BELGIAN AEROSPACE

Skywin
Aerospace cluster of Wallonia

TAKING ON A **NEW DIMENSION**

Members directory 2019

skywin.be

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Chairman's message

The trends observed in previous years in the civil aviation and space market were confirmed during the 2017 financial year. The order books from the main stakeholders have generally been further enhanced and emphasis is more than ever applied to the supply chain›s ability to monitor rate increases within a permanent price competition context.

In the defence sector, approaches are being substantially revisited due to existing park renewal programmes, present with stronger international tensions and more volatile geo-strategic balances.

The consequences of this situation are manifold for industrial stakeholders who, more than ever, need to be attentive to their competitiveness, their ability to offer innovative solutions to current programmes, to imagine more break-through projects and to play a part in defence programmes, all within a Belgian context which, at the federal level, is not marked by a very proactive approach in relation to the Belgian and Walloon industries in particular.

Within this framework, Skywin multiplied its actions and initiatives in 2017 to promote the emergence of projects to account for these developments, while also adjusting its strategy in the space and drones field in order to ensure permanent support and pro-active associations, defending at the federal level the interests of the sector in the fields of defence and space, and solidifying a stronger presence in the European bodies.

Skywin has not only thus reaped visible results but also others that are often less directly measurable but equally important in the long term. In doing so the transversal dimension of some Skywin actions or projects has also been highlighted and appears to contribute to a renewed cluster dynamic.

Jacques Smal
Chairman

Skywin in a Nutshell

Skywin is one of the 6 competitiveness cluster in Wallonia.

The Skywin pole is defined around 5 economic sectors and 6 technological axes.

The **5 economic sectors** covered by the cluster have their own different business models:

- The two historic sectors of the Skywin: **Civil Aeronautics** and **Space**. Both have been covered since the creation of the cluster by the integration of the members of the existing EWA and Wallonie Espace clusters.
- The **Drone** sector has emerged more recently and a consolidation process is still on going. Skywin cluster focusses on the development of new flying machines, sensors, control and applicated software, and also on synergies with the space sector, especially for earth observation.
- The **Defense** sector is the moste recent one but it was already present implicitly by the membership of some organizations and companies involved on several collaborative R&D projects. The awareness of a European defense need and the recent appearance of European and Federal research programs dedicated justify the integration of this specific sector.
- The **Engineering** sector is dedicated to the various service providers needed for the technological development of the other 4 sectors, including software developers.

The **6 technological and strategic axes** of the Skywin cluster:

- **Composite materials and industrial processes**: the Walloon aerospace industry is focusing on materials of the future, both for design and manufacturing;
- **Metallic materials and industrial processes**: an important know-how exists in Wallonia around metal tooling and design; the integration of operational excellence and Additive Manufacturing into the industrial process are major challenges for the sector;
- **Embedded systems**: for aeronautical, space and drone uses ;
- **Airport services**: the number of airports will continue to grow, with new operational and technical opportunities of management;
- **Space and drones applications and systems**: the global market for nano and micro-satellites (new space concept) is growing; the availability and the combination of data derived from space observation and the use of drones involve the development of plenty new applications;
- **Modelling and numerical simulation**: the Walloon industrial and scientific sector contains a few leaders on this specific international market.

End 2018 Skywin has **148 members** among which:

- 115 Companies: SMEs (84) and large companies (31) ;
- 25 Research operators ;
- 2 Training centres;
- 6 Other bodies (agency, association, ...).

Turnover of the Walloon aerospace sector: €1.75 billion

Employment figures: 7,500 direct jobs

Industrial Members

ACTE

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Heat exchangers
design & manufacturing

AERO

ENGINEERING

As a company acting for waste heat recovery, ACTE designs and manufactures innovative heat exchangers dedicated to waste heat recovery from micro-gas turbines and industrial applications including energy production units and vehicles.

Thanks to its unique arrangement of modular ring-shaped components and a specific primary surface profile, ACTE heat exchanger technology is flexible and fits with a wide range of applications and processes with a specific focus on lightweight and compactness.

ACTE S.A. has more than 15 years of experience in high performance gas-gas heat exchangers, mainly used as heat recuperators on turbine engines. ACTE is therefore able to deal with primary surface heat exchangers in extreme environments: high power densities, large range of mass flows, thermal shocks, creep and thermal fatigue, combustion gases, etc.

The waste heat recovery solutions designed by ACTE are aimed at being compact and lightweight while offering all the features required to reach the target performances.

In order to respond to each customer needs, ACTE answers in several ways:

- Standardized solution supply
- Adaptation from ACTE standard products
- Full development
- Prototype to mass manufacturing

ACTE also offers service related to the whole spectrum of heat transfer.

ADDIPARTS

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AERO DRONE DEFENCE ENGINEERING

Additive Manufacturing Services for the Industry Specialized in Polymers, ADDIPARTS provides Additive Manufacturing expertise and know-how in many demanding industrial sectors.
ADDIPARTS consulting services and manufacturing solutions support and accelerate the design and compliance of new products to their Specifications, their qualification, industrialization and production.

Based on customers requirements, ADDIPARTS provides qualified industrial AM technologies, high performance materials, rapid prototyping and digital manufacturing services in order to reach cost optimized solutions.

ADDIPARTS professional performances allow customers to meet their development and production deadlines, and reduce their costs and risks.

ADDIPARTS works side by side with customers to define the right AM technology and material for the right application.

ADDIPARTS designs and prints complex parts, per unit or in small batches, using high performance industrial thermoplastic materials.

The resulting functional prototypes, parts, tools and jigs offer unequalled mechanical, thermal and chemical performances, matching industrial requirements and constraints, allowing their use in actual conditions.

ADVANCED COATING

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AERO SPACE

Advanced Coating is a reference in thermal spray coating technology, as well as in flat and cylindrical grinding, super finishing and balancing of technical parts of any dimensions. Advanced Coating is an optimally sized, customer-oriented company with the skills to provide its customers high added value. Quality, reliability and flexibility are the watchwords of our family company who can meet the tightest design, development and manufacturing deadlines on the market.

Products

Advanced thermal sprayed coatings (metals, alloys, abradables, ceramics and carbides) onto mechanical components up to Ø2000x6000 mm

Main properties

- wear resistance (abrasion, erosion, fretting)
- abradable
- thermal barrier
- high temperature corrosion resistance
- electric insulation
- power conductivity...

Capabilities

- Automated sandblasting up to Ø2000x5700 mm
- Cylindrical grinding up to Ø1524x5700 mm
- Modern thermal spraying processes including Plasma, HVOF, HVAF and Cold Spraying
- CN cylindrical grinding up to Ø350x1000 mm
- Super finishing up to 0,01 µm Ra
- Flat grinding up to 4000x500 mm
- Balancing up to Ø1500x6000 mm and 5 T

Certifications

- EN 9100:2018
- NADCAP Coatings
- Qualified as test laboratory for Safran Group (Metallography)
- ISO 14001:2015

Main References

- References of intermediate and final customers: SAFRAN Group (SAFRAN AIRCRAFT ENGINES, SAFRAN AERO BOOSTERS) – GENERAL ELECTRIC - AVIO
- Working of following programs: LEAP - GP7200 - CFM56 – SILVERCREST – TP400

AERODROME DE NAMUR

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AERO

DRONE

The aerodrome of Namur is located in the heart of Belgium. With its new asphalt track of 690m by 25 it can now operate all year round. The site continues to develop by building office spaces to create an aeronautical hub. The plane, drones, gliders and helicopters coexist for 70 years at the Aérodrome de Namur.

The Aerodrome of Namur, with the contribution of its new owners, undergoes important modifications.

The grass track has been replaced by an asphalt track. New gas pumps have arrived and real estate is growing.

Sonaca Aircraft is based on the site of the aerodrome and has just integrated its brand new building of 2.300m² intended for the assembly of the S200 aircraft. New tenants should set up on the site in 2019 where there are still building spaces available.

Aerodrome also wants to develop corporate incentives and rehabilitate its main building by the end of 2020.

AEROFLEET

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AERO

Aerofleet is specialized in High-Tech composites.

Nowadays we produce all kinds of high technical quality prepreg parts under vacuum and in autoclave.

Composite materials, using prepreg materials offer technical and environmental qualities.

Among other realizations, our company has built the domes for the Very Large Telescope, developed for ESO on the site of Cerra Paranal (Chile), the nozzles and the fairings for the A380 Airbus, weapon protection for the "FN"...

AEROSPACELAB

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SPACE

DEFENCE

Artificial Intelligence & Machine learning Small satellites

Blending satellite imagery with non-geospatial data to help you find the needle in the haystack. We develop cutting edge tools to automate a broad range of tasks ranging from surveying to monitoring. We process heterogeneous datasets composed from various sources and can also customize the tools to incorporate your own proprietary datasets. The services can be run on-site or in the Cloud, according to your cybersecurity requirements.

We are building versatile small satellites in the range of 25 to 50 kg. Our satellites are equipped with a variety of sensors collecting high resolution optical data multiple times per day on selected target areas. Tasking and archive imagery products will be available soon, with an optional extra layer of AI and machine learning to speed up your findings.

AETHIS

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SPACE

NETWORK AND CRITICAL INFRASTRUCTURES MONITORING AETHIS offers unique tools, services and solutions to measure, analyse, report and alert on availability, performance, service level and security of critical communications and command/control infrastructures.

Activities and experience

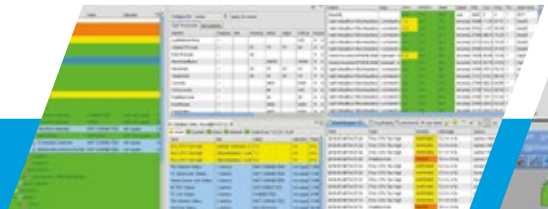
With more than 15 years of experience in the aerospace sector, AETHIS builds solutions and supports its customers to efficiently monitor and control their ground segment assets. The company provides solutions addressing the complete spectrum of managed components, from environmental supervision of physical devices in ground stations and in control centres to equipment and applications monitoring and control.

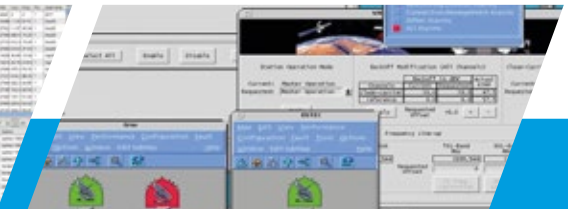
Skills and technologies

AETHIS offers its technology and associated services in network security, distributed monitoring, and management of the quality of service of ground segment networks and infrastructures:

- Design and development of SNMP agents for devices, systems and software applications
- Tailor-made and integrated solutions for monitoring and managing complex networks and infrastructure components
- SNMPv3 security-oriented consultancy and training
- TrafMon/TrafX software tools providing detailed protocols performance analysis of time-critical or heavy-loaded traffic in ground segment communications networks
- ISMEGA for smoothly integrating remote management into distributed ground segment and mission control elements
- SMON/SAMView operational monitoring platform for mission control systems and applications.

AETHIS is also reseller of leading ICT performance reporting solution (SevOne), of smart alert dispatching solutions (telAlert/MIR3), of SNMPv3 software tools and development kits (SNMP Research) and of environmental and SCADA monitoring and control devices (AKCP/ Asentria).





AIRCRAFT TRADERS BELGIUM

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AERO

DRONE

AIRCRAFT TRADERS BELGIUM is organized to offer clients an alternate technical resource specializing in commercial aviation.

AIRCRAFT TRADERS BELGIUM AIRCRAFT DEPARTMENT will subject your needs to the most meticulous analysis so as to determine the type of aircraft best suited to your needs. We will take into account anticipated usage and expected workload, as well, of course, as your budgetary goals. We will study the market's potential to satisfy the body of your personal or corporate needs, in budgetary and technical matters. With AIRCRAFT TRADERS BELGIUM, you sidestep the tedious burden of shopping, and armed with judiciously and professionally targeted data, you will be afforded the opportunity to make a clear-headed decision. Our own fleet available immediately for lease consists of DC9's, B727's and B737's freighters.

AIRCRAFT TRADERS BELGIUM UAV DEPARTMENT is manufacturing the most performant UAV on the market able to fly 3 to 4 hours powered by an electrical engine fed by Li-Ion batteries and solar cells. The automatic pilot AIRELECTRONICS is controlled by radios and 3G/4G telemetry communication system. Life images are sent by Streambox Avenir Drone 3G/4G/Lte router to the ground station via internet. Treatments of images can be executed during the flights by a powerful computer on board.

AKKA BENELUX

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AERO SPACE DRONE DEFENCE ENGINEERING

AKKA Technologies is an international Group with 16.000 employees working in Europe, America and Asia. It experts serve in the field of innovation, assisting large manufacturing and tertiary services companies in the full range of their innovation processes and in the lifecycle of their products, from initial studies to the start of large-scale production.

For over 30 years, AKKA Technologies develops its global aeronautical offer: from manufacturer design offices to operators, including EMs, airlines owners and lessors. This tailored support at every stage of projects can be provided in the form of Technical Assistance of Work Packages, thanks to our international footprint.

AKKA Belgium, with its 800 experts is the leader in industrial engineering consulting in Belgium. Our engineers work our Engineering Center or directly at our clients' sites (Safran Aero Boosters, Sonaca, Asco, Sabca, Safran Aircraft Engine Services Brussels...).

Our high-added value solutions to cover the whole project life cycle and to meet future issues:

- Cockpit ergonomics
- Embedded Software
- System conception and integration & installation: hydro-electric, avionic...
- Aerostructure: metal, composite, static calculation, stress/non linear, cinematic
- Flight physics and aerodynamics
- Power plant
- Aircraft modifications
- Software development
- 3d tools: virtual maintenance, digital mockup, viewer 3d real time...
- Flight ops and maintenance
- Ground/flight tests
- Technical publications maintenance, service bulletin, electrical schematics...

Certifications

For TC or modifications, upgrades & new developments, STC (avionics, cabin, conversion, external liveries) EASA Part 21 DOA & POA and GCAA DOA certificates

As a specialist in engineering and technologies, AKKA Technologies also developed expertise in other sectors such as automotive, pace/defense, pharmaceuticals, energy, telecommunications, railway, chemicals, etc.

ALX SYSTEMS

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DRONE

DEFENCE

ALX Systems provides mission-optimized UAV operating system, with AI enhancement.
The solution supports secure cloud control, integrated image recognition, obstacle avoidance and path finding, as well as complete integration of swarm capabilities.
To complete our offer, we provides customer based solution, like integrated security system (Sentinel), counter-UAV solution (Spartiath), and many other ones dedicated to indoor exploration, 3D mapping, search & rescue.
In a few words "ALX provides solutions to make UAV projects come true!"

ALX Systems provides mission-optimized UAV operating system, with AI enhancement.

The solution supports secure cloud control, integrated image recognition, obstacle avoidance and path finding, as well as complete integration of swarm capabilities.

To complete our offer, we provides customer based solution, like integrated security system (Sentinel), counter-UAV solution (Spartiath), and many other ones dedicated to indoor exploration, 3D mapping, search & rescue.

The solution is dedicated to be easily integrated in any kind of structure, to make the UAV an extension of business process, which means, that it's completely open to the connection with other software

Our 3D simulation environment will allow our users and customers to test, train and validate their process in a completely secure way

Our Vision suite will allow our customers to train themselve, without knowledge, our image recognition AI engine

AMOS

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SPACE

ENGINEERING

AMOS was created in 1983, merging from the mechanical machining expertise of "Ateliers de la Meuse" and the optical polishing know-how of the Institute of Astrophysics from the University of Liège.

Located in Belgium, AMOS has been designing and building high-precision optical and mechanical equipment for more than 35 years. Its main achievements are professional telescopes, space optical systems, test equipment for space instruments, and high-precision mechanical equipment. It employs about 100 employees highly skilled in advanced technologies and offers services to the space industry, to the professional astronomy sector, to scientific laboratories and to industry.

AMOS' added value recognized by its customers is:

- Cutting-edge expertise in optics and high-precision mechanics,
- Ability to reach the technology limits despite difficulties,
- High quality thanks to in-house manufacturing,
- Precise and reliable solutions for long-term use.

Main area

- Professional Astronomy Systems: turn-key telescopes, telescope subsytems, telescope instruments
- Space Systems: on-board hardware, optical and mechanical test systems (GSE), handling systems
- Science and Industry Solutions: optical and mechanical systems
- Services: Design, engineering, manufacturing and test services in optics, mechanics and mechatronics

AMOS has customers in Europe (ESA, ESO, AIRBUS DEFENCE & SPACE, THALES ALENIA SPACE, OHB), in United States (AURA), in India (ISRO, PRL, ARIES), and has more recently expanded its business in countries such as China, Turkey and Russia.

AMPACIMON

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DRONE

Founded in 2010 based on research undertaken since 2003 at University of Liège, Ampacimon developped innovative Dynamic Line Rating systems (DLR) for transmission/distribution systems operators.

This new technology belongs to the « smart grid » world of innovations to actively manage electricity grids. It is made of stand-alone sensors installed on high-voltage lines, coupled to software interfacing with dispatching centers SCADAs.

The system consists of sensors installed on high-voltage lines that measure key parameters influencing the maximum thermal capacity of a line (vibrations, temperature, sag, wind speed). It measures the so-called « ampacity »of a line, i.e its true, real-time maximum capacity (which is usually significantly higher than its design capacity). This system also allows to reliably forecast this capacity up to two days in advance.

A first field-test was initiated in 2008 on the Elia high-voltage grid in Belgium. Through the EU-funded «Twenties »project (completed in 2013) with RTE (France), REE (Spain) and Elia (Belgium), Ampacimon was able to demonstrate that its DLR system was not only technologically proven, but also the most effective in the field.

Since then, Ampacimon started bringing to the market the ADR (Ampacimon Dynamic Rating) product line, including quantification/modelling tools, real-time monitoring systems, up to day-ahead forecasting software, integrated in T/DSOs SCADAs.

Ampacimon works alongside its customers globally, helping them to optimize their grids.

ANY-SHAPE

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AERO SPACE DRONE DEFENCE ENGINEERING

Any-Shape is a leading company dedicated to Additive Manufacturing (3D Printing) for Industry with state-of-the-art equipments for the production of plastic, composites and metal functional parts. Any-Shape provides its customers with services in the whole Additive Manufacturing (AM) value chain, with a specific focus on Engineering for AM, high standard & state-of-the-art production machines and strong capabilities in control, test & quality assessment.

Any-Shape competitive assets are based on three main pillars

- **Engineering, co-conception & design for additive manufacturing:**

  Any-Shape provides its customers with a professional support to exploit the full possibilities of industrial 3D printing while properly accounting for manufacturing constraints from the concept to the detailed design phase.

- **Metal, plastic and composites parts serial production:**

  Any-Shape manufactures high value parts in both plastic & metal for highly competitive industries. Consistent state-of-the-art technologies are available: Selective Laser Melting (SLM) for metal powders, Selective Laser Sintering (SLS) for polyamide powders, Multi-Jet Printing (MJP) for high-definition ABS-like plastic production and Fused Deposition Modeling (FDM) for high performance polymers and continuous fiber reinforced composites.

- **Control, Test and Quality assessment:**

  Providing our customers with the best quality standards is our main concern as a way to favor the rapid introduction of 3D printed parts in highly demanding industrial applications. Any-Shape is fully equipped with metallography, mechanical testing and metrology labs aiming at qualifying the mechanical properties of the parts produced or developing the process parameters for new materials. Detailed on-line and a posteriori process control is performed in parallel to rigorous part quality assessment.

BALTEAU NDT

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AERO

BALTEAU NDT is an NDT manufacturer specialized in X-Ray solutions designed for the quality control of industrial products since 1932. Balteau NDT is involved in various industries and has been deeply involved in the aeronautic industry for decades, with portable equipment and Real Time System.

Understanding new requirements is very important for Balteau as we are always looking to answer your needs with the best solutions. Balteau has evolved into digital applications and developed products such as software suite, calibration tools, etc. that are specifically designed for the aeronautic industry.

Balteau is involved is most industries by having portable units, stationary & mobile equipment, real time systems (standard and customized), NDT software, digital imaging, etc.

Balteau is one of the most experienced and complete x-ray solutions manufacturer and we are delivering high quality and highly reliable x-ray equipment since 1932. After sales service is very important and this is why we worked hard to offer one of the best service possible. Thanks to a worldwide network, we are able to be responsive, offer a fast delivery and allow every user to have fast maintenance and / or repairs in case the equipment needs it.

Highly qualified engineers, a customer orientated staff and an extensive network is one of the main reasons to the success of our brand and to your possibility of always getting service, maintenance and a qualified and professional support.

BELGIAN DRONE FEDERATION

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DRONE

The Belgian Drone Federation forms a network for more than 350 members, including universities and colleges, companies, pilots -operators and institutions. It represents their interests in the unmanned aviation sector. The federation is active in both Belgium and abroad to promote the sector and the integration into the airspace.

The Belgian Drone Federation represents the interests of her members and the drone sector locally, regionally and federally. The lobby for a new European legislation and an accurate Belgian implementation is a priority. The sector is on the eve of a rapid evolution. It's the goal of the organization to create an ideal environment in Belgium so that no opportunities are missed and Belgium remains one of the leaders in Europe. The federation is based on the dedication of a team of board members who volunteer to share their passion for drones and look after the interests of the sector. A good mix of knowledge and expertise is deployed daily in working groups and advisory boards such as those of the Belgium Civil Aviation Authority and in contacts with foreign sister organizations.

The 4 main objectives are

- Maximum safety and true airmanship
- A pursuit of a uniform position in terms of regulations within the sector
- Fair competition and a viable sector
- A positive image for the drone sector in Belgium

BELGIUM ENGINE CENTER

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AERO DEFENCE ENGINEERING

Belgium Engine Center (BEC) is a one-stop shop for Maintenance, Repair and Overhaul (MRO) services for the F100-PW engine platforms. We provide a complete, single MRO solution through a wide range of in-house repair capabilities. Today BEC also offer its equipment's and tooling portfolio as well as its 40+ years of experience in Engine MRO activities to customers active in civil aviation.

A large variety of services for F100-PW users on one side & An excellence center in Aircraft Engine Maintenance activities available for Civil aviation needs.

Versatile and complete MRO solution

Our comprehensive in-house capabilities (NDT/NDI, Item Repairs, Module Overhaul) provide our customers with a complete, single MRO solution resulting in competitive pricing and turn time, eliminating the need to rely on a dispersed repair network.

Extensive choice of Non Destructive Testing & Inspections

BEC is an ideal local partner for NDI/NDT requirements.

Modern portfolio of repair capabilities

BEC not only restores a wide range of components in-house, but our engineering team offers custom repair processes and services according to customer's needs.

Efficient spare parts provisioning & trading

Our close collaboration with the OEM, leading to shorter lead times in hardware procurement, is complemented with our ability to offer an attractive off-the-shelf availability of new and serviceable parts.

Smart selection of engineering & logistics services

As a reliable and knowledgeable partner, we provide custom services that aim to lower customers' overhead cost, such as material forecasting, configuration management, technical support and warehouse services.

Liège, a competitive logistics hub

Ideally located, in the middle of an highway network, close to Liège Airport and close to major European major hubs (Amsterdam, Frankfurt, Paris, London).

BIG BAD WOLF

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ENGINEERING

Big Bad Wolf's mission is to support organizations in achieving their digital transformation by identifying creative technological opportunities and challenging business processes to positively impact the value chain.

Big Bad Wolf is a brand-tech product and services company. We help innovative businesses shape the future of their brand experience through digital transformation of their services, products and communication. We see Virtual Reality, Augmented Reality, Computer Vision, Machine Learning and Natural Interfaces as new opportunities to redesign and improve business-to-consumers interactions.

Our integrated startup studio helps companies by giving them access to an ecosystem of software solutions and platforms dedicated to the digital transformation of their business.

BODAIR

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AERO

BODAIR SA is active in the development, design and production of carbon fiber rods, struts, tubes and shafts.

- As a result of the R&D conducted by BODAIR, new technologies in carbon fiber rods, struts and shafts are emerging.
- BODAIR is eager to offer high quality rods and advanced designs allowing significant weight savings that largely exceed the current designs & mechanical performance of aluminum and/or stainless steel rods, struts and shafts.
- Thanks to the combination of a completely new manufacturing process with a new carbon fiber design, BODAIR has acquired a unique competitive advantage over traditional technology & design.

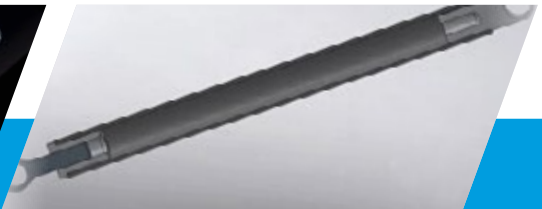
BODAIR uses the pre-impregnated carbon fiber filament winding technology.

- This technology will allow maximum control of the process and guarantees porosity levels that are significantly lower than the traditional
- RTM processes. It also ensures maximal repeatability and consistency in overall product quality.
- BODAIR uses patented production methodologies and designs enabling the production of parts which previously were not possible to manufacture.

BODAIR's design makes it possible to integrate metallic inserts and flanges with a carbon fiber tube without using any glue or sealant. These metallic parts are positioned during the filament winding process and are consequently an integral part of the final product.

- Rods with adjustable ends feature one or two inserts in stainless steel, aluminum, titanium or HR polymers with a thread.
- Struts with fork type ends
- Shafts with metallic flanges at both ends will transfer high torque loads.

References and/or Certifications ISO 9001 and EN 9100



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AERO

Bridgestone Corporation, headquartered in Tokyo, is the world's largest tire and rubber company. With a passion for excellence and creative pioneering, Bridgestone Aircraft Tire Europe serves the commercial aviation industry with the highest quality aircraft tires, providing our customers and their worldwide passengers with superior safety and reliability.

Our outstanding tires are sourced exclusively from our factories in Japan and state-of-the-art retreading facility located in Belgium, the largest aircraft tire retreading plant in the world.

Bridgestone Aircraft Tire Europe supplies new and retread tires in the EMEA Region to more than 160 airlines and wheelshops.

Aircraft tires work under extreme conditions, carrying up to 35 tons per tire and accelerating up to 380km/hour at takeoff, in addition to enduring varied environmental stress when in flight and taxiing.

With more than 80 years of experience and insistence on quality in aircraft tire manufacturing, Bridgestone ensures that its aircraft tires remain one of the most trusted brands in the aviation industry.

References and/or Certifications

- Federal Aviation Administration (FAA)
- European Aviation Safety Agency (EASA)
- Certified EN 9110, ISO 9001, OHSAS 18001, ISO 14001

Around the world, over 2,000 aircraft equipped with Bridgestone aircraft tires land safely every hour.

BRITTE-MUSTAD

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http://www.mustad.be

AERO SPACE DEFENCE

Britte-Mustad: "Customers satisfaction first!" "Britte Mustad" belongs to the mechanical division of the family group MUSTAD INTERNATIONAL GROUP founded in Norway in 1832. This Family Group has built his reputation on the Quality of their products, their diversified and industrial strategy, but also on the respect of their commitments.

Since 1980, Britte-Mustad has built an important expertise in the Aircraft and Space industries by machining various components and sub-assemblies for a large variety of engines.

Britte Mustad's core business is

- to machine high precision mechanical components in all existing materials including composite, super alloys... by various machining technologies like milling, turning, grinding, EDM, etc. With 32 different technologies inside, Britte-Mustad can manufacture in series high added value products with competitive prices and short delivery time.
- to produce assemblies including NDT final testing for all industrial sectors.
- to design and manufacture very complex tools, including measuring and control systems.

Britte-Mustad is also active in other sectors like Defense, Spatial, Energy, Medical, Transportation, and Machinery Construction

BRUSSELS SOUTH CHARLEROI AIRPORT

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AERO

Brussels South Charleroi Airport is Belgium's second international airport, situated in Gosselies. The airport is situated at approximately 40-minutes-drive from Brussels. The operations at Charleroi Airport started in 1919 but grew significantly in the 90's.By the end of the 90's and with the arrival of the Irih low-cost carrier, Ryanair, the expansion of the airport started and keeps on going currently. Today, the airport welcomes the passengers of six airlines, i.e. Wizz Air, TUI fly, Pegasus Airlines, Ryanair, Belavia and Air Corsica.

More than 7 Moi passengers travel every year through Brussels South Charleroi Airport for its accessibility, low-fares and its stress-free environment.

3rd most punctual airport (OAG Punctuality League 2016) Brussels South Charleroi Airport is the second most punctual airport in the world (OAG Punctuality League 2014) and has been awarded several times for the quality of its infrastructure.

Brussels South Charleroi Airport offers a wide range of destinations worldwide. Passengers can choose among more than 180 destinations in Europe, North Africa and the Middle-East.

In addition to its destinations, BSCA also offers tailor-made services to make every passenger's journey more enjoyable such as: Fast-Track at the security, premium passes, All in 1 for group travels...

CAPAUL

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AERO

DEFENCE

Capaul - High quality service - Uncompromising precision - Excellent delivery performance. Highly qualified workforce as well as the flexibility of a medium-sized company are the keys of success for Capaul.
Capaul is specialized in high precision machining of mechanical components and complex subassemblies: modules for aircraft engines (SUMP LEAP, BOOSTER LEAP, CFM56) - Subassemblies for complex medical equipment - complete installations from the procurement of raw material to the finished product.
Our modern facility offers high precision multi-axis CNC-turning and milling centers as well as 3D-measuring equipment installed in a modern fully air-conditioned production hall (20°C).

A modern plant can offer the following capabilities

- CNC-turning on 2 to 5 axis turn-mill centers up to Ø1250mm
- 3,4&5 axis machining on vertical centers up to 1250x1000x1000mm
- 5-axis simultaneous machining up to Ø1250x1000mm in a 2000m² fully air-conditioned hall
- High-precision 3D-Measuring equipment
- Machining on horizontal centers (pallet machining) up to 500x500x500 mm
- Hard turning in an air-conditioned environment up to Ø420mm
- Dye penetrant inspection, barrel finishing, balancing , sandblasting
- Complete integration of sub-assemblies (SUMP LEAP, BOOSTER LEAP and CFM56)

Main References

- Certified: EN 9100:2016
- References of intermediate and final customers: Airbus – Boeing – General Electric – Safran Group – Snecma Motors – Sonaca – Technical Airborne Components - Asco Industries
- Working of following programs: CFM56 - Leap - CF34 - A330/340 - A400M - A380 - Embraer E2- F7XC GE90 - GP7000 - TP400 - GE9X - PP20 - Silvercrest

CEGELEC INFRA TECHNICS

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AERO SPACE ENGINEERING

Cegelec IMCS develops tailored solutions for multi-technical projects. We have developed advanced skills in the area of aerospace, rail and public transport infrastructures, Bagage Handling System,... All safety critical projects are SIL2 certified.

We are specialized, among other things, in the design and realization of different types of real-time test benches, with hardware-in-the-loop capability. Our test system is known for its reliability and efficiency and has already been used in major projects. Our test system has been used, among others, for European space launchers for Ariane 5, 6 and Vega (to test the Vulcain engine, actuators, ...).

The success is due to a scalable Measurement and Control system that we have developed. This system can be interfaced with both laboratory test benches and large test installation systems. The software developed is based on RTX operating system. Following the concept "from measurement to knowledge", our Measurement and Control system offers a wide range of functions such as test and measurement parameter high speed acquisition (up to 1µs), real-time processing, storage, archiving, ... All this while ensuring the safety of the bench and equipment under test. The system can also interfaced with a broad range of standard and customized subsystems trough a wide range of interface protocols.

More than a supplier of technical services, Cegelec is a partner who anticipates and thinks along with its customers. Transparency combined with a personal approach and an expertise of more than 50 years will guarantee you an excellent realization of your project. We can rely on our employees who give every day their utmost. Thanks to their expertise and knowhow we can offer innovative solutions, taking into account the life cycle cost of your installation.

CHP CONSULT

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AERO SPACE DEFENCE ENGINEERING

ChP Consult designs, prototypes, tests, develops, industrialises and produces components and actuators for aeronautic and space fluid systems.
Most R&D activity is currently focused on Shape Memory Alloy couplings for pipes which are being developed within the frame of three ESA projects and for which an aerospace compatible supply-chain is being set up.
ChP Consult is open to new partnerships within the frame of ESA, EU and other projects.

The company develops above mentioned products internally and with the help of strategic partners. Components are validated mainly in own facilities presented below, which are also available for outsourcing.

The laboratory is equipped with

- Helium bench (up to 400 bar) with mass spectrometer leak detector, vacuum chamber (10^-8bar) and climatic control
- ISO5 area with laminar flow with optical cleanliness analysis equipment
- Dynamic test facilities (Shaker for resonance search, Sinus and Random tests)
- Hydraulic test facilities up to 1300 bar, liquid pressure drop bench...
- Specialised metrology (including surface scanner in nanometer range)
- Electronic diagnosis equipment
- Equipment for metallographic analysis.

Processes (for prototyping of small components)

- High precision CNC turning
- Electroplating (Au, Ni)
- High precision polishing/lapping
- Cryogenic thermo-mechanical treatment

Within ESA projects, the company also conducts **numeric simulations** in the field of mechanics, flow dynamics and magnetic analysis with own tools/models that are validated by tests.

Currently, a process is underway for customising own space products for **non-aerospace applications**.

CITIUS ENGINEERING

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http://www.citius-engineering.com

AERO SPACE DEFENCE ENGINEERING

Citius is an engineering company specializing in design and realization of turnkey solutions for industrial facilities in production and testing. Its engineering office offers key competences in mechatronics, mechanical and electrical engineering as well as in automation.

Citius operates along three axes:

- Advanced production systems, robots and vision. Citius develops and integrates 'turnkey' production means, from defining the need to final implementation. Citius also sets up complete solutions for handling industrial processes, thanks to its skills in automation, robotics, electricity, industrial computing and instrumentation.
- Testing solutions. Citius develops specific solutions for testing equipment, provides its customers with own integrated testing facilities, and proposes complete solutions of testing means based on its specialized skills in the instrumentation sector.
- Engineering and consultancy based on recognized competences in the field of mechanical design, piping and structures, energies and technical project management.

Citius ensures the development of complete systems, from the early beginning by defining concepts, to the full development of the solution, as well as the commissioning and start-up of dedicated applications. Its works cover all aspects of a project:

- Design and studies of concepts and detailed solutions
- Selection and integration of on-the-shelf components and systems
- Planning and follow-up of installations, site management, coordination of work forces, reporting to clients
- Testing, commissioning, start-up
- Quality aspects, procedures, regulation, security
- Budgetary follow-up and reporting
- Risks management

Founded in 2009, Citius Engineering is based on a strong team of 38 specialists representing a buoyant healthiness for this cutting-edge expertise.

Citius enjoys a growing number of customers in the aeronautic sector (the SAFRAN Group, Sonaca, Sabca), in the spatial and agro-food sectors (AB INBEV, Groupe Tirlemont, Belourthe), in the defense and security sectors (Thales, FN Herstal, CMI), in the sectors of chemistry, pharmaceutics and transport (Alstom, JTEKT, AW Europe), energy (GDF-Suez, Groupe Emerson), and life sciences (Mithra, UCB, GSK). In addition, Citius cooperates with the Liège University's faculty of Applied Sciences, with a double objective: to develop an automated cell for the production of small and medium-sized series; and to provide the operator with an easily configured user-friendly solution.

JOHN COCKERILL (ex CMI INDUSTRY)

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http://www.johncockerill.com

AERO DEFENCE ENGINEERING

Driven since 1817 by the entrepreneurial spirit and passion for innovation of its founder, the John Cockerill Group develops large-scale technological solutions to meet the needs of its time: preserving natural resources, contributing to greener mobility, producing sustainably, fhighting against insecurity and facilitating access to renewable energy. Its contribution to businesses, governments and communities consists of services and associated equipment for the sectors of energy, defense, industry, the environment, transport and infrastructures. With over 6000 employees, John Cockerill achieved a turnover of 1.3 billion euro in 23 countries on five continents in 2018.

John Cockerill Industry

As an expert in industrial processes, John Cockerill Industry has made it its mission to improve the overall performance of its customers' facilities. Its offering includes: equipments and services for the processing of steel and non-ferrous metals; thermal treatment furnaces for the milling, forging and aeronautical industries; installations for the treatment of electrolytic and chemical surfaces for all types of industries.

John Cockerill Energy

John Cockerill Energy is a world leader in the design and supply of heat recovery steam generators (HRSG), thermal solar receivers, boilers for FLNG (Floating Liquefied Natural Gas), and industrial boilers.

John Cockerill Energy has drawn on its 200-year-long boiler-making experience to develop receivers for solar thermal tower power plants

The John Cockerill Energy offering includes industrial boilers for sectors such as chemicals, petrochemicals, biomass, etc

John Cockerill Environment

John Cockerill Environment brings global and made to measure environmental solutions within 4 domains of expertise: water, air, waste and energy efficiency.

John Cockerill Defense

John Cockerill Defense is the undisputed leader in multifunctional high-effect turrets in the 25 mm - 120 mm range for light and medium armoured vehicles.

John Cockerill Services

John Cockerill Services provides advice and support to industries and operators of public infrastructures for the assembly, operational management and modernization of their facilities.

COEXPAIR

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AERO

Coexpair is a Belgian company active in the aeronautical sector since 2006.
Our strategy is based on an original business model. It offers services to support its customers in the development of new applications in composite materials. This includes the manufacture of first part prototypes (no serial production). Once the research is complete, Coexpair extends its offer to the assembly of production equipment needed for RTM industrialization. On a general way, Coexpair is supporting its customers from the idea that sprouts in their design office up to the installation of their workshop.
Today Coexpair is a recognized partner of the largest OEM and Tier-1 suppliers in the sector. Several European companies have become regular customers, including Airbus and Safran groups. Our company is a unique place in Europe to develop and to transfer advanced composite manufacturing technologies.

Workstation

Coexpair designs and builds RTM workstations including clamping & heating systems, injection systems and tool handling devices. Automation of High Performance RTM process for aerospace is our job. The partnership with Radius Engineering ensures our Customers the same high quality & reliable equipment worldwide.

Mold & Tools

RTM mold quality is critical for part production success. Customers can count on a team of specialized engineers to design and to machine their molds. FEA allows study of thermal transfer, mold deformation and tool closure kinematics.

Part & Process Development

Net-shape composites are an opportunity to improve performance: lower weight, lower cost, shorter manufacturing cycle. Coexpair supports you by engineering for optimal performance. The position of the office inside the workshop gives the designer a great opportunity to combine 3D models and hands-on trials.

CONSOLIDATED PRECISION PRODUCTS BELGIUM

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AERO

Consolidated Precision Products Belgium is an investment casting facility using vacuum casting techniques to produce structural castings, rotating blades and nozzle guide vanes for aeronautical gas turbines.

Consolidated Precision Products Belgium is a major supplier for the aerospace market including helicopter, missile and airplane engines.

Consolidated Precision Products Belgium has a subsidiary company named CPP-Slovakia in Slovakia Republic for low cost manufacturing and is part of CPP Corporation including 14 casting facilities in the USA and in Mexico pouring Aluminium, Magnesium and Superalloys.

Consolidated Precision Products Belgium has the strength and agility to exceed customers' demanding expectations in a continuously changing business environment and is specialized in challenging products that require exotic alloys and complex geometries.

Consolidated Precision Products Belgium keeps aircraft flying by providing a wide array of critical components to the aerospace and defense industries. CPP produces the entire line of hot gas path (HGP) components including Directionally Solidified (DS), Single Crystal (SC) and Equiaxed blades, nozzles guide vanes and structural castings. CPP also provides and manages such post-cast processes as machining, grinding and stem drilling. Product quality, technical capability, customer service, delivery response and cost effectiveness are key factors when choosing a casting vendor. With state-of-the-art facilities on two continents as well as superior expertise and service CPP Corporation is a recognized and major supplier of sand casting, investment cast products and services for the aerospace.

Consolidated Precision Products Belgium is certified NADCAP for special processes and the European aeronautical standard EN 9100:2009.

DARDENNE

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AERO SPACE DEFENCE

High-precision mechanics combined with the agility of a SME.

Since 1978, DARDENNE has a recognized technical expertise for the manufacturing of mechanical parts of the highest accuracy. Active mainly in Aeronautics and Space Industries, the company is EN9100 and ISO9001 Certified.

Our workshop is equipped with up-to-date CNC equipment for Turning, Milling, Wire Cut EDM, Die Sinking EDM and Flat & Cylindrical Grinding. The combination of all these technologies with our highly qualified technicians allows us to master the manufacturing of any mechanical part from the beginning to the end. Every part produced is Quality Controlled in an air-conditioned metrology lab fitted with 3 three-dimensional measuring machine.

Dardenne is providing a complete service from single prototypes to large-sized series production and is active on most of the major engines programs: LEAP, TP400, GTF, CFM56, Passport, Silvercrest...

DELTATEC

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SPACE DRONE DEFENCE ENGINEERING

With a team of more than 50 high-level designers, DELTATEC, a high-tech design company, is specialized in advanced hardware and software technologies with a strong focus on digital imaging applications, also embracing the recent Deep Learning/AI trend

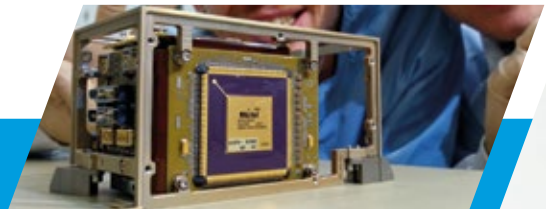
The company is active in the industry sector (embedded systems, quality control projects), in the TV broadcast market (design of boards, automation of live shows), in the Industrial Vision (development of specific cameras) and in aerospace (on-board imaging subsystems, on-board computers, EGSE...)

Space became a strategic activity in 2005 with the development of flight systems performing image acquisition and/or processing.

In the space segment, DELTATEC's role consists in designing data processing subsystems, with a focus on the electronics of cameras used in earth or sun observation satellites. Another major activity is the design of payload and on-board computers. DELTATEC is also focusing on the NewSpace, taking profit from its experience in both space and industry worlds.

In the ground segment, the activity of DELTATEC is based on the design of specific test beds and in video processing applications, which are both derived from similar activities for aeronautics and industry markets.

Based on its experience in the space sector and R&D activities in the scope of the Marshall Plan, DELTATEC also supports development of onboard equipment for aeronautics and drones sector.



DONCASTERS SETTAS

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AERO

DEFENCE

Part of Doncasters Group, Settas operates one of the largest foundries in Europe with a vacuum furnace capacity of 1 ton of titanium. Settas centrifugally pours into cold moulds on the largest centrifugal table in the world.

This process provides excellent consolidation of metal during solidification, enhancing both the surface aspect and mechanical properties of the component. Mechanical properties achieved are within parameters set by forging specifications, reducing the need to apply a casting factor in design. Production techniques include; centrispinning, investment and precision sand casting, producing medium to large, simple to complex components up to 400 kg (880 lb) delivered. Our manufacturing envelope is up to 1100 mm (44 in.) investment cast and 2600 mm (102 in.) precision sand. Settas benefits from Doncasters Group's vertically integrated structure and can supply fully machined and assembled parts.

Aerospace Market Products

- Engine Structural Components (Cast) | Bearing Supports (Cast) | Rings and Discs (Cast) | Compressor Case, Radial Straighteners, Axial Straighteners (Cast)
- Defense Casings (Cast) Defense Structural (Cast) | Airframe Brackets and Components (Cast)
- Braking Systems Components (Cast) | Torque Tubes (Cast)

Certifications

- AS/EN 9100: 2016 (ISO 9001 included), ISO 14001: 2015
- OHSAS 18001, NADCAP NDT (RT) – Digital, NADCAP NDT (PT) + (Etching included), NADCAP Welding, PED 2014/68/EU (EC Annex 1,4.3), NORSOK M650 (Offshore) MDS-T02

DUMOULIN AERO

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AERO

In 2003, Dumoulin Aero, specialized in the manufacturing of Fine Hunting Guns, has operated a significant diversification by launching a program to manufacture titanium and other allied steel parts for aircrafts.

Although, the company was rather inexperienced in this particular field, the rigor and precision needed in the manufacturing of fine firearms, considerably contributed to the success of this reconversion and enabled the company to establish a performing operation and obtain the EN 9100 Certification.

In a short period, Dumoulin Aero has successfully assimilated the quality requirements, the organizational and production aspects and adopted the strict control requirements needed for the manufacturing of high precision parts sub-contracted by manufacturers such as AIRBUS, BOMBARDIER or EMBRAER.

Today, Dumoulin Aero employs 40 people specifically trained to operate modern machines and equipment and has the capacity to perform a broad range of operations from turning-milling and milling mostly for connection parts between Tracks and Flaps and Tracks and Slats as well as Carriages. We have also a strong partnership with La Nitruration Moderne (Nadcap and required qualifications against specs) which allows us to deliver complete treated parts (NDT, Passivation, Zn Ni, Cadmium Plating, Painting and Ink Identification...).

The light structure of the Company and its geographical location enables a quick and efficient response to customer needs always in accordance with strict quality criteria and allocated deadlines.

DUMOULIN AERO is positioning itself as a key partner for aeronautic companies willing to establish a close and fruitful relationship based on know-how, reliability, flexibility and cost-effectiveness.

E-XSTREAM ENGINEERING

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AERO SPACE ENGINEERING

e-Xstream engineering, an MSC Software Company, is a leading global software and engineering services company, 100% focused on state-of-the-art modeling of advanced composite materials and structures to help material suppliers and end users across the industries to design and manufacture optimal composite products time and cost efficiently.

Digimat, the Material Modelling Solution developed at e-Xstream, is a Unique, Unified and Integrated Composites Simulation tool, offering complete capabilities to model the nonlinear multi-scale behavior of advanced materials. Recently, Digimat has been enriched by a complete solution that generate composite allowable with progressive failure analysis of Continuous Fiber Reinforced Polymer (CFRP). This solution enables to perform Virtual Test Campaign with the main standard tests used in the Aeronautics.

DIGIMAT fastens the development of optimal composite parts. Trough micromechanical modeling approaches, DIGIMAT accurately predict the nonlinear behavior of complex multi-phase materials.

Digimat Platform can support the development of any composite structures like CFRP, honeycomb sandwich structures, short fiber reinforced thermoplastics, 2D and 3D woven or Discontinuous Fiber Composites (DFC). The coupling of the material description with commercial CAE codes also to perform multi-scale analyses to raise the level of accuracy of composite structures simulations.

Airplane, spacecraft manufacturers and their suppliers use DIGIMAT to study the thermo-mechanical behavior of material lab samples and predict the influence of the material microstructure on the structure end performance. Through partnerships with the aerospace sector, e-Xstream has developed the appropriate tools and extensive know how for modeling materials involved in lightweight aerospace composite structures

References and/or Certifications Airbus, Boeing, Alenia Aermacchi, Safran Composites, Honeywell Inc, Eaton

EREM-SOGEX

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AERO SPACE ENGINEERING

Family company created in 1962, EREM is specialized in electro-mechanical machining of higth precision parts. We can produce in single part or large quantities for a variety of industrial sectors such as spacial, aerospace, medical, nuclear...

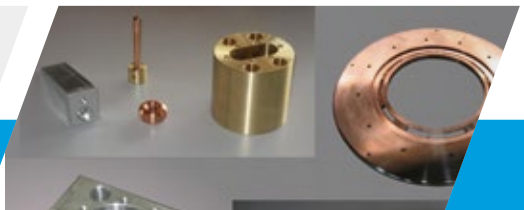
Erem started the manufacturing of components for start and stop ACEC engines such industrial resistor, contactor, relay...

We rapidly extended our activities to support our customer needs by manufacturing a wide range of high quality electromechanical products. With the time, we have in parallel developed a high know-how in industrial resistive elements.

Currently, we still propose these products with many other electromechanical devices based on customer's drawings but our investment in high technology manufacturing tools has enable us to specialize in precision machining on speciality parts using a wide range of materials such as steel, stainless steel, non ferrous materials (copper, aluminium, brass...), technical plastics, composite materials... Recently we equiped our workshop with a Mazak simultaneous 5 axis CNC machine to increase our range of services for more complicated parts. We also invested in a 3 axis CNC milling machine with a table of 2000 x 800 mm.

Quality controls are performed using, among others, a 3D control machine and CNC numerical optical control.

Our goal is to provide high quality products with excellent service levels and to be flexible to meet our customer needs.



ESPACEDRONE

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DRONE

EspaceDrone Group

European EspaceDrone Academy - IRIS - Professional training center for drone pilot
EBR065 - Flightzone dedicated to drones

European EspaceDrone Academy, created in 2014, offers basics trainings that meet the requirements of the Belgian legislation and specialization trainings such as thermography, photogrammetry, photo-video, maintenance...

To date, EspaceDrone Academy has trained more than 1000 pilots working for companies such as Infrabel, Elia, RTL, RTBF, MSF, UCL, the Belgian federal police, the Belgian civil services, DGTA-DGLV...

IRIS is a customizable training program. It is used to train and manage specify and risky flight missions such as building inspection, pylon analysis...

IRIS is an exclusive system that integrates elements in "Augmented Reality" during a real flight. It allows to develop safely a multitude of training scenarios for specific missions in various environments.

The IRIS training program combines real and virtual for cutting-edge vocational training.

EBR65-Liernu, approved by the DGTA-DGLV, is a flight zone in which drones can perform test and search flights in extraordinary conditions: altitude 1500ft AMSL, distance 2NM, day and night flight, airdrop, spaying, transport, towing.

ETIENNE BONNE FORTUNE

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AERO


DEFENCE

Etienne Bonne Fortune sa located in Grace-Hollogne (Liège), is active in subcontracting in the fields of general mechanics. We also master the machining (milling, turning and grinding), sheet metal (bending and press), welding (TIG, MIG, ...), complex assembly (bolting and riveting).

Active in industrial subcontracting in general mechanics, Etienne Bonne Fortune S.A. , located in the industrial zone of Grâce-Hollogne, serves primarily Belgium and Europe.

Based on a mechanical experience of almost 50 years, a dynamic team of about thirty professionals and diversified production means (machining, fine sheet metal, welding, assembly), our company guarantees the satisfaction of his customers through Mastery of the quality of our products and of our mechanical production processes in small and medium series.

Your requests are directly taken care of by different specialized departments (technical and launching office, production and quality control) in order to guarantee fast implementation and compliance of your requirements.

We also have a technical office that, on the basis of your plans, orientations or projects, carries out the mechanical study up to the realization of a prototype before the production phase series or integration in your industrial equipment or products.

EURO HEAT PIPES

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AERO SPACE

Euro Heat Pipes (EHP) develops, produces and sells Two-Phase Heat Transfer Systems (Heat pipes, Loop heat pipes and Thermal Bus including deployment systems) that, thanks to their exceptional thermal performances, are enabling the development of more powerful, more reliable equipment / instruments.

From Space to Earth

Created in 2001, EHP know-how is based on more than 35 years of Space heritage. Developed for Space, now available on Earth, this 100% European technology is leading the European cooling market for Space applications and is strongly developing on Aeronautical, Defense and Terrestrial markets. EHP proposes its two-phase cooling devices that will enable equipment manufacturers to increase their equipment reliability with the management of high power densities, low temperature excursion, compact / miniaturized packaging and remote cold sources.

Full in-house capabilities

Based on a highly qualified staff of 75 people, Euro Heat Pipes, an EN9100:2016 certified Company offers full in-house capabilities (5,000+ m² of facilities) including ISO 8 to ISO 5 clean rooms, small to large vacuum chambers and mechanical / vibrations tests rigs to be used for small to large production projects focused on: Design and simulation capabilities, Industrial manufacturing, Quality control and Qualification and acceptance tests.

Main customers (Telecom or Institutional markets)

Main customers are ESA, CNES, AIRBUS DS, RUAG, Thales Alenia Space, Tesat, IAI, OHB... for Space markets.

EUROPEAN METROLOGY SYSTEMS

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http://www.ems-benelux.be

AERO

DEFENCE

Active in the metrology for more than 20 years, the company EMS proposes the maintenance/ calibration, and reparation of measure machines, the parts scanning, the implementation of measures, training on the different softwares and systems, moving and retrofit of the machines.

Constitued of executives, sales managers, technicians, engineers, makes from us, one of the largest in innovative metrology solutions in the Benelux. EMS can contribute to your projects by supplying you a wide range of solutions. EMS is at the service of the customer. Our expertise does not stop selling metrology solution, but we want to profile ourselves as true experts in Metrology. Our group has built up an exceptional sales program made up of brands and first-class solutions over the years and acquired experience. The combination of our many years of experience & our knowhow means that for each of your applications we are able to offer you a tailor-made solution.

Our services can accompany you throughout the life of your investment. Through this & our approach centered on your needs, we want to make a difference! We offer you: Calibration of your measuring instruments, via our accredited laboratory, maintenance & repair, & the possibility to let us realize your measurements/controls or to carry out your parts scan, the dispensation of training for all the systems and softwares, we also have the expertise to move your machines to measure safely or realize the retrofit of your old machine or other measuring device.

FERONYL

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feronyl@feronyl.com
http://www.feronyl.com

AERO SPACE DRONE DEFENCE ENGINEERING

Feronyl S.A., established since 1950, is specialized into the development, prototyping and manufacturing of technical components produced through high precision molding processes of polymers, composites and metals.
Development is dedicated to lightweight structures, advanced properties and decrease of cost.
High Quality production with own tool development and manufacturing.

Scope of activities

- Injection Moulding of technical parts in polymers, metal and composites.
- Research and design of lightweight structures/advanced properties
- Assembly of sub-systems

Certifications

- ISO 9001
- EN 9100

Highlights

- In-house engineering.
- More than 60 years of experience in the injection moulding of technical plastics and in the manufacturing of injection tools
- Dynamic, flexible and reactive team which enables a mastery of complete projects from A to Z.
- Partnership with research centers or organisations specialised in complementary services(material choice, tests, design, rapid prototyping, painting, surface treatment...)

We dispose of a wide variety of injection machines between 10 tons and 1300 tons of closing force, which allows us to inject volumes till 6 kg.

Transformed technical materials: PEEK, PEI, PPS, PPSU, PSU, Carbon Fibre, PA... eventually charged with glass, carbon or metallic fibers.

FLYING-CAM

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http://www.flying-cam.com

DRONE

Flying-Cam has been the world leader in providing 25 Kg-150 Kg UAS VTOL system for the civil industry since 1988. We are now expanding to several markets: Industry, Military, Academic, Govern- ment, Entertainment. The vertical competence are the best asset for developing and selling breakthrough unmanned helicopter solutions.

Founded in 1988 by Emmanuel Previnaire in Liege, the company Flying-Cam SA is an Award-Winning company and world leader in developing high fidelity Unmanned Airborne Solutions with proprietary Flying-Cam Airborne Robotic Engineering Technologies.

Well-known firstly in the niche film industry, Flying-Cam had worked for blockbusters such as James Bond, Mission Impossible, Harry Potter, Oblivion, Prisoners, Da Vinci Code, Transformer, Game of Thrones... etc.

Strictly adhering to aviation standards, embracing with 30 years field experience for over 1000 projects in more than 75 countries, FLYING-CAM is now offering its "Super Drones", named SARAH and DISCOVERY, fully integrated with the state-of-arts sensors carefully chosen to match the supreme platform quality for a variety of applications ranging from Entertainment Industry, Homeland Security, Earth Monitoring to High Precision Remote Sensing.

Flying-Cam is dedicated to develop, manufacture and sell the high-end "SARAH" system, Special Aerial Response Automatic Helicopter. This is an unrivaled cutting-edge "Unmanned Aerial Intelligence" solution and only possible by mastering all the technologies and skills involved: helicopter platform, centimeter precision guidance, navigation and proprietary control system (autopilot), payload integration, human-machine interface design, training, maintenance and field operations.

FN HERSTAL

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http://www.fnherstal.com

AERO DRONE DEFENCE ENGINEERING

FN Herstal provides high added value defense solutions for multi-role military helicopters and subsonic aircraft based on combat-proven small caliber firearms. These solutions cover design, development, manufacture, and full integration of airborne weapon systems that combine unprecedented and unequalled firing capabilities, ease of use and crew safety. The company is ISO 9001 and AS /EN 9100 certified.

FN Herstal's integrated airborne weapon systems include crew-served and axially mounted machine guns, rocket launchers and a complete range of ammunition.**Airborne Pintle-Mounted Systems** can be window-, door-, ramp-, or externally positioned and provide:

- Outstanding firepower (1,100 rounds per minute) through the .50 cal FN® M3M/ GAU-21 machine gun designed, developed and manufactured by FN Herstal as a worldwide exclusivity;
- Outstanding balance, hence, high firing accuracy;
- Proven reliability and safety;
- Multi-weapon/multi-caliber capability, including compatibility with the 7.62mm FN MAG® machine gun and Minigun.

Airborne Podded Systems are available in various configurations depending on the ammunition box capacity, and requirement for links/cases collector and/or guided and unguided 2.75'' rocket launcher tubes. Airborne podded systems offer:

- Outstanding firepower (1,100 rounds per minute) through the .50 cal FN® M3P machine gun (FN Herstal exclusivity);
- Pod weight optimization, optimal performance and reliability in all environments, including sand or dusty conditions.

FN Herstal continuously innovates to provide stateof-the-art, groundbreaking solutions for superior combat capabilities. Latest developments include:

- Digitalization of the complete axial suite, including the machine gun pods, the armament management systems (AMS) and the head up sighting system (HUDI);
- A full digital armament management system that offers improved integration with OEM's avionics computers and that controls up to 6 weapon stations (FN Herstal pods or other equipment) installed on the aircraft;
- A compact, digital and lightweight Head Up Display specifically designed for enhanced firing accuracy and reduced pilot workload.

Throughout the years, FN Herstal has built up a position as a leading provider of defense solutions to Military Agencies and Original Equipment Manufacturers, with FN integrated airborne weapon systems being qualified and fitted on over 4,500 carriers deployed around the globe. With its decision to invest in the DO-178 DO-254 standard, FN Herstal reinforces its position as a major integrator of innovative airborne defense systems embedding the latest technologies.

FREE FIELD TECHNOLOGIES

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contact@fft.be
https://www.fft.be

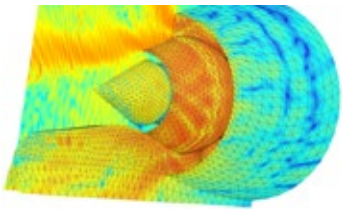
AERO SPACE DRONE DEFENCE ENGINEERING

Free Field Technologies (FFT), a subsidiary of MSC Software Corporation, closely collaborates with many leading aerospace companies and provides dedicated simulation tool for improving the acoustic behavior of aircrafts and evaluate the robustness of spatial structures and payloads designs. FFT develops the Actran acoustic CAE software suite and provides related technical services such as support, trainings and engineering projects. Actran is the most complete acoustic, vibro-acoustic and aero-acoustic CAE software suite for studying acoustic problematics the aerospace industry is facing.

Actran offers best-in-class technologies allowing:

- Fuselage and cockpit acoustic insulation assessment
- Engine nacelle liner optimization including installation effects
- Helicopter turboshaft engine acoustic design
- Ramp noise
- Airframe aeroacoustic noise prediction such as landing gear noise and slap/flap noise
- Acoustic fatigue prediction of structure and payload during space launch phase
- Rotors aeroacoustic noise prediction

Based on the finite element and the infinite element method, Actran provides a rich library of elements, material properties, boundary conditions, solution schemes and solvers to model accurately the acoustic phenomena involved in airplanes and spacecraft applications. FFT's extensive know-how allows to provide off-site projects, on-site assistance or technology transfer initiatives fitting the needs of the aerospace industry.



GDTECH

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http://www.gdtech.eu

AERO SPACE DRONE DEFENCE ENGINEERING

Engineering company, GDTech offers its expertise to industrial projects spanning across all necessary stages for Design, Simulation and Industrialisation.

- Design and stress analysis
- Tools design and manufacturing
- Technical documentation
- Project management
- Engineering consulting

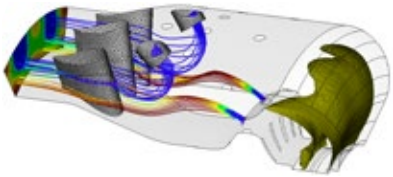
At first, GDTech was founded to provide a service in the numerical analysis sector. Its offer has significantly expanded. The GDTech group mission is to build an integrated service offer covering the entire product development process. Our knowledge of the state-of-the-art industrial techniques and our extensive experience ensure a perfect balance between the services we offer and your project needs. Flexibility, reactivity and thorough skills are our business-enhancing opportunities.

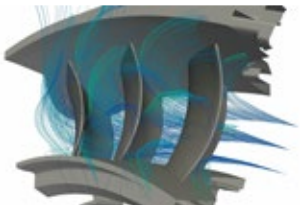
Our consultants are: Designer (mechanics, electricity,...), Study Engineer, FEA Engineer, Modelisation Engineer, Project Manager, Hydro-mechanics Engineer, Documentation Engineer, Exploitation Engineer, Material Engineer, Tests Technician, Method Agent, Quality Management, ...

Enthusiasts about new technologies and permanently on the looking after real challenges, our staff will demonstrate their experience legacy and teamwork, enhanced by a never-ending quest for continuous improvement.

Thanks to our knowledge of the most advanced industrial technologies and our expertise, we provide you a customized solution.

Our assets, our expertise, our CAE complete offer and our quality commitment (EN 9100 certified).





GEONX

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AERO SPACE DEFENCE ENGINEERING

GeonX S.A. started up its activities in 2012 with headquarters in Belgium and became a GE Additive company in 2017. Our customers make a daily use of our flagship Virfac® modelling software to accurately simulate various manufacturing processes such as Additive Manufacturing, Machining, Heat Treatment and Welding.

GEONX S.A. develops robust and powerful software packages to support manufacturing engineers in their daily design duties. From the design office to the factory, VIRFAC® powered by MORFEO, provides an accurate, powerful and industrial platform of virtual manufacturing. Making of virtual manufacturing a reality is the mission of GEONX. Simulation today is an essential component of the design cycle, increasing a company's profits by significantly reducing time to market. Modelling the manufacturing processes allows designers to reduce tedious manual tuning, the waste of material and to optimize the resulting manufactured part in terms of mechanical properties, residual stresses and final deformations. After 10 years of development by engineers from the Research Centre Cenaero, specialized in advanced computational methods, GEONX is integrating this approach in today's product development environment by marketing its new generation manufacturing software VIRFAC® (VIRtual FACtory), powered by MORFEO (Manufacturing ORiented Finite Element tOol).

This innovative software is the new reference in unified simulation for applications ranging from transformation and assembly processes to in-service structural response. MORFEO is built with the most modern object-oriented programming technologies and has been particularly designed to handle large and complex mechanical components for realistic industrial environments.

GEONX S.A. revolutionized in 2017 the modelling of additive manufacturing with the release of its new product Virfac iAM® optimized for high performance GPU computing.

GILLAM

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SPACE

DEFENCE

GILLAM SA is able to propose a wide panel of products and services in Aeronautics, Aerospace, Defence, Mission Critical Applications as well as Civilian sectors.

GILLAM SA aerospace/aeronautics activities are mainly focused in the following areas:

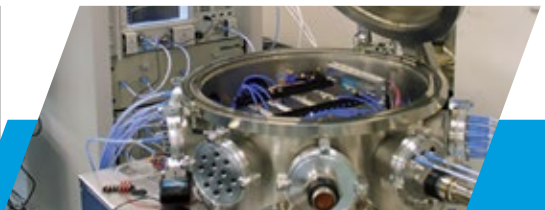
- Test benches and Simulators
- Avionics Systems
- Time & frequency solutions
- On-demand electronic designs

Our team of experienced engineers is at your disposal to attend your needs, throughout the project.

Study, design and supply of airborne electronic equipments for military and civilian use. On-board Human-Machine Interfaces including illuminated control panels compatible with night vision (MIL-STD-3009). Severe environmental constraints (RTCA DO-160, MIL-STD-810). Design in accordance with aeronautical standards DO-178 and DO-254. Main test benches achievements are EGSE for Main Frequency Generation Unit (Iridium Next program), EGSE for L-Band converter (Iridium Next program), RF suitcase for space dielectric & coaxial resonator oscillator (CRO / DRO), TWTA/ RFDN Discrete Interface Simulators (ExoMars program), COMS ADEV STE (JUICE program), etc

Frequency and Time (F&T) Subsystem for the GALILEO Uplink Stations (ULS).

GILLAM SA experts have developed a high level of expertise necessary to design, to industrialise and to manufacture specific solutions and GILLAM SA, certified ISO9001-2015, can bring added value to partner or to customer.



GIM WALLONIE

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SPACE DRONE

From satellite images to actionable insights
GIM helps public and private customers understanding and better managing our changing environment. GIM is able to build on over 15 years' experience in integrated solutions for processing and analysing countless types of satellite, aerial and drone images, from optical to radar. We deliver solutions across the environmental, agricultural and urban sectors specializing in high and very high resolution satellite imagery, automated features extraction, customized land use land cover mapping and change detection.

Operational services

GIM is at the forefront of developments in image processing with a particular focus on advanced processing chain automation. Time series of images are analysed in near real time to derive geoinformation supporting the business and decision making of our clients.

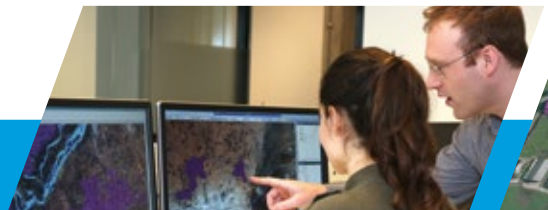
Not only maps are produced but complex geostatistical and spatial analyses are applied to deliver specific information that can be directly integrated in the business practices of our clients. GIM delivers information services in application areas such as precision farming, urban planning, environment and natural resources management, infrastructure development or e-health. GIM is serving large international industrial and multi-lateral organizations, has a long track record in working with ESA and public authorities and has the ability to process large volumes of very high resolution imagery as for instance for the prestigious Gates Foundation in the context of the Global Polio Eradication Initiative..

Eo data distribution

GIM is an official distributor of imagery from most of the high resolution sensors available to date like GeoEye, WorldView, SPOT 1 to 7, Pléiades, Skysat, PlanetScope, RapidEye, Kompsat, Cosmo-Skymed, TerraSAR- X, etc. GIM also offers a wide range of topographical data (i.e. DEM, DSM and DTM) as well as standard data pre-processing services (e.g. atmospheric correction, orthorectification, mosaicking).

Web services, spatial data infrastructure and interoperability

GIM capitalizes on its geo-ICT expertise to design and deploy web services applications and data infrastructures based on Open Standards for the management and visualization of Earth Observation data and metadata for several of its customers.



HEXCEL COMPOSITES

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http://www.hexcel.com

AERO SPACE DEFENCE

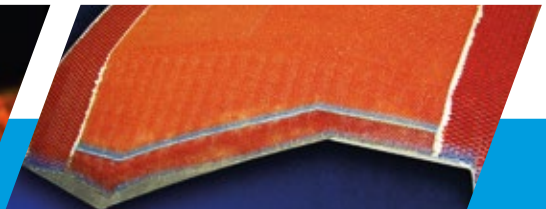
Hexcel's plant was established in Welkenraedt in 1967. It is Hexcel's European center of excellence for Engineered Core (HexWeb® EC), the name we give to our processed honeycomb parts that are machined and finished in any number of ways and then supplied as ready to fit parts to customers. Key applications for products made at Hexcel's Welkenraedt plant are aerospace structures for civil and defense aircraft, helicopters and aero-engines. Our facility is ISO 9001, AS/EN9100 Rev. C and NADCAP certified for composites processing.

HexWeb® EC encompasses a wide range of unique processing technologies used to add value to blocks or slices of HexWeb® honeycomb, also known as flat core. With advanced computer-aided design and manufacturing techniques, flat core is formed, shaped, machined and/or bonded to create high quality core details and assemblies to precise customer specifications. With over 60 years of honeycomb manufacturing experience, Hexcel is the leading supplier of Engineered Core used in commercial and military aircraft including engine and nacelle applications. The expertise of our manufacturing and engineering staff, combined with extensive research and unique core processing technologies, results in precise complex shapes and core assemblies that allow our customers to streamline their production process and eliminate capital investment through the purchase of ready-to-use honeycomb components.

HexWeb® EC provides the following advantages for your serial production program:

1. High quality components
2. Tight dimensional tolerances on dimensions and shapes
3. Fewer manufacturing stages and processes
4. Dedicated technical support from HexWeb® EC experts

Hexcel Corporation is one of the largest global producer of carbon fiber; the world's largest weaver of reinforcement fabrics; the number one producer of composite materials such as honeycomb, prepregs, film adhesives and sandwich panels; and a leading manufacturer of composite parts and structures.



I-MAGE CONSULT

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http://www.i-mage.be

SPACE

I-MAGE Consult is a private company founded in 1994, run by a multi-disciplinary team of engineers, geographers and computer scientists. The company has acquired a great number of experiences in the mapping of renewable natural resources in land management and in the field of Geomatics (GIS and satellite image processing). The company has acquired a strong experience thanks to the numerous project conducted throughout the world.

I-MAGE Consult provides services and consultancies in the following areas:

- The development of GIS and EIS, data archiving, management and dissemination of information (Web Mapping and decision making tools);
- The collection (field surveys) and processing of remote sensing data;
- Earth observation derived data production and diffusion;
- IT developments and implementation of software packages;
- Environmental studies, land management;
- Spatial analyses, land-use mapping;
- Capacity building and training.

I-MAGE is delivering solutions (data and software products/services) in Earth Observation, Geographic Information Systems and Geo-informatics, R&D to private/public organizations. The company has acquired a great deal of experience in the mapping of natural resources and the management and dissemination of information. Our expertise can be summarized through a workflow process that goes from the processing of satellite images through GIS implementation and data integration, thematic analysis and applications, technology transfer.

This leads to the development of dedicated applications and decision making tools eventually correlated to Web mapping interfaces. Free Open Source software are often favoured using standards solutions, although proprietary solutions are also developed when required. While a majority of the projects are referring to Africa (French speaking as well as English speaking), important projects have been achieved in Europe, Asia, the Caribbean and Oceania.

INCIZE

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http://www.incize.com

SPACE

Incize provides measurement, characterization and other services for radiation hardened devices and circuits as well as services for RF applications. Incize is a spin-off from Université catholique de Louvain (Belgium) where the know-how in RF and radiation hardness was accumulated. The know-how and the access to the state-of-the-art university labs enables innovation and optimization of our clients' products and processes.

Located only a few steps away from one of the best cyclotrons in Europe, Incize provides radiation hardness characterization and modelling services. The ability to characterize devices immediately after irradiation can be crucial in some experiments. Therefore, proximity of our labs to the cyclotron is an important added value.

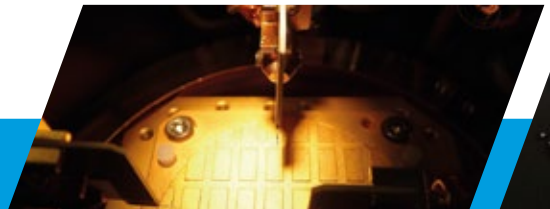
Our experts provide the following services:

- Numerical simulations of devices and materials using TCAD and Geant4 tools
- Design and fabrication of PCBs for radiation tests
- Definition of radiation test plans and related characterization methodology
- Execution of the tests in the cyclotron
- Electrical characterization before and after irradiation
- Data analysis

Incize addresses the needs of research centres, semiconductor foundries, design houses and suppliers of electronic components for space applications through its finely chosen state-of-the-art services. We have an excellent track record with our clients that include substrate suppliers, RF product suppliers, system houses and leading companies in the space and medical fields.

At the Cyclotron Resource Centre (CRC) in Louvain-la-Neuve we have access to the following irradiation facilities:

- Heavy ion
- Proton beam line
- Neutron
- Gamma



ISOMATEX

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AERO DRONE DEFENCE

ISOMATEX is the global leading producer of enhanced volcanic rock filaments distributed under the trademark FILAVA ™. The production of FILAVA ™ is unique thanks to a genuine and innovative treatment of the raw material, basalt, which is enriched with various mineral additives to increase and guarantee its original mechanical and chemical properties.

Thanks to its innovative approach, its leading edge technological process and its tight quality control, the company ISOMATEX is known in the exclusive segment of high thermo-mechanical performance fibres as the only and therefore leading firm. ISOMATEX is keen to find the best solutions for each specific application and develops today tailored made fibres with an adapted sizing for the most prestigious companies in the segment of high-performance composite materials and technical textiles.

ISOMATEX proposes you different formats of FILAVA™:

- Single –End Direct roving from 68 TEX up to 100 TEX
- Conventional assembly Multi-end Direct roving from 136 TEX up to 2400 TEX
- Twisted yarns
- Chopped strands as from 4 mm
- Woven fabrics as from 200 g/m²
- Unidirectional tapes, Bi and Multiaxial fabrics
- Non-Woven Fabrics
- Geotextiles
- Prepreg
- Knitting for engineering composites

IT-OPTICS

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ENGINEERING

With 15 years of experience in the OpenSource field, we provide multiple IT services and business solutions. We take care of the design, implementation, support, and maintenance of your systems. We also provide on demand development, for a solution that will meet all your expectations.

Infrastructure

Our experts will analyze your systems and give you the best advices to optimize your infrastructure. We have a variety of solutions that will cover your needs, from virtualization, security, monitoring, back-up, communication, to hardware and more advanced options.

Transport and logistics

We provide various solutions to optimize your supply chain visibility and boost your competitivity on the market: firstly we have the Track&Trace solutions (RFID TECH, NFS, QR code), secondly an EPCIS solution for a transparent collect and sharing of the acquired data, and thirdly a Management System Platform to give you a clear visibility of your supply chain and easier assets management (inventories...), to reduce costs and to give your project room for evolution.

Health and clinical research

We provide solutions to obtain precise clinical data in real time with an efficient data processing. Our SensePRO solution will allow you to collect and share your data, and we will provide you with various supports (tablet, pc...) and hardware (sensors...). On demand development: For a specific solution that fits all your needs, contact us, and we will work together to achieve your goals.

JD'C INNOVATION

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http://www.jdcinnovation.com

AERO SPACE DRONE DEFENCE ENGINEERING

Founded in 2006 by les Ateliers Jean Del'Cour, an non-profit sheltered workshop with a social integration aim, JD'C Innovation develops One-Stop Shop solutions tailored to each customer's specific needs around three core activities: Composite, Connectics and Mechatronics.
With a focus on Defence and Aerospace, and more commonly, on innovative industrial processes, our competences range from build-to-print manufacturing to complete project management integrating several specialties, including collaborative design/development, prototyping, industrialization, certification/qualification and series production.

Composite

- Design of components + dedicated tooling.
- Metal-to-Composite reverse engineering.
- Development of Industrialization process, including integration of high precision mechanical components, electronics (RFID tags) and connectics.
- Production: pre-preg manual lay-up with various epoxy matrix material (glass and carbon) + Autoclave or Oven curing.
- Multi-material adhesive bonding, including ultrasonic and thermobonding.

Equipment

- 3 ISO 8 (class 100000) Clean rooms (600 m²) dedicated to Fabrics Cutting / Wrapping / Bonding
- Autoclave: diameter: 2m – length: 3m – Max press. 10 bar – Max t° 200° - 4 internal vacuum sockets
- Oven (section: 2mx2m – length: 3 m) Max t° 250° - 3 internal vacuum sockets.
- High precision ultrasonic welding
- Multi-material CNC machine. NDT ultrasonic control equipment
- Automatized cutting equipment for prepreg fabrics

Connectics

- Design and Development of customized connecting devices for power, signal and IT.
- Prototyping, Industrialization
- Development of dedicated test benches and programs.
- Complete production management, including components supply, series production, final testing/control and logistics.

Mechatronics

- Design and Development, Prototyping, Qualification, Industrialization and Series Production of devices integrating electro-mechanical components, connectics and electronics.

Quality Assurance

JDC Innovation and Ateliers Jean Del'Cour are EN9100 – ISO 9001 certified. Our Vacuum and Autoclave Polymerization Process are qualified by Airbus, Safran Aero Boosters and Sonaca.

Social engagement: Through the development of our activities, our #1 priority at JD'C group is to promote social integration through work, by providing socially disabled people with adapted jobs, completed with education programs and dedicated training.

References: THALES - CMI DEFENCE - FN HERSTAL - SONACA AIRCRAFT - THALES ALENIA SPACE - Safran Aero Boosters...

LA NITRURATION MODERNE

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http://www.lanitruration.be

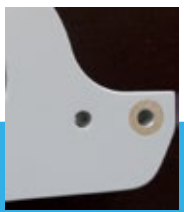
AERO

Surface Treatments and related activities such as Non Destructive Testing and Painting.

- Cadmium plating
- Zinc-Nickel
- TSA
- Chromic Acid Anodizing
- Sulfuric Acid Anodizing
- Passivation
- Chemical Conversion Coating
- Silver coating
- Fluorescent Penetrant Inspection
- Magnetic Particle Inspection
- Identification
- Dry Abrasive Blasting
- Wet Abrasive Blasting (vapor blasting)
- Zinc Phosphating
- Manganese Phosphating
- Painting

References and/or Certifications

- EN9100 and Nadcap accredited.
- Qualifications certified by Airbus, Bombardier, Moog and Embraer.



LAMBDA-X

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http://www.lambda-x.com

SPACE DRONE DEFENCE ENGINEERING

Lambda-X designs, develops and manufactures optical & metrology systems for Space, Defense & Industry.

Widely recognized as a key player in the space sector, Lambda-X has developed and manufactured more than 30 instruments which have been deployed in Space since 1996. The instruments engineered by Lambda-X are based on a broad range of optical technologies including:

- Light Scattering
- Interferometry
- Tomography
- Microscopy, Hyperspectral applications
- Deflectometry (Patent: Phase Shifting Schlieren)
- And many more...

Thanks to its professional team, highly skilled in optics, mechanics, electronics and software but also to its huge experience in high level international project management, Lambda-X has the capability of handling entire projects from the very initial stage of the conception up to serial production. The activities also include Flight Models assembly.

The solutions implemented in Lambda-X's systems and sub-systems often combine several technologies into a single instrument which requires to take into account the most demanding constraints (to name just a few very compact sizes, broad temperature range of operation or extreme lightweight).

The Space systems developed by Lambda-X find their applications in various domains:

- Earth and ground observation
- Exploration of the Martian atmosphere
- Solar pointers
- Scientific payloads
- ...

Lambda-X is certified ISO 9001:2015 & EN 9100:2016.

LASEA

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info@lasea.com
http:/www.lasea.com

AERO SPACE ENGINEERING

LASEA is specialised in high precision laser machining: marking, welding, engraving, drilling, cutting, texturing, and the removal of thin layers.
LASEA applies its expertise in many sectors, including aeronautics and space industry.

The growth in laser marking applications is driven by an increasing need for part identification and traceability, for aircraft manufacturers, for instance. Product identification, in the form of simple alphanumerics to complicated graphics and codes, is proven to reduce costly errors, man-hours, and material waste.

Laser technology has proven to be the most consistent, high-speed, effective manner of permanent identification for the smallest industrial pieces.

LEBRUN

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AERO

LEBRUN S.A., a medium-sized and financially independent company, has become "the reference" for conditioning aircrafts on the ground. From the design of a cooling system to its completion and its maintenance, LEBRUN controls and coordinates all different stages of the manufacturing of conditioning machines for aircraft. Made up of skilled technicians and graduates from topmost engineering schools, our engineering department is at the leading edge of the refrigeration technology.

LEBRUN S.A. is specialized in air conditioning units (PCA units) that are developed to ensure the comfort of passengers and crew by maintaining the appropriate temperature inside the cockpit of any parked aircraft during pre-flight servicing, loading and maintenance. Various type of machines are available: fixed or mobile serving all types and sizes of aircrafts (AIRBUS, BOEING, MD, EMBRAER, FALCON...) for civil and military aviation. References and/or Certifications Munich Airport, Schiphol, Frankfurt, Zaventem, Heathrow, Charles de Gaulle, Genève, KLM, Air-France, Lufthansa, Virgin, Ethiad, Airbus, Bombardier, DGA, Dutch Army...

LESCAV Aero

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http://www.lescav.com

AERO SPACE DRONE DEFENCE ENGINEERING

Better protection, Better performance.

Protection for special treatments:

- Plasma, HVOF
- Chemical bath
- Shot peening
- Sandblasting
- "No Metal Contact" handling devices

Our know-how: protection solutions for industrial processes

Certain manufacturing processes require to hermetically protect parts during heat, chemical, sand blasting, shot penning and other treatments. LESCAV designs and produces high performance protection tools, silicone, masks and industrial handling devices.

Masking products are molded from silicone for faster installation and consistant quality results. Our tooling is designed with an exclusive « no metal contact »concept, which enable easy handling and transport of aircraft parts and components without risks of shock or damage **From design to production** Our LESCAV'S engineering consulting team complements your internal R&D engineers. Over 10 years of experience in these niche markets, complementary to your core activities, enables us to quickly provide adequate solutions to complex problems. According to your needs, your design phase can be followed with prototype making and production of low or high quantity items

IoT at the service of industrial efficiency

LESCAV proposes a series of IoT devices for tracking and managing industrial tools and containers within the factory or on a global scale from plant to plant.

LESCAV is a trusted partner in protective solutions for special treatments and handling of aircraft part and components.

LGM BELGIUM

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belgium@lgm.eu
http://www.lgm.eu


AERO


SPACE


DRONE


DEFENCE


ENGINEERING

LGM Belgium S.P.R.L. is the Belgian subsidiary of LGM Group. We have been developing our references in the aeronautical sector by providing the highest level of reliability and effectiveness.

The key words for our expertise are RAMS engineering (Reliability, Availability, Maintainability and Safety), ILS (Integrated Logistic Support), Technical Publication, Project Management and Quality Management. LGM is your long-term partner; we make sure your product meets your customer's reliability requirements. For a maintenance application, LGM documents your solutions by taking into consideration the purpose of the system, the level of maintenance, the update of your products...

Our know-how of the aeronautical sector gives us a leading asset in Project Management engineering. We support your organisation by defining and deploying new standards for process improvement. LGM is also your partner for management and support in operational quality.

Regarding Tool & Test Benches, we have developed a turnkey offer which can be adapted to your needs by a tailored approach.

- Technical Documentation: Documentation Expertise, Design and Drafting of Technical Documentation, IETM (Interactive Electronic Technical Manual),
- Development and Implementation of Documentation Management Tools,
- ASD S1000D, S2000M, IT 8805, MAT 10000, ATA
- iSpec 2200...
- RAMS Engineering: RAMS Analysis and Management of System, Software, Electronics, Mechanical Components
- Project Management: PMO, Contract Management, Risk Management, Planning, Change Management, Optimization of Industrial Performance
- Integrated Logistic Support: Maintenance Engineering, Optimization of Life Cycle Cost...
- Tools & Test Benches: Design and Development of Test Integration Tools, Integration of Software Solutions, Development of Qualification Benches, Maintenance Benches and Acceptance Test Benches Manufacturing, Maintenance Tool Development

M3 SYSTEMS

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desenfans@m³systems.net
http://www.m³systems.eu

SPACE

DRONE

SATELLITE NAVIGATION FOR INVENTING THE FUTURE

M3 Systems Belgium provides a unique expertise in engineering services and technical solutions for satellite navigation applications. M3 Systems Belgium brings its expertise in the definition and the assessment of innovative GNSS algorithms and GNSS receiver architectures, in real GNSS data collection, and in the analysis of GNSS performances.

Location-Based Services development

The applications of satellite radio navigation systems (GPS, GLONASS, GALILEO) have increased dramatically in recent years. M3 Systems Belgium has specialized in the development of location-based services that require a high performance level and the capability to provide a measure of the positioning information level of confidence.

Satellite signal processing

Signal spoofing and jamming are amongst the major threats of GNSS systems. M3 Systems Belgium has developed a recognised expertise in the assessment of GNSS systems vulnerability. Based on simulation and/or on real data collection, M3 Systems Belgium is capable of characterising the impact of interference on GNSS performances. The company has also developed competencies in advanced mitigation algorithms.

Performance evaluation

The ongoing GNSS upgrade, and the deployment of augmentation systems (WAAS, EGNOS, differential GPS, pseudolite...) have raised the need for performance evaluation. M3 Systems Belgium has become a renowned partner of institutional actors (such as ESA) for GNSS performance evaluation, including GNSS signal-in-space and receiver performances, data collection and analysis, test bench.

MECASOFT

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contact@mecasoft.be
http://www.mecasoft.be

AERO

ENGINEERING

Mecasoft is a manufacturer of high precision pieces and tools with all EDM technologies. With 18 EDM installations in service, we can offer a complete service for prototypes, short or high series with flexibility and controlled delivery time. Size of the components up to 1000 x 1000 x 400 mm. Since 5 years, Mecasoft is the leader in micro EDM technologies (micro holes, 3D micro milling, micro EDM cutting). Minimum size of details is 15 µ, roughness Ra 0.03 and tolerance <1µ.

We manufacture components for aeronautic, space and defense industries especially in the programs of A340 –A350 – A400M – EMBRAER 170-190 – CRJ700-900. We also participate in R&D for special technologies in pharmaceutical industry and for the CERN (Geneva). We participate in the new Boeing 737NG program.

References and/or Certifications

- Certified EN 9100-2009 and ISO 9001-2008.
- SAFRAN certification for special process
- AIRBUS certification for EDM processes

METAL FORMING

METAL FORMING sa

Parc industriel d'Ivoz-Ramet, 1 - 4400 Flémalle | BE
T. +32 (0)4 337 79 62 | F. +32 (0)4 338 10 03
metal.forming@skynet.be

AERO

Tube and sheet forming by special processes. Prototype development - Complex shape Cooperation with universities and industry Research centers

Processes

Punching, bending, deepdrawing, swaging, hydroforming, HERF (Hight energy rate forming), magneticforming

Materials

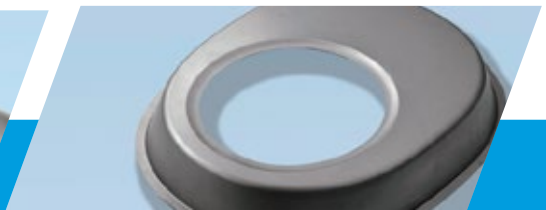
Aluminium alloys, Nickel Alloys, precooted steel, Titanium, refractory steel, Stainless steel, Hight tensile steel

Main references

DAHER-SOCATA - EUROCOPTER - SABCA - SONACA - TECHSPACE AERO.

Programs

A330 - 340 - CFM 56 - F7XC - Super Puma - TBM 700 - Ariane 5



METHODES & TECHNIQUES D'USINAGE

Rue du Pont Bleu, 21 - 7730 Evregnies | BE
T. +32 (0)56 48 02 51
pf@mtusprl.be
http://www.mtusprl.be/

AERO

MTU sprl is your partner in the following fields:

- Machining from 2 to 5 axes: single piece, small and medium series
- Design and production of tools
- Repair and modification of tools
- Various assemblies
- Technical consultancy

A multidisciplinary team with complementary skills:

- Complex machining of all materials in FAO
- Heat treatments and surfaces
- CAD design
- Plastic injection

Productivity - Quality - Delay are the basic elements of MTU management. Innovation is at the center of our concerns to increase our competitiveness.

MOCKEL

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T. +32 (0)87 59 39 59 | F. +32 (0)87 59 39 30
info@mockel-precision.be
http://www.mockel-precision.be

AERO SPACE DEFENCE

MOCKEL is active in the field of high precision mechanics meeting the complex needs of our customers in the defence, aeronautics and space industries. MOCKEL currently has a workforce of 55: All of our employees are specialists in the manufacture of high precision mechanical parts. The company has the state of the art machinery, the technical know-how and the necessary experience to handle all aspects of production from start to finish.

Be it large or small parts, simple or sophisticated components, series of 5 or 10,000 parts, we translate the ideas of our customers into technical excellence. All our parts are turned and milled with high precision on state-of-the-art machines.

The company offers a wide range of industrial services:

- Turning CN 2 to 5 axes
- Milling CN 3, 4 and 5 axes
- Quality control (2 air-conditioned halls)
- Finishing zone (grinding, thread-rolling, marking, etc.)
- Assembly groups

In addition MOCKEL has developed a wide range of services to satisfy the customer: Project management, supply chain management, assembly of part... The company has also a large network of international authorized suppliers for heat and surface treatments, in order to deliver its customers with finished products.

MOCKEL is certified ISO 9001/EN 9100 and ISO 13485.

During the last years, we invested highly in automatization: robot system with two five-axis machines combined turning-milling machines... COME and VISIT US!

MUBEA SYSTEMS

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T. +32 (0)56 58 52 60
info@mubeasystems.com
http://www.mubeasystems.com

AERO

Mubea Systems: the right machine for each process

Mubea Systems manufactures a complete range of 5-axis CNC machining centers: we offer machinery designed for automatic tooling of exceptionally long aluminum profiles and high speed cutting of solids in aluminum and new materials like titanium. Mubea Systems offers advanced solutions for the aviation industry.

2015: First high speed mega-flex for xi'an aircraft installed

Mubea Systems installed the Mega-Flex High Speed machining center for XIAN AIRCRAFT, the biggest aircraft manufacturer and developer of large and medium-sized airplanes in China. The Mega-Flex High Speed will be used to machine Aircraft Structural Frames.

For more information about our machines visit: www.mubeasystems.com

NOLISYS

NOLISYS
Solutions & Software
for Nonlinear Vibrating Systems

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T. +32 (0)485 32 91 87
info@nolisys.com
http://www.nolisys.com


AERO


SPACE


DEFENCE


ENGINEERING

NOLISYS provides consulting services and software solutions for advanced and nonlinear vibration analyses. Our technologies, developed in collaboration with the University of Liège (Belgium) for more than 15 years, power nonlinear test campaigns and simulations with applications in aerospace, automotive and mechanical engineering.

Nonlinearity is a frequent occurrence in engineering structures, due to the presence of bolts, elastomeric materials, gaps, gears, or friction. It introduces distortions in structural responses, and makes experimental data difficult to interpret.

Building on advanced experimental and computational techniques, the competence and activities of NOLISYS focus on the detection of nonlinearities in measurement data and the assessment of their impact on the structure's dynamics.

NI2D Software

Thanks to its experimental capabilities, the NI2D® software allows the analyst to quickly and robustly identify nonlinear phenomena during vibration test campaigns. Based on a hybrid nonlinear modeling of the structure, the NI2D® software also calculates nonlinear time responses, nonlinear vibration modes, nonlinear resonance frequencies and bifurcations through innovative algorithms. These nonlinear features provide a clear and immediate view on the impact of nonlinearities on the dynamical properties of the structure, for predictive and design purposes.

Engineering services

We provide expertise and support for the following activities:

- Test campaign design and execution.
- Analysis of experimental data.
- Nonlinear structural modeling.
- Advanced vibration simulations.

Training

Our company continuously organizes intensive courses and on-site training on nonlinear vibrations dedicated to practicing engineers.

NOLISYS has already demonstrated the versatile character of its competence on several industrial cases for Airbus D&S, ArianeGroup, Atlas Copco, Pratt & Whitney, Safran Aero Boosters and Sonaca.

NRB

Parc Industriel des Hauts Sarts 2e Avenue, 65 - 4040 Herstal | BE
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ENGINEERING

NRB is an ICT service provider allowing you to source or outsource IT to the degree that best fits your needs and ambitions.

Consultancy

Our consultants assist and advice you on the development and the implementation of your IT strategy to support, optimise and transform your business efficiently.

Software

We offer a full range of services with regard to your applications: (custom) development, implementation of market solutions, integration, and application maintenance.

Infrastructure services

We provide operational management of your IT infrastructure from our data centres or from your own site.

Managed staffing

We can find the resource you need to complete your IT team or to staff your project at the right cost, at the right moment and for the right time.

NUMFLO

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ENGINEERING

CAE and CFD simulation software is largely used by industry today. General software tools are available on the market and cover a large variety of applications, but often fail in providing a fast, reliable and cost-effective solution to challenging industrial applications. Reliable simulations rely on understanding a large number of physical properties and models and the manipulation of various software tools. NUMFLO addresses these requirements and accompanies your CAE and CFD workflow. We provide high level consulting services and technology to simulate and optimize complex industrial components and processes.

NUMFLO is an engineering company active in the field of CFD ("Computational Fluid Dynamics") simulations. NUMFLO offers advanced consultancy services for fluid flow analysis, design, and optimization, as well as dedicated technological solutions for fluid/solid multiphysics and heat transfer modeling. NUMFLO is a subsidiary of NUMECA International (www.numeca.com), worldwide leader in industrial CFD software development. Our activities cover a wide range of applications where fluids play an important role: Aerospace & Defense, Architecture engineering & Construction, Automotive, Consumer Goods, Energy, Healthcare and Marine & Offshore.

Our main areas of expertise are:

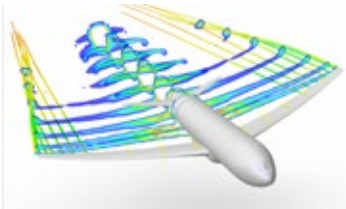
- Simulating complex fluid flows and multiphysics applications;
- Providing innovative technology and models in response to specific requirements;
- Integrating in-house or new technologies in commercial CAE software systems, guaranteeing maintainability and support.

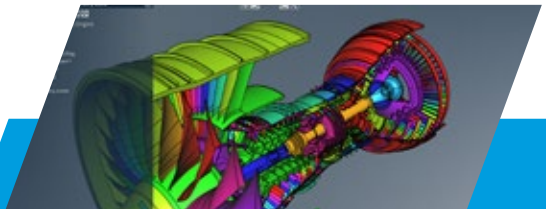
We cover a wide range of industrial applications where fluids play an important role.

NUMFLO is working in close relation with universities and research centers worldwide and is active in several national R&D funded projects.

References and/or Certifications

NUMFLO is a certificated company (ISO9001– AS 9100)





OPEN ENGINEERING

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https://www.open-engineering.com

AERO SPACE DRONE DEFENCE ENGINEERING

Multiphysics Simulations to Support your Innovations

Open Engineering is a breakthrough supplier of multiphysics software for the CAE market. Our solutions are based on our OOFELIE::Multiphysics platform, optimized for the analysis of large industrial 3D design work.

Part of the GDTech group, Open Engineering is active in the Computer-Aided Engineering (CAE) market. Open engineering designs, develops, and sells OOFELIE: Multiphysics.

Successful technical innovation is based on robust designs. A growing number of high precision applications have to perform under harsh conditions. Sensitive to multiple physical effects and to their manufacturing process, they might be influenced by their package and their surrounding environment.

The OOFELIE::MULTIPHYSICS Suite helps understanding and optimizing the performances of complex devices to make them more robust.

Our main expertise areas are in:

- Sensors, actuators, MEMS and microsystems
- Optomechanical systems and MOEMS
- Fluid-Structure Interaction applications
- Small satellites

These simulation capabilities encompass a broad range of products in the aeronautics, space, defence, automotive and electronics markets.

In complement to the development of its own engineering tools, Open Engineering performs different types of services works:

- Trainings on our multiphysics engineering software tools
- Engineering consulting
- Customized engineering software tools

Cut the number of design cycles and accelerate your innovation capacity by choosing the 3D multiphysics FEA solution from Open Engineering: the OOFELIE::MULTIPHYSICS Suite

OPTIMAL AIRCRAFT DESIGN

Rue de l'Yser, 31 - 5020 Namur | BE
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info@oad.aero
http://www.oad.aero

AERO DRONE ENGINEERING

OAD proposes Design Tools that will help you to accelerate the design process of any aircraft and to improve the quality of your products.
OAD Activities: Software development, subcontracting and consultancy, training session organisation

OAD Develops ADS (Aircraft Design Software)

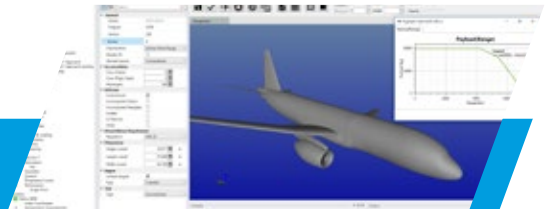
ADS is one of the most user-friendly and accurate software packages dedicated to take the designer through the entire aircraft conceptual design process. ADS can handle UAV, light aircraft and transport category aircraft of any configuration. ADS can be used either to design a new aircraft from scratch, or to design modifications to existing aircraft. ADS is used all over the world, by leading aerospace companies, Universities and individuals.

Subcontracting and consultancy play a key role in OAD's activities

We can design all kinds of planes, with any specifications: UAVs, light aircraft, jets, single and twin-engine planes, with electric or internal combustion engines. We can offer comprehensive or specific assistance. We can simply help the designer to define the specifications, or take part in the complete development of the project. We can design a new prototype or help with modifications to an existing design. We use our own calculation models to answer most questions that arise during the pilot study incredibly quickly.

OAD regularly organises training sessions in businesses and academic institutions

We adapt our training solutions to the level of the participants as well as to the teachers' requirements. The courses can last anything from 1 day to 1 week.



OPTIMAL COMPUTING

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T. +32 (0)498 622 632
info@optimalcomputing.be
http://www.optimalcomputing.be

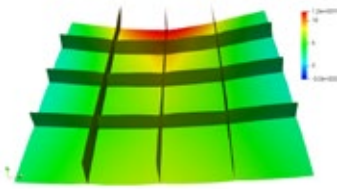
AERO

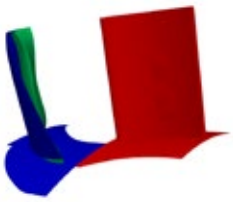
ENGINEERING

OPTIMAL COMPUTING develops software and provides consulting services in the field of numerical optimization. Our technology is based on artificial intelligence techniques and is applicable to any simulation based optimization.

We develop,**Xtreme**, an advanced numerical optimization software based on artificial intelligence techniques such as Genetic Algorithms and Artificial Neural Networks. Optimal Computing also provides consulting services in numerical optimization, in software engineering and also develop dedicated optimization algorithm solutions.

We have a long expertise in solving complex and real design optimization applications, developing large software based on challenging goals for our customers. Our optimization algorithms can be applied to shape optimization based on Conputational Fluid Dynamics (CFD), structural mechanics or any other engineering fields. We also have very efficient algorithms for optimizing large scale sequence optimization problems such as welding sequence optimization.





OSCARS BELGIQUE

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http://www.oscars-sa.eu

SPACE ENGINEERING

Specialized in Oracle technologies (more precisely its Spatial components), OSCARS federates and optimizes the use of data coming from Geographical Information Systems (GIS). Oscars' expertise covers the installation, configuration and optimization of « Oracle Spatial » databases, consulting services in the area of enterprise GIS data usage as well as training. GIP4Airports is one of OSCARS' flagship software, a powerful analytics and geolocated information correlation tool which aims at optimizing airport management. For further information: www.oscars-sa.eu

OSCARS is an innovative independent consultancy company specialising in the Oracle Spatial sector. It can help you to make the data within your GIS profitable. The company is recognised as a reference player by Oracle, and can help you optimise your use of GIS data, thereby enabling you to increase returns on permitted IT investments... Given the various GIS players on the market, it is essential that your data be interoperable. Exploiting it for decision-making purposes is a real advantage and a source of new services. OSCARS, your partner for GIS and Oracle Spatial, is a certified company that has won several awards from the giant Oracle and is recognised as a reference partner. GIP4Airports is one of OSCARS' flagship software, a powerful analytics and geolocated information correlation tool which aims at optimizing airport management. GIP is a platform for acquiring and treating geolocalised data, allowing you to set off alerts in real time in response to previously defined spatial events.

You can define your own alerts and spatial events; this generates associated workflows that you can later activate or deactivate as and when you like. GIP is a generic, non-intrusive tool essential for relevant decision-making in real time, based on position and events, whether implemented or not. The underlying GIP technology takes care of the real time monitoring and management of all equipment elements, players and events pertaining to the airside airport zone (runways, taxiways, car parks and boarding areas). GIP4Airport goes further than the mere cartographic analysis of objects and events. The solution makes it possible for airport authorities to crossreference the data that have been collected. The purpose is to enrich the databases (AODB3) and to allow systems to communicate with each other in order to improve the management and automatic decision making process, based on the rules, constraints and performance indicators each airport has to cope with.

PEGARD PRODUCTICS

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http://www.pegard.com

AERO

Pegard is active in the machine-tool business for more than 50 years and became well-known in the whole industrial world for its large and precise horizontal boring and milling machines. Created in 1937 and now a subsidiary company of the group OGEPAR, Pegard engineers and delivers tailored solutions for the flexible machining of large precision parts offered to the customer in a turnkey solution. Pegard also provides services in machining and after-sales services.

Machine tools manufacturer

Pegard is specialized in the manufacturing of large horizontal boring and milling machines and machining centers committed to high quality and performance. Our customers are users demanding ultimate levels of precision and automated machining of large mechanical parts, such as turbine rotors, valves, pumps, engine blocks, compressor housings, components for earth moving equipment...

Pegard has also developed its business in manufacturing of vertical turning lathes (Ø12504000mm table) and offers you a large panel of sharpening machines through its brand HARO Technologies.

After-sales service

Besides its boring and milling machines and vertical lathes, Pegard offers of course a well-known after-sales service (works on site, spare parts, preventive maintenance...), the retrofit of existing machines as well as an electric department able to realize complex sub-contracting works **Machining subcontracting** Pegard can machine your parts thanks to its large panel of machine tools. Here are our capabilities:

- CNC horizontal machining centers / 3 to 5-axis / up to 9600x3000x700mm
- CNC turning up to Ø5600x2500mm
- Flatbed grinding up to 7200x2200x1350mm
- Quality inspection (Cimcore infinite 2.0 3D arm)
- CAD/CAM softwares

References

BOEING (Spirit aero) – AIRBUS (Premium Aerotech) – SONACA – ASCO – SAFRAN – TECHSPACE AERO – FIGEAC AERO– IBA – KENNAMETAL – CMI

POLMANS

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sa.polmans@polmans.be
http://www.polmans.be

AERO

For more than 45 years now, POLMANS has been active in precision mechanics, particularly in the fields of aeronautics, nuclear, weapons, medical, steel. Polmans has also been active in the field of plastic injection for almost 20 years.
The company is specialized in prototypes, unitary parts, in small and medium series.

Company background

Year of establishment: 1973 Number of employees: 50 Export: +/28 % Main Export countries: NL – G – CH – GB – GDL – F

Added value

We are specialised in the manufacturing of high precision mechanical parts, from diameter 1 mm to diameter 750 mm. Maximum length: 6000 mm.

In addition to the usual CNC machines, we have several centers lathes allowing 6 axes machining. We also have welding MIG-TIG department for the manufacturing of welded and milled structures.

We are also specialised in the manufacturing of closed circuit systems, where the vacuum must to be created.

We have a specific machine to realise all vacuum tests required.

We are able to machine all type of material, like stele, cupper, titanium, stainless steels, nickel, etc.

We also have injection moulding machines for which we created our own design and moulds.

In addition, we have a drawing office.

Range of products

Turning: diameter 1 mm to 750 mm, length: 10 to 6.000 mm Milling: </= 3.500 x 1.000 x 1000 mm and 2.000 x 1.200 x 1.500 mm

PRECIMETAL PRECISION CASTINGS

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edward.rabendzki@precimetal.be
http://www.precimetal.com

AERO DEFENCE

Investment casting (lost wax process). Steel and stainless steel technical parts for aeronautics.

Civil and military aeronautics: steel, stainless steel, copper and cobalt alloys technical parts

- For aircraft structures, door locking systems, landing gears, engines...
- For embedded electronic and optics, light and heavy weapons.
- Components and complex pipes for fluid transport and control
- Seat fasteners and other level 2 and 3 parts.
- Machined and coated parts ready for the assembly on production line.

Other sectors

- Besides the aeronautical and defence sector, Precimetal supplies the nuclear and petro-chemical markets, general engineering, food production equipments, fluids processing, defence, building, railway and automotive...

Rapid prototyping

- Fast casting of steel prototypes based on 3D files and STL models

Technical data

- Investment casting process (lost wax)
- Parts from 1g to 50 kg
- All steel and stainless steel grades
- Nickel, cobalt and copper alloys
- Machining and surface treatments on demand; ready-to-use parts
- Non destructive testing facilities

Certifications

- EN 9100 / AS 9100
- ISO 9001
- NADCAP accredited (NDT including Digital X Ray)
- Qualified as test laboratory

References

AIRBUS, SAFRAN, STELIA, ZODIAC, LATECOERE, AVIC, HAL...

Investment casting strengths

- Dimensional accuracy and surface quality
- Complex shapes, thin walls, design freedom
- Lower weight
- Reduced machining, welding and assembly
- Very wide choice of alloys

PRONOVEM GROUP

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ENGINEERING

Towards sustainable competitive advantage...

We are an international group of law firms specialised in the field of Intellectual Property. We offer a full range of high-quality services in Intellectual Property matters, including patents, trademarks, designs, copyright, IP licensing and acquisition, IP dispute resolution and valuation of IP Rights. PRONOVEM® built up the necessary competence to help you implement available assessment and management methods for Intellectual Property Rights.

We work for international companies, SMEs and individuals with a service adapted to the size and demand of the entity. Passionate about Intellectual Property matters, we combine our legal expertise and individual engineering or scientific skills in various fields of technology: Mechanical Engineering, Electrical Engineering, Microelectronics, Material Sciences, Computer-implemented inventions, Coatings, Ranging technology, Satellite Navigation Systems, Nuclear technologies, Robotics, Telecom, Acoustics, Optics, Control systems...

Q-SQUARE AEROSPACE

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AERO


SPACE


DRONE


DEFENCE

Created in 2013, located in the suburbs of Brussels, Q-SQUARE Aerospace is a highly specialized company delivering Quality Management Consulting and Audit services.

Our team is composed of senior engineers and PhDs, each demonstrating track records of more than 20 years, running R&D and Production activities in the Manufacturing, Aeronautics, Space and Defence industries.

Our consultants complete their technical experience with key Quality certificates and have all implemented/run Quality Management Systems in the industry. Some also act as 3rd party auditors (ISO 9001, AS/EN 91xx series) for worldwide-recognized certification organisms.

The combination of technical skills, quality knowledge and team management gives you the best guarantees for success. Our missions are sharply defined and run at fixed costs.

Added value is very strong, especially for fast growing high-tech companies.

What we do?

- Audit your suppliers worldwide
- Supplement your teams with high level ad-interim Quality resources
- Run your gap analysis going to the latest revisions of aerospace standards (AS/EN 91xx)

How we do?

In a simple, pragmatic, flexible and cost-effective manner, thinking "out of the box"

Keywords

Quality Management, Product Quality, Aeronautics, Space, Audit, Defence, AS/EN 9100

Q3S

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AERO

ENGINEERING

Q3S is an engineering company providing consultancy services to companies willing to master their operational, organizational and technological evolution.

Our main activities are

- Safety-critical Systems and Products:
- Architecture of safety critical systems and products
- Engineering processes of Safety critical systems and products
- Quality and Safety Management for safety critical systems and products
- Software Verification & Validation
- Safety studies and safety cases (risk analyses)
- Independent Safety Assessment and Certification of Systems, Products and Software.
- Software Verification, Testing & Validation
- Requirement & Design Verification, Software code review, Software FMEA, Dynamic & Static Testing, Integration Testing, Validation Testing
- RAMS and Dependability Engineering for Systems and Products
- Analyses, studies & support in Reliability, Maintainability, Availability and Safety, Safety Case, Proof of Safety , Trade-off studies, Independent Safety Assessment
- Design Control & Management during Development phase
- Development process methodology, Functional Analysis, Quality Assurance, Safety Assurance, Requirement Management, Configuration Management, and Traceability
- Logistic and Maintenance
- Maintenance Policy Definition and Optimisation, Reliability-Centred Maintenance, Integrated Logistic Support, Life Cycle Cost

We are now also focusing on

- UAV engineering, manufacturing and testing
- State of the art knowledge of small UAVs (drones)
- Knowledge of civil aviation rules and procedures (Design, manufacturing and assembly competences and capabilities related to R/C aircrafts (CAD/CAM, CNC)
- On site testing capabilities (recognized RC Pilots) and facilities for Drone (In partnership with DGTA authorized Radio Controlled airplane field)

Our Clients

- ALSTOM, SIEMENS, BOMBARDIER, THALES,STIB, INFRABEL, TUCRAIL, SNCB
- CERTIFIER, BELGORAIL, KEMA, RAILCERT
- LOGIPLUS, FABRICOM, TRACTEBEL Development,
- Egnos (ESSP) , Septentrio

QUALITICS

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DRONE

Qualitics is a Belgian innovative company specialized in drone's inspections and materials recognition base on AI technologies in real time. We work already with several companies in Europe especially in the energetic area. We are also developing other markets opportunities where some proofs of concepts are ongoing

Qualitics is a company which provide automated solutions to use industrial drones for aerial infrastructure inspections and power lines assets inspections. Regarding actual standards for human inspection, aerial inspection is a huge step forward that enables our clients to inspect smoothly and accurately the state of their infrastructures. It is also a tremendous improvement in terms of safety for the manworkers during inspections as well as for the inspected asset itself. Qualitics developed its own product with the use of artificial intelligence and based on the latest technology including embedded super computer GPU. It recognizes in real time various equipment and can conduct inspection with its automated pilot that optimize flight time and make easier flight control at operator level. The product called « A-Eye »is developed by our internal experts team and validated by professional UAV pilots recognized internationally within the drone community. By selecting the latest powerful hardware and IA technology we are proud to say being in advance in the inspection sector regarding other implementation on the market.

REDU SPACE SERVICES

Redu Space Services
CUSTOMIZING SATELLITE SOLUTIONS

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SPACE

RSS, founded in 2007 by SES & QinetiQ Space nv, operates the ESA Redu Centre including tens of antennas and operational satellite systems.
ESA Redu Centre is considered as EU Critical Infrastructure and hence an ideal place to host space based activities, services and applications for Governments and Institutions with a high level of security and cybersecurity.

What are your needs in satellite communications?

a) Enabling Satellite Businesses, Innovative solutions.

You have in mind services involving satellite communications, navigation and/or earth observation: Our value proposition involves secure communications tailored to customer needs including cybersecurity services to make sure the satellite network is protected to the highest standards.

Case Studies

- GOVSATCOM-Mission Operations Centre: Redu is the core of the SES ESA GOVSATCOM PRECURSOR PACIS-1 project where the core satellite communications infrastructure such as the Mission Operations Centre, antenna teleport infrastructure is being validated and installed for for governments and institutions in Europe.
- Cybersecurity study and demonstrator: RSS is in charge of a study and first demonstration of key capabilities for ESA to identify the mission priorities and objectives for a future Cybersecurity Operations Centre. We are carrying it this out with the support of Thales and Spacebel.

b) Satellite Operations.

You are interested in efficient satellite operations or a back-up: We can help you by Hosting and Maintaining & Operating your satellite communication infrastructure. We deliver top-quality 24/7 services for satellite communication systems and back-ups.

Case Studies: PROBA OPERATIONS, Earth Observation satellites, Hosting and maintenance: SES BACK-UP CENTRE

c) Payload IOT Solutions.

You are looking for a leading company to carry out your In-Orbit payload tests: We are the European Excellence Centre for IOT with a successful heritage of carrying out more than 50 IOT campaigns.

Case Study: GALILEO Constellation In-Orbit Tests

RHEA SYSTEM

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SPACE DEFENCE ENGINEERING

Premier supplier of system engineering solutions, security and crisis management consultancy and software development. RHEA Group has 25 years of experience in the security and the space system engineering service market. Key clients include European Space Agency, Belspo, the European Commission, Federal Government of Canada, the City of Montreal, EUMETSAT, CERN, NATO, the European GNSS Agency and the European Southern Observatory.

RHEA Group is actively engaged in developing the latest advancement in the fields of security and crisis management, space systems, and engineering services. Some of the main products designed by the company are Nuvlabox®, SlipStream®, CDP®, and MOIS7®.

On Security and Crisis Management, the company offers the latest trends in physical security, cyber-security and critical infrastructure protection. Some of the most groundbreaking security projects include: leading the first cyber-range for space systems and operations for the European Space Agency to contributing to the largest-ever NATO cyber-defense exercise.

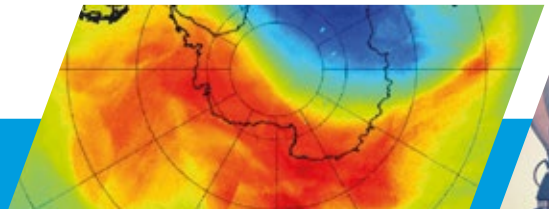
On Space Systems, RHEA Group's MOIS7 software automates different complex processes, reducing the time spent by the user in operations' preparation while simultaneously increasing the quality of testing and safety of mission. MOIS is used as a standard by the European Space Agency (ESA).

On engineering services, RHEA Group is leading the market with its Concurrent Design method that has streamlined the complex engineering design for companies, facilitating the production of its products and reducing design time and lifecycle cost.

RHEA Group works with the best scientist and engineers to contribute to the more advanced engineering projects and space missions. Having contracts with the European Space Agency, the European GNSS Agency, the European Commission, the European Southern Observatory and EUMETSAT.

RHEA Group operates in ten countries with more than 300 scientists and engineers worldwide. The company has headquarters in Montreal, Canada, for operations in North America, and in Wavre, Belgium, for European operations.

Certified ISO 9001:2015 for system engineering and security and crisis management consultancy. Project management and development of software and systems.



ROVI-TECH

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AERO

ROVI-TECH has 25 years of experience in the development of industrial vision control solutions and measuring instruments to propose automated conformity, metrology, appearance, shape, character reading and code control equipment, sorting and/or quality.
ROVI-TECH has the required skills thanks to a team of experts for industrial vision complemented by computer science, robotics, mechanics and electronics. We take charge of your project at the international level, from design to integration.

Expert in Industrial Vision. Our services include consulting, auditing, feasibility study in our optical laboratory, prototyping, integration of vision solutions on the production line or realization of autonomous special machines.

ROVI-TECH to master its developments which integrate many technics:

- 1D, 2D, 3D monochrome & color cameras, Stereo Vision, Laser Triangulation, Laser Telemetry, Infrared Thermography, X-Ray,
- Definition and integration of adapted lighting,
- Neural classification, artificial intelligence, Deep Learning, image processing (based on vectorization or thresholds, ...),
- With its know-how and the technologies of future industry 4.0, ROVI-TECH will follow you step by step to offer you the most adapted solutions in accordance with your needs.

SABCA

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AERO SPACE DRONE DEFENCE

With its strong shareholder (Dassault Group) and soon celebrating its first century in aerospace, SABCA, a Belgian company, has within his group 1000 highly motivated employees mastering all skills from design, manufacturing, qualification and support. The SABCA group location includes four plants in Belgium and in Morocco.
The SABCA group is a major player from design to certification of complex metal and composite "plug and fly" Aerostructures for aircraft and space vehicles, integrated and equipped.

Through his own-design expertise in actuation, SABCA is an European reference for Thrust Vector Actuation systems of satellite launch systems. Programmes like Ariane 5 and 6, Vega and Vega-Consolidation benefit from it.

SABCA offers high-end expertise in maintenance, repair and overhaul as well as modernization of military platforms and maintains most of the fleet of the Belgian armed forces. It also works with other European countries, as well as the US Air Force (USAFE), on the F-16.

SABCA also develops his expertise in Unmanned Aerial Systems as integrator and service provider for various type of applications, going up to qualification and certification

Références and/or Certifications

EN/AS/JISQ 9100 certification, AQAP 2110 certification, POA i.a.w. EASA part 21 Subpart G, MOA PART 145.32, PRI-NADCAP certifications (Chemical Processing, NonDestructive Testing...), ISO-9001 certifications

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AERO

DEFENCE

Sabena Aerospace is a leading independent and international aviation solutions provider for civil and military operators. Our century of experience enabled us to develop an internationally recognized expertise and savoir-faire as well as a responsive internal capability. Our mission is to facilitate and optimize our clients' business by offering highly qualitative, customized and efficient solutions.

Sabena Aerospace Engineering supports its customers with 5 different types of services

- **Line Maintenance** support of major airlines in Brussels, Antwerp, Luxembourg and a series of outstations on the African continent
- **Engineering & CAMO** support of major airlines through our centralized Engineering Service Center in Brussels
- **Component Repair Services** for a wide range of aircraft components: Nacelle, Flight controls, Composite, Wheels&Brakes, L.S.E. & Tubing
- **Flex Aviation Service Team** providing Cabin Maintenance, Aircraft Decoration, On-Site Manpower and AOG assistance to our customers
- **Defence & Government** activity supporting Belgium's C130 fleet with heavy maintenance and NATO's AWACS fleet with component repair

SAFRAN AERO BOOSTERS

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AERO SPACE

Safran Aero Boosters designs, develops and produces modules, equipment and test cells for aerospace engines. Thanks to its high-tech products, the company equips the Ariane launcher and most commercial aircraft engines in all thrust ranges. Based in Liège, Safran Aero Boosters has approximately 1,450 employees on an integrated 65,000 m² site.

BOOSTERS: Low-pressure compressors and front bearing support

- Responsibility of low-pressure compressors for CF34, CFM56, GE90, GE9X, GEnx, GEPassport, GP7200, LEAP and Silvercrest engines
- Technology for developing more environmentally-friendly engines: light-weight booster (BluM® and composites) and high-speed booster
- Partnerships with Safran Aircraft Engines, General Electric and Pratt & Whitney

OIL SYSTEMS: Lubrication units, oil tanks, heat exchangers, special valves

- Responsibility of lubrication equipment for CF34, CFM56, GE90, GE Passport, LEAP, PW1000G (for MRJ, C-Series, E-jet), Silvercrest, TP400, SaM146 and helicopter engines
- A shift towards "more electric" aircraft and thermal management Maintenance, Repair and Overhaul for over 50 customers

TEST CELLS: Turnkey test cells, testing equipment, data acquisition and control systems

- Responsibility of military and civil test cells from A to Z, modernization and adaptation of test cells for all types of engine (turbofan engines, turbojets, turboshaft and engine components)
- Shift towards smart cowlings and more environmentally-friendly test cells (studies to find solutions that cut fuel consumption and recover energy)
- 50 customers: engine manufacturers, maintenance centers and armed forces
- SPACE EQUIPMENT

SPACE EQUIPMENTS: Flow control valves for launcher engines and tanks

- Responsibility of flow regulation valves for the Vulcain 2® and Vinci® engines and stages
- Shift towards electrically actuated valves and boast enhanced features
- Partner of Airbus Safran Launchers for Ariane 5 & 6

SAGITA

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AERO

DRONE

The new TDR helicopter drive system; Turbine Driven Rotor
SAM a compact VTOL UAV propulsion unit featuring the TDR concept
Innovative solutions in turbomachinery

Turbomachinery

- Turbines specifically developed to drive a contrarotating helicopter rotor
- Composite centrifugal compressor

Flight testing

- Wind tunnel and flight tests on small scale (1/5) models validate the TDR concept for autorotation, handling and stability, fuselage drag

SAM

- 1/2 scale model flight tests.

SAMTECH

SIEMENS

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AERO SPACE DEFENCE ENGINEERING

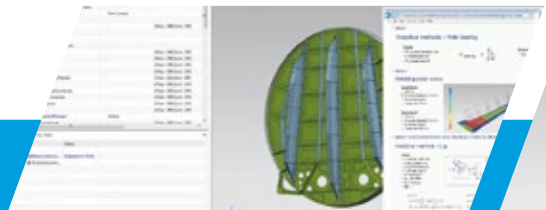
Walloon subsidiary of Siemens Digital Industries Software, SAMTECH S.A. develops since 1986 the general-purpose Finite Element Analysis software Simcenter SamcefTM, including its version embedded in Simcenter NastranTM, and the customizable collaborative engineering platform Simcenter Aero-structure dedicated to the certification of Aircraft Structures.

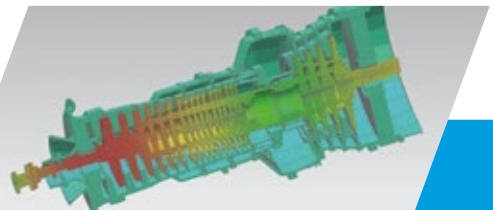
SAMTECH provides a complete suite of engineering 3D simulation software for loads computation, topology optimization, structural sizing, thermo-mechanical stress analysis of structural components and non-linear structural dynamics analysis of whole machines, made of both metallic and composite materials. Rotating machines is a specialty of Samtech simulation software like aircraft engines, gas turbines, steam turbines, open rotors, tilt-rotors, helicopter rotors, ... Samtech also delivers advanced simulation solutions for the modelling of space deployable and inflatable structures and finally for the simulation of manufacturing processes with the purpose of predicting structural parts distortion in additive and composite manufacturing.

The SAMTECH S.A. software technology has an unsurpassed reputation for its quality and reliability. It has been adopted by many major companies across all engineering disciplines as an integral part of their design process. It is an important technology contributor to the Siemens Industry 4.0 vision based on Digital Twins, from Product Design until Simulation in Service, going through all the steps of manufacturing.

References and/or Certifications

Major Aerospace worldwide customers like AIRBUS, AIRBUS Defence&Space, AIRBUS Group Innovations, AIRBUS Helicopters, Leonardo, SAFRAN, SAFRAN Aero Boosters, SONACA, SABCA, AMOS, V2I, GDTECH, CENAERO, AIR Liquide, AVIC, CNES, COMAC, DGA, ESA, GTRE, JAXA, KARI, MBDA, Rolls Royce, Sagem Defense&Security, Turkish Aerospace Industries or Thales Alenia Space trust the expertise of SAMTECH.





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AERO

Seco Tools has an established reputation as a leading manufacturer and supplier of carbide cutting tools and associated equipment.

Seco's range of products includes a complete program of tools and accessories for turning, milling, drilling and reaming and attachment systems of additional tools. With over 25,000 standard products, Seco is a leading provider of complete solutions for metalworking and machine tools.

The company headquarters are located in Fagersta in Sweden. Seco is present in over 50 countries worldwide, with 40 branches, distributors and channel partners.

For more information, visit the website www.secotools.be

SHUR-LOK INTERNATIONAL

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AERO SPACE DEFENCE

Shur-Lok International is a world leader in the design and manufacture of critical performance fasteners which have become industry standards for Aerospace civil and military applications.
Shur-Lok International has also strong expertise in producing hard metal machined parts for Aircraft engine and Helicopter components.

Shur-Lok International is EN 9100 & NADCAP certified and processes all aerospace materials, specifically high-alloyed steels, stainless steels, high-temperature-resistant steels, titanium or aluminium.

SL Fasteners are used in high vibration and load transfer applications to provide superior alignment, load transfer, resistance to wear and movement, and ease of assembly. Our key product lines include bearing locknuts, barrel nuts, expandable diameter fasteners, studs and inserts, lockwireless fittings, and sandwich panel inserts.

Shur-Lok serves its worldwide customers from two design and manufacturing centers: Shur-Lok Company operates a 75,000 sq. ft. facility in California and a 48,000 sq. ft. facility in Belgium.

Shur-Lok International is part of PCC Airframe – Engineered Products Division, Precision Castparts Corp. (PCC) a worldwide, diversified manufacturer of complex metal com- ponents and products. Precision Castparts Corp. is leader in structural investment castings, forged components, and airfoil castings for aircraft engines and industrial gas turbines. Airbus, Boeing, GE, Rolls-Royce, and many other leading manufacturers depend on us for critical airframe, engine, power generation, medical, and general industrial components.

With few exceptions, every aircraft in the sky flies with parts made by PCC. PCC is a wholly-owned subsidiary of Berkshire Hathaway Inc.

SKYANGELS

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DRONE

DEFENCE

SkyAngels is a Walloon "Young Innovative Company" incorporated in 2014. Its mission is the design, the development and the DO178C certification of "intelligent" avionics software embedded in autonomous drones supporting the critical missions of military, police and civil security forces.

SkyAngels current research themes are

1. The design, the development and the DO178C certification of "intelligent" (i.e. based on artificial intelligence) embedded avionics software implementing critical functions (ex senseand-avoid) for enabling the autonomy of Unmanned Aerial Vehicles used to support the critical missions of military, police and civil security forces. This research is led in the scope of a PhD thesis initiated at the Namur University, in collaboration with the Belgian Royal Military Academy and the "Centre d'Excellence Drone" of the French Air Force.
2. The threat modelling of terrorist attack scenarios led with commercial micro-drones and the integration of mitigating technologies within systems aimed to detect, classify, track and neutralize, with electronic and kinetic means, a swarm of hostile drones. The research also includes the design of "intelligent" software controlling those Counter-UAVs systems.
3. The cybersecurity measures protecting governmental UAVs from cyberattacks.
4. The applications of UAVs for Search-And-Rescue and the transport of emergency medical equipment.
5. The concept of "UAVs-carrier airship" (Zeppelin like) used for military missions.

SOBELCOMP

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AERO SPACE DRONE DEFENCE ENGINEERING

Sobelcomp is a Belgium industrial sub-contractor founded in 2006 who studies and produces parts made from composite materials for clients.
As a compagny active in the Aerospace and defence sectors it has committed to a high-quality approach and has had its quality management system certified according to standard AS/EN/JISQ 9100 (and ISO 9001).
Also convinced that innovation is the driving force behind its activity Sobelcomp has invested for many years in the development of its engineering office.

The services we provides through our engineering office are

- Study and design of parts, mold and tooling
- Calculation by finite elements
- Qualification of processes and materials

Through our workshop, parts are

- manufactured using different processes like RTM, RTM Light, Infusion, Pre preg
- Assembled by gluing or riveting
- Painted in our painting booth

We are able to produce 10 to 5000 parts per year each weighing between 5 and 200 kg.

Concerning quality

- We are able to do no destructif testing (NDT). In fact we are EN4179 certified to do infrared testing also called thermography.
- We are also able to do dimentional inspection with our 3D faro arm.

Aviation activity

Safran Aero Booster: Sobelcomp designs the moulds and produces the air intake sleeves and the cowlings for plane engines. These are used when the engines are undergoing maintenance on test cells to simulate the airflow.

In order to satisfy Safran Aero Booster, Sobelcomp had to show inventiveness and competitiveness by offering technical solutions based on its expertise.
Defence activity:

FN Herstal: Sobelcomp has been studying a structural part from a helicopter. Thanks to its innovation, Sobelcomp was able to offer its client a part with a 40% mass gain.

SOLVAY

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AERO

Solvay is a multi-specialty chemical company, committed to developing chemistry that addresses key societal challenges. Its products and solutions are used in planes, cars, smart and medical devices, batteries, in mineral and oil extraction, among many other applications promoting sustainability. Its lightweighting materials enhance cleaner mobility, its formulations optimize the use of resources and its performance chemicals improve air and water quality.

Cleaner mobility

Manufacturers have to comply with ever more stringent regulations on CO_2 and particulate emissions while meeting consumer demand for safer and more environmentally sustainable travel. Our solutions contribute to cleaner, safer and more energy-efficient modes of transportation. We produce lightweight materials for both the automotive and aerospace industries to help make vehicles and aircraft more fuel-efficient and cost-effective.

We provide products that improve powertrain efficiency through effective thermal control and protection against corrosion. In the field of electric vehicles, we contribute to developing batteries offering higher energy density and greater power. Our high-performance silica reduces the rolling resistance of tires, which helps cut CO_2 emissions, while we also produce rare earth materials that help reduce NOx emissions from diesel engines.

SONACA GROUP

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AERO SPACE DRONE DEFENCE ENGINEERING

Sonaca Group is a top 10 Aerostructure player combining 2 strong companies: LMI Aerospace and Sonaca

Sonaca Group is an aerospace company active in aerostructure (Design & Build and Build to Print), services, innovation, space and defense. Sonaca Group has one-stop shops and integrated teams of design and industrial professionals who can provide responsive solutions tailored to customers' needs. Sonaca Group can offer the best price combination with the latest automation technologies, low cost country manufacturing facilities and worldwide engineering offices.

Year after year, Sonaca Group is recognized by its customers as "best-in-class" for quality and delivery performance of reliable industrial solutions. Thanks to its global footprint, Sonaca Group is close to customers, accompanying them from early design stages to in-service support, focusing on reducing overall costs. Sonaca Group is founded on bringing together two strong companies: LMI Aerospace and Sonaca

SPACEBEL

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SPACE

ENGINEERING

REACHING INTO SPACE TOGETHER

Established since 1988, SPACEBEL is a Space systems and software engineering company that has grown in the Space market to become a trusted developer of advanced IT solutions and a related service provider. SPACEBEL is also in the international mix of small satellite system suppliers.

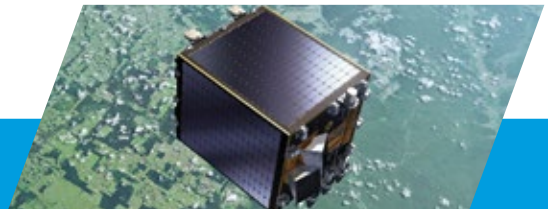
The company operates in the Space and Earth monitoring applications sectors, serving Space agencies, government departments, major aerospace companies, European institutions as well as the commercial market.

SPACEBEL is active in several domains including Earth observation, Space flight, science, telecoms, navigation, exploration, launchers, balloons and space situational awareness.

Our skills range from the design, development, integration, validation of IT systems for the Space industry over geospatial information systems to the mission definition and analysis of Earth observation mini satellites.

- SPACEBEL delivers on-board control and data handling software for satellites and space vehicles, satellite simulators, control and mission centres as well as EO Web services provisioning infrastructures. So far, SPACEBEL has contributed to the success of more than 40 Space missions aimed at better understanding the Earth and the Universe.
- SPACEBEL offers Earth observation services for forestry, water, industrial risks, atmosphere, mine exploitation and natural resources management and contributes to help decision makers worldwide in protecting and improving people's life sphere.
- SPACEBEL has the capacity to provide complete Earth observation solutions, including user requirements and system definition.

SPACEBEL offices are located in Belgium (Liège, Brussels), France (Toulouse) and Poland (N7Space - Warsaw).



STEMME BELGIUM

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https://www.stemme.com/

AERO DRONE

Stemme Belgium is a new company based in the airfield of Namur.

IStemme Belgium is a subsidiary company of the German company Stemme AG owned since 20 years by Olivier de Spoelberch. Stemme AG represent more than 120 employees in Germany. Since more than 40 years Stemme imagine and build ultra performer gliders with retractable engine. The system of the S12 glider is totally unique with a retractable propeller in the front of the glider. The S12 is a glider capable to flight more than 2.400 kilometers in one day without engine.

Stemme Belgium is based in Wallonia to imagine with Sonaca and Sabena a drone capable to flight in the stratosphere to make some earth obervation. This join venture between those three companies is very ambitious. We expect to flight in the stratosphere at the end of 2020.

TECHNICAL AIRBORNE COMPONENTS

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AERO SPACE DRONE DEFENCE

Technical Airborne Components Industries (TAC), established in 1981, designs and manufactures rods and struts for the aerospace industry. TAC is recognized worldwide as the reference source for high quality, custom engineered control, structural and system rods.
Its expertise in design, development and manufacturing of metallic & composite struts and rods is complemented by related machined parts (e.g. cranks, brackets), special tubular links, telescopic rods, torque shafts and special rod ends.
As one of the leading suppliers in this industry TAC today supplies to its customers all over the world products for all segments in aerospace: commercial aircraft, regional and business jet, helicopter, military and space programs.

Whether your needs are for specific design, innovative solutions, built to print or standard items TAC will provide a tailor-made answer for all requirements of aeronautical struts & rods.

Over 200 employees are working at TAC offering the complete scope of competence from developing solutions to performing qualification testing and hence rapid prototyping and production.

TAC is part of TransDigm

References and/or Certifications

- Certification EN 9100
- NADCAP certification NDT
- ISO 14 001

TECHNOCHIM

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AERO

Technochim, specialist in metal surface treatments

Technochim is a company specialised in mechanical, chemical and electro-chemical treatments of metal surfaces.

These treatments are carried out on metals in order to modify their surface properties to increase their resistance to corrosion or for decorative purposes. For carbon steel, it may also constitute a base to improve adhesion of subsequent treatments such as painting, etc...

Among the different treatments at which Technochim excels, we mention in particular:

- degreasing, pickling, passivation, electro-polishing, mechanical polishing, shot blasting and de-rouging of stainless steel;
- descaling, rust removal and de-silting of HVAC equipment, in which carbon steel, brass, copper, etc. is found...;
- pickling and anodising of titanium;
- application of nanostructure ceramic coatings on metals which improve functional qualities.
- chemical machining of parts made by additive manufacturing (aluminium, titanium).

These operations are performed either on site at its customers, or in its own workshops located in the industrial zone of Ghislenghien in Belgium not far from the French border.

TECHNORD

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ENGINEERING

FLEXIBLE SOLUTIONS, STRONG EXPERTISE

Technord is a global systems integrator specialised in electrical engineering combining different disciplines from high-voltage electricity to industrial IT systems and MES/MoM, including new technologies for Industry 4.0, to provide customers with guaranteed optimum productivity and flexibility for their industrial processes.

THALES ALENIA SPACE BELGIUM

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SPACE

Thales Alenia Space - a joint venture between Thales (67%) and Leonardo (33%) - is present in Belgium with three sites in Charleroi, Hasselt and Leuven. Thales Alenia Space is an expert in several high-technology fields. The company is the Belgian front-runner in space electronics applications for satellites and launchers, a world leader in power conditioning and distribution for satellites, a key supplier of electronics for European launchers and will be the first automated factory of space PhotoVoltaic Assemblies (PVA) in Europe.

Satellites are our core business...

The Belgian entity of Thales Alenia Space is a world leader in satellite power conditioning and distribution. The product range covers needs from observation microsatellites up to the large geo-stationary satellites for telecom applications, with power requirements from 250 W up to 20 kW. The company also enjoys a position at the forefront of flight electronics products: avionics, power supplies for plasmic propulsion thrusters, power supplies for travelling wave tubes, DC/DC converters and other dedicated power products.

With the construction of a one-of-a-kind center of excellence in automated manufacturing, Thales Alenia Space confirms its position at the forefront of digital innovation and its ability to accompany its partners through the transformational evolution of the space industry.

On board all European launchers

Thales Alenia Space in Belgium is the N°1 supplier of onboard electronics for Ariane 5, designing and manufacturing more than 50% of the electronic systems on each launcher. These systems perform a variety of functions, including onboard electricity distribution, management of the thrust-vectoring nozzles that keep the launcher on trajectory, spatial positioning, separation of the launcher stages and the satellite's protective nose fairing during flight, and safeguard system. The Thales Alenia Space team in Belgium will also be supplying the safeguard system for Ariane 6. We also produce the safeguard system for Soyuz launched from French Guiana. We are also taking part in preparing the Vega launcher.

THALES BELGIUM

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AERO DEFENCE ENGINEERING

Thales Belgium has served worldwide and the Belgian defense, security, safety and transportation markets for more than 50 years. Today the Group employs more than 200 people at 3 sites across Belgium, in Herstal, Tubize and Genk. Thales has developed close ties with Belgian industry over many years, and has worked hand in hand with universities and research institutes to develop innovative products for its customers.

Added value

- Supplier of tactical communication systems & sensors for Air, Land and Naval sectors
- Partner of NATO's program to upgrade its AWACS Airborne Warning and Control System
- Unique company able of offering and mastering the whole air-to-ground rocket system
- Mastering following technologies: propulsion, pyrotechnics, mechanics, electronics, ballistics, guidance
- Unique Cyberlab platform to prepare companies for the most dangerous cyber-attacks

Range of products

2.75''/70 mm air-to-ground rockets systems for aircraft & helicopters

- Tactical communication systems and a variety of onboard sensors for all platforms
- Modernising the communications systems as a Tier 1 supplier to aircraft manufacturer
- Cryptographic & cyber security solution to protect on-board data
- Digitalisation of aircraft operations based on Electronic Flight Bag (EFB) solutions

Main references

- Customers & partners: Nato / Napma, Belgian Defense, Luxembourg Army, Boeing, Raytheon, Northrop Grumman, Lockheed Martin, Thales Avionics, Thales Communications & Services, Astrid, Airbus, Stib Brussels, Eurocontrol
- OEM: Airbus Helicopters, Hindustan Aeronautics, Leonardo Helicopters, BAE Systems, Denel, H3 Defense
- Rocket systems have been adopted by 55 countries and 70 armies worldwide

Certification

Thales Belgium is certified according to ISO 9001:2015 and qualified supplier by various helicopter and aircraft OEM's

V2i

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FROM VIBRATIONS TO IDENTIFICATION

AERO SPACE DRONE DEFENCE ENGINEERING

Full service in vibrations: coupling numerical simulation and experimental testing Development of tailor-made acquisition and monitoring solutions

V2i's know-how is based on researches of international repute of the University of Liège in the field of structural dynamics and is continuously improved and updated by massive **R&D** programs.

As an engineering company specialized in mechanical vibrations, our skills cover:

- **Numerical simulation** of structures and fatigue studies to predict their behaviour under environmental vibrations,
- **Testing** of equipment under severe environment and data **correlation** with results from simulation,
- A deep knowledge of **fatigue** phenomena to predict lifetime,
- All associated services: instrumentation, tooling design and verification, specification definition and analysis,
- Expertise in **rotordynamics** and vibrations of structures to detect and diagnose faulty behaviors,
- **Vibration** and other physical quantities **measurement, data collection and analysis** onsite or in laboratories, high-sampling frequency signal analysis, advanced data processing in real-time and database operation.

In addition to these services, V2i acquired a strong experience in the development of **tailor-made acquisition and monitoring systems** for test rigs and zero-defect manufacturing applications in Aerospace and other fields of industry.

Certifications

- ISO 9001:2008
- Safran / Rolls-Royce
- Certified LabView Developers / NI Alliance Partner

References

Safran - Rolls-Royce - Thales - Ariane Group - Sabca - Sonaca - FN Herstal - CMI

VANHULEN HIGH PRECISION SPRINGS

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AERO SPACE DRONE DEFENCE

Compression Springs. Traction Springs. Form Springs. Torsion Springs. Double Torsion Springs. Induction Coils. Locking Rings. Leaf Springs. Assembly. Welding.

Stamping of items in single or combined toolings, by electroerosion, laser and chemical components for prototype building and small series.

Assembling of mechanical, plastic or electronic parts in using conventional or specific processes (tig and ion-beam welding...).

The quality of the VANHULEN products is officially certified by standards such as ISO 9001:2015, EN 9100:2016, ISO26000 and IATF 16949:2016.

NATO cage B1811.

VENYO EUROPE

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AERO

Since 2009, VENYO has been working on a revolutionary B737NG Fixed Base Simulator (FBS) which was revealed and made its "World Premiere" at the Paris Air Show in 2013. It was the very first time that the aeronautical industry was able to view an innovative and fully functional flight simulator operated on site at Le Bourget. Being qualified as a "Game Changer" by the professional community not only confirmed but encouraged VENYO's intention to continue to invest and move from concept to commercialization.

As professionals in aviation training, we've understood that high-quality Fixed Base Simulators (FBS) like ours are now in demand to off-load training tasks at an unrivalled budget that would otherwise be done in an expensive Level D Full Flight Simulator (FFS).

Designed from day one for the highest level of certification for a motionless training device, we are proud to provide a solution to the pilot shortage with a product allowing you to increase simulator training hours without extra costs.

'Power-by-the-Hour' rental model is as some may say a 'disruptive' approach to the market. Our flexible, monthly billing includes a minimal contractual number of hours or metered fees (if minimum is exceeded) at a predefined hourly rate. The idea is to offer a simulator at your premises which is constantly maintained to premier standards, with no hidden fees.

Our goal is to offer more flexibility for the customer in terms of adjusting to the ongoing market changes in technology and training capacity.

Our simulator is easy to install and to operate. It doesn't require an empty FFS bay and a nuclear power plant nearby. Look at how one of our partners simply installed our training device in a maintenance hangar.

As new entrants in the flight simulator market space, we're proposing a B737NG aircraft specific shell and flight deck, offering the form, fit, feel and function of a Full Flight Simulator without the motion. Designed from day one to be certifiable as EASA FTD Level 2 (even FFS Level D), our product is ideal to off-load training tasks that would otherwise be done in an expensive Level D fullflight simulator at an unrivalled budget.

VITROCISET BELGIUM

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SPACE DRONE DEFENCE ENGINEERING

Vitrociset Belgium, a LEONARDO company since january 2019, can count on more than 30 years of experience in the field of Space Operations Service & Engineering activities.
We provide significant contribution to the most major Space programmes of the European Space Agency. Our core business is work on the ground to build bridges into space, contributing to the success of ambitious missions.
#wemakespacepossible

Who we are

Vitrociset Belgium, part of Vitrociset Group, is a leading supplier of engineering and operations support services to the European Space Agency, the EU Commission and prime industries in the context of space programs. In addition, we have competence and experience of delivery of turn key solutions in the domains of space mission control systems, integrated logistics support, spacecraft testing and space-based value added applications.

What we do

Vitrociset Belgium added value arises from the utilization and integration of different technologies in the context of highly innovative systems and services for its reference customers. The company is also active in the implementation of new technologies in the domain of satellite ground support systems of the future, integrated logistics support and satellite navigation-based applications and services. Since 2010 Vitrociset Belgium is part of the core industrial team responsible for Galileo operations. In 2018 Vitrociset Belgium has won rewards as best ESA engineering services supplier in 8 different domains.

Our capabilities

Engineering and operation support services provided by Vitrociset Belgium are ruled by the highest quality standards and severe SLA-based performance obligations. Solutions/products developed by Vitrociset Belgium include integrated logistic support tools, mobile satellite ground control systems, satellite mission control software, web and mobile based location-based applications, special Checkout Equipment (SCOE).

WALPHOT

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SPACE

USER-DRIVEN AND DETAILED GEO-SPATIAL PRODUCTS AND SERVICES

In support to local and regional authorities as well as private customers, WALPHOT develops remote sensing services in Belgium, Luxembourg and within European projects since more than 45 years. WALPHOT is the specialist of the whole chain of geographic data processing from the acquisition of information (spaceborne or airborne) to the supply of tailor-made solutions in mapping, geodatabase and spatial modelling.

Geo-information and mapping solutions

WALPHOT supports customers in their spatial management needs. Pro-actively and in response to regional and national tenders, to European directives and policies and to International regulations, WALPHOT provides 3D mapping solutions to various planning authorities. Our applications cover a wide range of domains including border management, land planning, industrial emergency, railway network management, large-scale mapping, heat loss studies or regional airfields maintenance plans.

Customized responses for spatial management

Thanks to the expertise in precise aerial photography and very high resolution imagery, WALPHOT produces high quality 2D/3D customized geographical products. Involved in several European Commission and European Space Agency projects, the company offers products and services using aerial and/or satellite imagery (optical and radar) as input data for the Copernicus program. Contact us to set up your own geo-spatial solution.

WSL

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SPACE

A BELGIAN INCUBATOR DEDICATED TO THE SPACE SCIENCES AND TECHNIQUES.

WSL as worldwide awarded Incubator is member of the consortium "Galaxia Space Innovation" with Skywin, Liège Space Center and Idelux (the sustainable economic development agency of the Belgian Luxembourg province and Luxembourg).

Galaxia Space Innovation is hosted in the Galaxia Business Park (Transinne). It supports start-up companies in their creation and development through a wide range of services. The services include support for fund raising, technical support for products development, market technology analysis, team assessment, business plan drafting, IPR consultancy advices, leasing for equipment and prototype development, support for communication strategy, etc.

The organisation provides access to a wealth of technical expertise, a state of the art infrastructureas well as to a community of companies based within the Galaxia Business Park, including two world leaders, Vitrociset and SES (through Redu Space Services), two strong companies very who are keen to support newcomers and entrepreneurs.

GALAXIA
SPACE INNOVATION

X-RIS

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AERO

DEFENCE

X-RIS ACTIVITIES: X-RAY Imaging Solutions is active in the developmenht and the delivery to customers of up-todate solutions in Digital Radiology both in NDT and in Security. The company offers standard and customized solutions.

The company is located at Liège in Wallonia (Belgium), an aera that benefits from a worldwide reputation for its competences in industrial x-ray.

Company philosophy is to provide user-friendly and efficient solutions that fit at best the application needs. To achieve these goals, X-RIS relies on the complementary competences of its young, dynamic and highly skilled team. The company is particularly technologically-oriented with 6 engineers et 3 technicians from 25 to 50 years old cumulating more than 80 years of experience in the field of x-ray. Our engineers are dedicated to the development of standard and customized solutions but also to provide training and support to all our customers and partners.

X-RIS principally works with the Security and NDT department and collaborated with FBI, Safran, Airbus, Pratt & Withney, Dassault, Total, and so on.

Universities & High Schools

ULB

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Aero-Thermo-Mechanics (ATM)
Pr. Patrick Hendrick

The ULB-ATM department is active fluid mechanics in propulsion systems for aircraft, rotorcraft, rockets and UAVs (rotor type and fixed wing type) at experimental level and CFD. Simulation of flow for reentry vehicles and alternative fuels such as hydrogen for aircraft and UAVs is also studied.

ATM has develop a strong expertise in the field of gas turbine engine lubrication systems and their specific two-phase flow (EU FP7, H2020 and CS projects) and works very closely with top industry players in Europe, offering them unique test facilities for these systems. Unique hybrid rocket engines (2 kN thrust) test facilities are also available.

Skywin Projects: INHEX, SARAH-LE, 4EQUIP

Materials Engineering, Characterization, Synthesis and Recycling (4MAT)
Pr. Stephane Godet

Research activities of 4MAT cover the entire life-cycle of inorganic materials from their synthesis and processing to the end of life. A special focus is given on optimizing the micro-structures of bulk material and thin films by studying the relationship between process parameters and material properties.

Skywin Projects: AERO+ and FASAMA (limits of Ti alloys in additive manufacturing for the aeronautical industry)

Structural and Material Computational mechanics (BATir-SMC)
Pr. Thierry Jacques Massart

The BATir-SMC research group develops advanced computational modelling methods for mechanical and coupled problems and works with the European Industry in several top EU research initiative.

The field of application covers the modelling of complex composite materials (3D woven, NCFs, Zpinned), the study of microstructural plasticity processes in multi-phase metallic materials, the modelling of lightweight materials (foams, 3D printed lattices), as well as structural health monitoring.

Bio, Electro and Mechanical System (BEAMS-Embedded Electronics)
Pr. Frederic Robert

The BEAMS - Embedded electronics research group activities focus on four major axes

- Multi-processor System-on-Chips (MPSoC) with real-time operating systems (RTOS)
- Better algorithm/architecture adequation using system-level design flows
- 3D-chips design and optimization
- Control of power electronics devices

Applications ranges from telecommunications to industrial technologies, platform, operating systems and monitoring systems.

Bio, Electro and Mechanical System (BEAMS-Mechatronics)
Pr. Christophe Colette

The BEAMS-Mechatronics team develop (conception and experimental validation) instruments and robust strategies for the active control of structural vibration of equipment such as

- large space telescopes
- Interferometric inertial sensors
- gravitational wave detectors
- Multi-degree-of-freedom nanopositioning systems

Department of System Analysis and Control Engineering (SAAS)
Pr. Michel Kinnaert / Pr. Emanuele Garronne

The SAAS laboratory research team is mainly active in two types of automation and predictive control systems.

- Model-based condition monitoring real time systems for electro-mechanical (aircraft lubrication, satellites power, Li-Ion battery,...) and industrial application (monitoring and predictive maintenance).
- Drone control and mission planning for innovative operations under constraints (sliding, manipulating, towed drones,...).

OPERA – Wireless Communications
Pr. Philippe De Doncker / Pr. Francois Horlin

The team at OPERA-WC develops new signal processing solutions for emerging digital communications systems, aiming especially at the system integration and terminal implementation. The research covers satellites (eg. digital compensation for analog front-end impairments), defense (SWS project) and IOT / drones applications.

Microgravity Research Centre
Pr. Franck Dubois

MRC main research activities concern the physics of fluids and interfaces such as evaporation, condensation, thermos-diffusion and aerosols physics. The second area of expertise of the lab is optical diagnostics, digital holographic microscopy, image processing and non-destructive testing using optical metrology.

The team has access parabolic flight facilities and has been involved in numerous ESA and NASA projects, studies and experiments performed under microgravity conditions.

Transfers, Interfaces and Processes (TIPs)
Pr. Pierre Colinet

The TIPs team research new theoretical, numerical and experimental methods allowing to understand and predict the behavior of multiphase systems, and to design or optimize industrial processes. Some of these research activities involve the development of experiments in microgravity (sounding rockets, Space Station) under ESA or EU projects.

Laboratory of Neurophysiology & Movement Biomechanics (LNMB)
Pr. Guy Cheron

The LNMB is involved in the fields of Human Space Science, BCI and basic Neuroscience. The main study areas are

- EEG and evoked potential studies during virtual navigation in the ISS
- Neural Networks & Deep Learning on brain derived signals and movement
- Brain to Brain interaction in social contexts

IGEAT-Geospatial Analysis (ANAGEO)
Pr. Eléonore WOLFF

The ANAGEO group at IGEAT-ULB Earth has developed a high level of expertise in extracting information from and interpreting high-resolution remote sensing data (aerial photos and satellite images).

The actual research is mainly oriented on mapping and monitoring human structures (land cover, land use, urban growth, refugee camps,...), demographic evolution, ecological corridors, geographical risks and vulnerability,... and led to the

Quantum Chemistry and Photophysics (CQP)
Pr. Pierre-François Coheur

The CQP field of research is gaseous atoms and molecules, isolated or in natural atmospheres. Combining ab initio calculations, high resolution spectroscopy and atmospheric remote sensing, CQP has develop pioneering research in infrared remote sensing and contributes to Earth observation satellite missions (eg. IASI (CNES) mission) and current/future space programs (eg. Venus Express).

ULiège

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The University of Liège has a long tradition in aerospace shared between five departments and one research center: Department of Aerospace and Mechanical Engineering(A&M), Urban & Environmental Engineering (UEE), Electrical Engineering and Computer Science (EEI Montefiore), Chemical Engineering; Space sciences, Technologies and Astrophysics Research unit (STAR) and Centre Spatial de Liège (CSL).

A&M Department

The **Aeroelasticity and Experimental Aerodynamics Research Group** conducts cutting edge research in the areas of experimental and theoretical aeroelasticity and aerodynamics, with particular applications aircraft, rotorcraft, drones and wind turbines. The research group collaborates closely with the ULiege's large multidisciplinary subsonic wind tunnel.

The **Computational & Multiscale Mechanics of Material** focuses on the development of multi-scale numerical methods for complex non-linear engineered materials, such as composites, foamed materials, and MEMS.

The **Metallic Materials Science Unit** studies the manufacturing processes, properties and microstructural characterization of metallic materials. The group has three laboratories, one for microstructure studies, one for the determination of thermal properties and one for damage studies.

The **Computer Aided Geometric Design** group is active in research in CAD/CAM/CAE and the link with novel numerical simulation techniques. Aeronautical applications include X-FEM simulations of composite structures (structural analysis or manufacturing techniques)

The **Non-Linear Computational Mechanics** group specializes in tailored software development and numerical simulation of problems involving large deformations, complex contact situations and multi-physics couplings. The group's finite element software METAFOR can deal with complex material behaviors including damage and fracture propagation for both metallic and composite materials.

The **Mechanical Vibrations Lab** focuses on the theoretical and experimental dynamic analysis of jet engine mechanical components. The main topics on which the lab has developed a strong research expertise are the following: structural design of aircraft engines, turbomachinery rotordynamics, vibration testing and modal analysis.

The **Multibody & Mechatronic Systems Lab** develops computer-aided tools for the mechanical and control design of deployable space structures, large telescopes, robots, machine tools, wind turbines, vehicle suspensions and powertrains. The team is also involved in the Laboratory of Human Motion Analysis of ULiège.

The **Multiphysics & Turbulent Flow Computation** group is specialized in computations of turbulent flows and complex multiphysics phenomena covering a broad range of applications in aerospace and other fields, ranging from turbulent combustion in scramjet engines to polymer drag reduction in turbulent incompressible flows.

The **Precision Mechatronics Laboratory** (PML) is developing instrumentation and strategies for actively measuring and controlling the vibrations of structures. Over the years, it has developed internationally recognized expertise in high precision control of large instruments dedicated to experimental physics, including gravitational wave detectors, particle colliders, segmented ground and space telescopes, satellites and light sources.

The **Space Structures and Systems Laboratory** research activities include spacecraft structures, nonlinear vibrations, astrodynamics and low-energy spacecraft transfer trajectories, ray tracing methodologies for thermal radiation, system identification, structural health monitoring and vibration mitigation.

The **Turbomachinery and Propulsion Lab** carries out research in turbomachinery design and aerospace propulsion using numerical methods and high-performance computing. The lab also runs a number of dedicated test benches.

Urban & Environmental Engineering (UEE)

The **Materials and Structures Mechanics laboratory** offers possibilities for aeronautical firms to carry out mechanical tests on different types of aircraft components, such as rods, lubrication groups, bearing supports, flap actuator parts and composite or metallic engine components.

Materials and Solid Mechanics team focuses on materials (steel, Ti, Al...), their characterization, forming processes and behavior modelling. Development and identification of constitutive thermo-mechanical-metallurgical laws rely on macroscopic phenomenological or multi-scale approaches and crystal plasticity models. Implemented within FEM codes, these laws and post processors predict stress, strain, microstructure, rupture during forming processes, static or cyclic loading. Fatigue, creep, corrosion and additive manufacturing are the current topics. Since 1984, MSM team has developed its own non-linear finite element code Lagamine.

EEI-Montefiore Department

Applied and Computational Electromagnetics (ACE) group: Electromagnetic Compatibility (EMC) tests according to MIL STD 461 (D/E/F) and RTCA DO 160 in reverberating and semi-anechoic chambers. Modeling of electromagnetic systems from statics and quasistatics to wave scattering and optics.

INTELSIG specializes in the acquisition, processing, analysis, and exploitation of a variety of signals and images for a variety of applications. It routinely deals with audio, sound spatialization, biomedical signals, radar signals and images, stereoscopic 3D images, ladar images, video analysis, motion analysis, etc.

The **Microsys laboratory** carries out exploratory R&D in the fields of microsystems and energy harvesting or scavenging systems. Microsys is involved in the design and integration of ultra-low power wireless sensor microsystems for structural health monitoring and environment sensing in harsh conditions.

Chemical Engineering

CRYO - Cryotechnology: The **CRYO group** has specialized in solving dedicated problems on components or equipment of cryogenic engines for the European spacecraft "Ariane". To achieve this, specific test benches are operated, with the essential characteristic of an extremely complete instrumentation managed by a high-performance and flexible data acquisition system.

Space sciences, Technologies and Astrophysics Research unit (STAR)

More than 100 scientists of STAR unit at ULiège conduct cutting-edge research focussing on:

- **Planetology:** detection, characterization and direct imaging of exoplanets, study of planets and small bodies of the Solar System, composition and dynamics of Earth's atmosphere;
- **Stellar astrophysics:** observational characterization and modelling of stars and their evolution, interaction of stars with their surroundings, high-energy emission;
- **Cosmology**, dark energy, extragalactic astrophysics & astro-particles: quasars, gravitational lensing, gravitational waves, large-scale structures, dark matter, cosmic rays;
- Instrumentation: **Earth observation** and astronomy payloads and satellites, ground-based instruments, custom-designed instruments dedicated to special applications.

STAR researchers are involved in the development of space missions and ground-based instruments, as well as in the gathering and modelling of data obtained using the largest international observatories and with STAR-owned telescopes (like TRAPPIST). STAR includes a wide interdisciplinary expertise in the field of instrumentation, through the research division of the Centre Spatial de Liège, which links the mission definition to the scientific interpretation of data.

UCLouvain

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With more than 3000 researchers and an annual research budget of 225 M€ (European, national and regional programs), the research is a true driving force behind UCLouvain's activities. The Knowledge and technology transfer office of UCLouvain can advise you to find the most appropriate contact especially for expertise that does not appear hereafter.

Materials

Composites, hybrids and architectured materials

Structural / Bio-sourced / Nano-composites, Hybrid materials, Functional properties, Coatings, Mechanical behaviour, Tribology, Thermosets & thermoplastics - Thomas PARDOEN, Christian BAILLY

Polymers and functional surfaces

Polymer morphology and processing, Smart coatings - Alain JONAS

Nanomechanics and nanophysics

Materials characterisation, Atomic force microscopies - Bernard NYSTEN

Materials manufacturing

Metal Processing, Metal additive manufacturing, Friction stir welding, Friction stir processing, Plasticity & Damage - Aude SIMAR, Thomas PARDOEN, Pascal JACQUES

Sciences and engineering

Centre for Space Radiations

Planets, Inside, Rotation, Internal geophysics, Space Radiation - Véronique DEHANT

Cosmology, Universe and Relativity at Louvain

Cosmology, Gravitation, Universe Sciences - Christophe RINGEVAL

Neural control of movement

Dexterous manipulation, Motor control, Microgravity, Parabolic flights - Philippe LEFEVRE, Jean-Louis THONNARD

Mathematical Engineering

Optimization and Control, Graph theory, Collaborative / Multi-agent / Decentralized systems - Raphaël JUNGERS, Julien HENDRICKX

Mechanics

Mechatronic, Electrical Energy, and Dynamic Systems

Optimal design and control of electrical actuators and electrical drives, Multibody and Multiphysics Modeling, ROBOTRAN software - Bruno DEHEZ, Paul FISETTE

Biomechanics

Experimental biomechanics, microCT imaging, 4DmicroCT, Mechanical testing, Contrast-enhanced microCT - Greet KERCKHOFS

Civil and environmental engineering

Drone-Based Additive Manufacturing, Robonumerization of the construction, Geophysical & environmental fluid dynamics, UAV-based photogrammetry - Pierre LATTEUR, Sandra SOARES FRAZAO

Fluid mechanics

Multi-phase flows, Reacting flows, Propulsion, Numerical modeling, HPC - Miltiadis PAPALEXANDRIS

Turbulence and Vortical Flows, Aerodynamics and Control

Numerical Methods, Scale Resolving Simulations, Wake Flows, Wind Turbines, Collaborative Control of Distributed Systems, HPC - Philippe CHATELAIN, Grégoire WINCKELMANS

Earth observation and climate

Environmental Sciences, Environmetrics and Geomatics

Optical and SAR Remote Sensing Algorithms Development, Agriculture and Forest Monitoring, UAV systems, GPR - Pierre DEFOURNY, Sébastien LAMBOT, Quentin PONETTE

Geography, Land use change monitoring

Remote sensing of agriculture, Forest cover and other land use / land cover changes, for understanding drivers of land-use change - Patrick MEYFROIDT

Earth system science

Tipping points, Optimal decision, Anthropocene trajectories - Michel CRUCIFIX

Information & Communication Technologies

Communication Systems and Networks

Signal Processing for Communications, Estimation (synchronization) and Detection, Positioning & localization, Radar - Luc VANDENDORPE

Electronic Circuits and Systems

Radiation effects and hardening, Design & Characterization, CMOS, Sensors, Ultra-low power microsystems - Denis FLANDRE, David BOL, Laurent FRANCIS

Microwave Engineering and Applied Electromagnetism

Satellite communications, Antenna arrays, Meta-materials/surfaces, Radar, Computational electromagnetics - Danielle VANHOENACKER, Christophe CRAEYE, Claude OESTGES

Secured systems engineering

Software vulnerability detection, Malware detection, Blockchain, Formal methods, Software/model based testing - Axel LEGAY

Crypto group

Cryptography and information security, Embedded systems, Efficient and secure implementations - François-Xavier STANDAERT, Olivier PEREIRA, François KOEUNE

Networked systems security

Security of communication networks and networked applications, IoT, Anomaly and intrusion detection - Ramin SADRE

Cloud and Large Scale computing

Distributed systems, Systems security, Dependability, Blockchains - Etienne RIVIERE

IP Networking

Lab Internet Protocols, Multipath TCP, Multipath QUIC - Olivier BONAVENTURE

Louvain Verification Lab

Functional Requirements Coverage, Autonomous space-bound applications - Charles PECHEUR

Technological platforms

Cyclotron Resources

Centre Radiation testing, Electronics, Cyclotron, ESA external test facilities - Marc LOISELET, Nancy POSTIAU

Lasers & Optics

Laser, Optical characterization, Spectrometry, Spectroscopy - Clément LAUZIN

Micro- and Nano-Fabrication Platform

Electronics, Micro- and nano-fabrication, 1000 m² cleanroom - Christian RENAUX, Sorin MELINTE, Sébastien FANIEL

Surface Characterisation

Surface characterisation, ToF-SIMS, XPS - Arnaud DELCORTE, Claude POLEUNIS, Pierre ELOY

Wallonia Electronics and Communications Measurements

Electrical and electromagnetic characterization (DC - 130 GHz), Micro- and nanotechnology, Anechoic chamber - Pascal SIMON, Valeriya KILCHYTSKA

Microscopic Characterization of functional and nanostructured materials

Optical, electron and scanning probe microscopies, FTIR and Raman spectroscopies - Luc PIRAUX, Delphine MAGNIN

Structural Molecular Analysis

RMN, Mass spectroscopy, XRD, Chromatography - Yaroslav FILINCHUK, Koen ROBEYNS

Processing and Characterisation of Inorganic materials

Processing of metallic materials, Shaping and forming, Microstructure characterisation and analysis, (micro) Mechanical testing - Marc SINNAEVE, Pascal JACQUES

Human sciences

Institute for Interdisciplinary Research in Legal Sciences

Tech law, ethics and anthropology, Privacy, Intellectual property - Christophe LAZARO, Alain STROWEL

UMons

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The University of Mons deploys its scientific expertise in areas like materials sciences and engineering, information technology and computer science, biosciences... Most of the research at UMONS is organized in 10 institutes which cover: New Arts and Media Technologies (NUMEDIART), Biosciences (BIOSCIENCES), Information Technologies and Informatics (INFORTECH), Language Sciences and Engineering (LANGUAGE), Materials Sciences and Engineering (MATERIALS), Risk Management Sciences (RISKS), Complex Systems (COMPLEXYS), Energy (ENERGY), Health Sciences and Technologies (HEALTH), Human and Organizational Research and Development (HUMANORG).

The university maintains many fruitful exchanges with its Multitel, Materia Nova and INISMa research centres and with the spin-offs and startups which gravitate around it.

UMONS is active in many scientific disciplines related to Aeronautics and Space research development: Materials and production technology, Fluids mechanics and thermal engineering, Reliability and maintenance, Surface treatment and last but not least, Information and Communication Technologies.

Materials and production technology

UMONS develops an expertise in the field of manufacturing processes. Specific research projects address design of closed mold composite parts for aircrafts or simulation of high-speed machining.

Other topics to be mentioned are the design of piezoelectric motors to provide a gain in weight and control in space applications, the gained experience in additive manufacturing methods such as EBM, the development of reinforced high temperature thermoplastic and thermoset resins, and the design of power electronic motor drives.

UMONS has some projects related to the manufacturing of composites parts for aircraft applications by a specific process, Resin Transfer Molding, which consists in injecting some resin in a closed mold filled by a fibrous reinforcement.

Keywords: Resin Transfer Molding, piezoelectric actuators, Virtual Manufacturing, composite materials, Additive Manufacturing, thermoplastic and thermoset resins, dc-dc converter, wide bandgap components, organization of production units and operational maintenance.

Fluids mechanics and thermal engineering

UMONS research efforts concentrate on the study and simulation of any type of flow. Research is mainly carried out with advanced CFD (Computer Fluid Dynamics) software. Numerical simulation methods for radiant transfer in absorbing media are also developed in UMONS as well as combustion gases special properties modeling.

In particular: Modeling, development and simulation in Computation Fluid Dynamics (CFD) for aeronautical, turbomachinery and multiphysical applications. The main development themes concern fluid-structure interactions, advanced preconditioning methods and turbulent transition modeling. Applied studies are focused on design and optimization for flow problems in facilities or engines (optimization of fans, compressors and turbines, design of separator and cyclone chambers...)

Keywords: Design and optimization of fan and turbo-generators blades, modeling and numerical simulation of high temperature systems, turbo-alternators cooling.

Reliability and maintenance

UMONS research activities aim at developing techniques to improve the safety of mechanical equipment and optimize their maintenance strategies. UMONS has significant expertise in structure dynamics, rotating machines, and vibratory solicitations.

Past and current research activities include: experimental modal analysis and finite element model updating, identification of input forces by inverse methods, vibration testing and

finite element modeling of electronic boards embarked on spatial vehicles, equivalence criteria between vibration tests, analysis and modeling of pyroshocks, prediction of ground vibrations induced by railway vehicles.

Keywords: Diagnosis of vibration problems, estimation of the residual lifetime of equipment, optimization of maintenance policies, predictive maintenance of electromechanical devices, pyrotechnical shocks on electronic spatial devices, maintenance 4.0, health management.

Surface treatment

Materials performances depend on the properties of their surface and on the interactions of the latter with the surrounding media. Modifying a surface or introducing surface layers contribute to optimizing materials properties or make new properties appear (self-healing, corrosion resistance, wetting, absorption, friction and wear, optics, viscosity, etc.). UMONS research activities focus on this.

UMONS is also specialized in the study of surfaces and interfaces: with the structural, electronic, and optical properties (OLEDs and organic solar cells), thin film deposit (plasma technology) and surface analysis (depth profiling and elemental composition).

Keywords: Plasma surface treatments, thin organic coating, surface functionalization, corrosion resistance, surface and interface characterization, chemical sensors, electrochemistry of functional coatings, texturing surface.

Information and Communication Technologies

With the recent deployment of drones and the growing need to process and interact with large multimedia databases, mastering and developing innovative data processing techniques has become a crucial expertise in many areas including aerospace and aeronautics. UMONS has leading-edge expertise in image and speech processing (also in noisy environments) and human-machine interfaces. It has also developed specific skills in positioning and indoor/outdoor geolocalization (in airports) and eye-tracking in virtual spaces (VR) which could be applied to space conditions.

UMONS also benefits from a large group of experts filling the entire data chain, including:

- optical-fiber-based sensors, low-power sensors, GPS receivers for nanosats, embedded signal processing and edge computing ;
- selection of the appropriate wire and wireless transmission technologies and standards, low-power transmission, indoor/outdoor geolocalization and transmission in adverse conditions ;
- cloud storage, parallel and distributed computing ;
- data mining, artificial intelligence (AI) and Edge AI.

The Fablab Mons, which benefits from a specific focus on Internet of Things (IoT) brings the research results and experts in this field closer to entrepreneurs and industries to create innovative solutions.

Keywords: Artificial intelligence, speech and image processing, AR/VR, (edge) AI, indoor geolocalisation, IoT, GPS, HPC, telecommunications.

UNamur

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Recently updated, the University of Namur research landscape includes 11 transdisciplinary research institutes. Research activities lean on state-of-the-art scientific equipments, technical knowhow and sharp expertise, grouped in 8 technology platforms (http://platforms.unamur.be/). Researchers develop inter- and transdisciplinary projects in fundamental as well as in applied research. They are accessible to the scientific community as well as to industries. The University of Namur maintains the appropriate balance between fundamental and applied research.

Namur Digital Institute - NaDI

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Grouping five research centers from various disciplines, ranging from sociology, philosophy, law, management to computer science, the Namur Digital Research Institute offers a unique multi-disciplinary expertise to all areas of informatics, its applications and its social impact.

The conviction that led to the creation of NaDI is the need to cross disciplinary perspectives on the ubiquitous digital technology that changes the lives and behaviours of our administrations, companies and individual citizens. NaDI currently brings together about 150 researchers and works on many research projects related to the digital technology, both at the Regional, Belgian and European levels.

Among the main expertises offered by NaDI are formal methods, man-machine interfaces, requirement engineering, modeling techniques to reason and design complex software systems, testing, quality insurance, software product lines, databases, big data, machine

learning and more generally artificial intelligence, security, privacy, ethics by design, technology assessment and legal reasoning.

Namur Institute for Complex Systems - naXys

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From the space debris to the whole universe, in the solar and extrasolar systems, naXys, the Namur Institute for Complex Systems is renowned for its numerical and analytical approaches of space dynamics. The naXys institute has a strong research component in orbital motions, space geodesy and physical cosmology. The researchers are partners of several space missions (BepiColombo, Euclid, Juice, Cheops) where their theoretical approaches are appreciated in the mission analysis and preparation phases; they contribute to the modeling of the dynamical problems and observables, as well as to the building and refining of suitable numerical software and tools (frequency analysis, efficient algorithms, statistical forecasts, chaos detection, stability criteria).

In many industrial and research projects, one attempts to improve a system by modifying its decision variables subject to constraints: this is optimization. naXys focuses on the numerical solution of such problems that is the effective calculation of the best values for the decision variables. It focuses in particular on nonconvex and large scale instances. Both theoretical questions, such as design and convergence properties of the algorithms, and associated software issues are studied.

Research Center in Physics of Matter and Radiation - PMR

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http://pmr.unamur.be/en

The 5 research themes of the Department are interconnected, environment, for instance, being linked to progress in materials, but also to developments in laser spectroscopy, theoretical calculations and life sciences. All 5 themes deal with the interaction between matter and radiation.

The PMR shows a great expertise in the development of innovative materials. The new materials generally present surfaces or interfaces which give them original properties. The PMR has developed a great expertise in the field of all types of thin film deposition by different physic-chemical techniques. The new materials are very often nanomaterials, such as nanoparticles (TiO_2 ...), functionalized carbon nanotubes, nanocomposites, bioinspired materials, etc. A long experience in digital modelling for solid physics and the access to powerful computers enables to explain, even predict, numerous experimental observations. The development of all these new materials is regularly done in partnership with Walloon industries.

The PMR develops also very high resolution spectrometers based on laser diodes and CO_2 lasers to study gas phases in atmosphere. It is also active in remote spectroscopy of planetary atmosphere or the simulation of nuclear reactions produced in stars.

Laboratory of Chemistry and Electrochemistry of Surfaces - CES

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The CES research focuses on the design of surface and interface materials and their fabrication by chemical processes, in particular electrochemistry, self-assembly and soft chemistry. These surface materials can be thin or ultra-thin organic and / or inorganic film assemblies on metal substrates, metal oxides, and polymeric films. The team's research fits naturally into the general theme of structured surface materials considering micrometric and / or nanometric scales. The studies are carried out with the aim of maximizing the performances (desired properties, durability, reliability, cost and ecological constraints), the chemical selectivity of the compounds to the targets (surfaces, polymer matrices, etc.) and the control of structure at the molecular level.

ROYAL MILITARY ACADEMY

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DEFENCE

ENGINEERING

The Environmental Mechanics and Mobility Applications (EMMA) research group of the Royal Military Academy is conducting research in the domains of advanced mobility and dynamics (green propulsion and platform dynamics), mechanical and environmental engineering (vibrations and hazards in flows), as well as applied robotics (collaboration strategies, sensor-platform integration, close-in and stand-off detection). All with a strong emphasis on aeronautical research questions that are investigated using state-of-the-art multi-disciplinary numerical simulations or experimental measurements.

The EMMA research group is organized around three units:

- advanced mobility and dynamics dealing with green propulsion by rotors and propellers including aeroacoustics, gaseous jet injection, flight dynamics of helicopters and UAVs, and propeller aircraft design,
- mechanical and environmental engineering ranging from smoke containment and fine-dust dispersal, to noise propagation issues and vibration testing or control, as well as virtual vibrations and simulation,
- applied robotics for high-risk applications and challenging environments handling autonomous vehicles with a particular emphasis on collaboration strategies in swarms of heterogeneous platforms operations, sensor-platform integration, close-in and stand-off detection and decision

Research and development questions are dealt with a strong multi-disciplinary background and using state-of-the-art numerical simulations or experimental measurements which serve as the base for horizontal cross-fertilization. Several simulation packages are available for High Performance Computing. Next to a BELAC ISO 17025 accredited vibration test facility with controlled climate, experimental facilities include several low-speed tunnels completed with a wide variety of measurement systems based on: Particle Image Velocimetry, Light Induced Fluorescence, Laser Doppler Velocimetry, Hot-Wire Anemometry, Infrared Thermography, Ultrasonic Anemometry and classical anemometry. Optimization techniques (genetic, adjoint, or gradient) are called in whenever necessary.

Fixed and rotary-wing unmanned systems are also available with different sensor suites.

Haute Ecole Condorcet

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The Provincial High School Condorcet offers about fifty courses (bachelor's and masters).

Condorcet High School train graduates in Aerotechnics.

Applied research and community services are important activities in the high school. These businesses, in close contact with professional circles, contribute to the scientific quality of the teaching provided and the influence of the high school in society.

Haute Ecole de la Province de Liège

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http://www.provincedeliege.be/hauteecole

Welcome to the Higher Education Institution of the Province of Liège !

The Higher Education Institution of the Province of Liège awards a wide range of Master and Bachelor Degrees in many subjects.

Whatever the field of study, our Institution offers trainings combining theoretical and practical aspects as it allows students to carry out field placements and meet the professionals.

From their very first year of studies, students are confronted with the real and professional world and are provided with efficient tools to do so.

Though it remains a « school within the city », our Institution is fully involved in the Bologna Process and aims to open up to the whole of Europe. It has been collaborating, for years now, with other European HEI's and has developed fruitful mobility programmes for students.

Proud to be known as a welcoming institution, the Higher Education Institution of the Province of Liège is fully integrated in the new European Higher Education Area.

Research Centers

BCRC

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ENGINEERING

BCRC, the Belgian Ceramic Research Center, has a proven expertise in the field of technical ceramics and metal-ceramic composites.

In order to provide state of the art support to the industry, our experts rely on 2 technological platforms. The sintering platform proposes several densification techniques (SPS, Gas Pressure Sintering, HIP, HP...) to address all kind of ceramics oxides, nitrides, borides, carbides... The second platform gathers original rapid manufacturing technologies: selective laser melting, laser cladding, inkjet printing, laser and hydrid milling.

CENAERO

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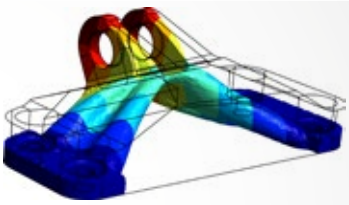
AERO SPACE ENGINEERING

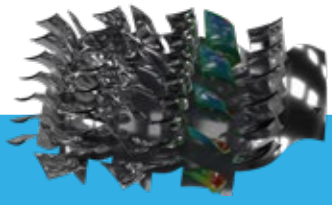
Cenaero is a private non-profit applied research center providing to companies involved in a technology innovation process numerical simulation methods and tools to invent and design more competitive products. Internationally recognized, in particular through its research partnership with Safran, Cenaero is mainly active in the aerospace (in particular turbomachinery), manufacturing, process engineering, energy and building sectors.

Cenaero provides expertise and engineering services for advanced (composite and metallic) structural design, manufacturing processes modeling (welding, machining and additive manufacturing), high resolution CFD for aeronautics (large eddy and direct numerical simulations), hypersonic flows and ablative materials, buildings and smart cities, design space exploration and optimization, thermo-fluid processes and systems modeling. Cenaero also provides software through its massively parallel multi-physics platform Argo, its manufacturing process simulation and crack propagation platform Morfeo and its design space exploration and optimization platform Minamo.

Cenaero operates experimental facilities in composite manufacturing and prototyping as well as the Tier-1 Walloon supercomputing infrastructure with 14,000 computing cores.

Cenaero is certified against the EN 9100:2018 and ISO 9001:2015 standards.





CETIC

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ENGINEERING

The Centre of Excellence in Information and Communication Technologies (CETIC) helps companies to enhance software-based solutions and to integrate ICT innovations into their products, processes and services. CETIC continually develops its expertise through collaborative research projects involving regional and European actors.

CETIC provides expertise in three complementary axes: software engineering, ICT technologies and embedded systems.

CETIC can support the Aeronautics sector with methods and tools

- for developing high-quality IT solutions;
- for Model Driven software engineering;
- to enhance software reliability, safety or security;
- for compliance with international standards, where software or embedded systems development life-cycle are impacted.

CRA-W

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SPACE DRONE ENGINEERING

Founded in 1872, the Walloon Agricultural Research Centre (CRA-W) is a Public Research Organization (PRO) offering a multidisciplinary scientific expertise in the fields of the agriculture and the agrofood industry

The Agriculture and Natural Environment Department and the Production and Sectors Department cover various activities:

- Technico-economic research on GNSS-based systems and TIC (busCAN, ISOBUS) for agricultural machinery (navigation aids, auto-guidance, field operations) to reduce inputs (pesticides, fertilizers, energy) while increasing worker's comfort.
- Applications of the Earth Observation to the crop management at field and regional levels (biomass assessment and environmental indicators), models and Decision Support Systems (e.g. crop nitrogen status) using temporal, multi-sensors information and assimilation techniques.
- Earth Observation services for crop growth monitoring and crop damage assessment Systems for crop yield estimations and natural risk management.

CRM GROUP

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AERO SPACE ENGINEERING

CRM Group is an R&D center with a high level of expertise in metal industry, surface treatment, innovative design,hybrid,additive manufacturing ....

CRM Group is an R&D organization active in the field of metal and steel production with the mission to develop new processes, products and applications. CRM was funded in 1948 to become the collective research Centre for the Steel and Non-Ferrous Metal Industries with laboratories and pilot facilities located at Liège and Gent. CRM Group employs 265 employees and researchers.

At CRM Group, the activities are centred on the production, transformation, coating and use of metallic materials. We offer R&D and technology solutions focusing on the development of innovative processes and products that create value for our industrial partners (42 members in 2018).

CRM is involved in several projects for AEROSPACE industry

As concerns ESA projects, CRM is running three activities in the field of additive manufacturing (AM). The first of them is focused on the surface processing of parts made by AM. the second focuses on primary structures made by AM ;the third is dedicated to the development of New Aluminium alloys .

Furthermore, CRM has developed for ESA face change materials heat storage devices devoted to electronic thermal stability.

CRM is developing an extensive expertise in the field of HYBRID ADDITIVE MANUFACTURING for aerospace/aeronautic applications.

CENTRE SPATIAL DE LIEGE

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SPACE ENGINEERING

Created by the ULiège, the Centre spatial de Liège is a research center dedicated to space instrumentation including environmental test facilities and high level laboratories. It works for the European Space Agency (ESA), for the space industry and for regionals firms.

CSL activities are organized in 3 programs:

- Tests: characterization and qualification of space hardware in severe environment.
- Space Systems: definition, design, integration, ground and flight calibration of scientific payloads under the authority of Space Agencies (ESA, NASA, JAXA...).
- Technology: research & development support in the following fields: Optical Design & Metrology, Mechanical & Thermal

Signal Processing

CSL activities on radar imagery processing have resulted in the creation of the "Space Environment and Remote Sensing Group" which has acquired an international reputation in the field of SAR data processing.

Electronics

The lab has a state of the art expertise in microcontrollers, digital electronics, analog circuits, radiation resistance, ITAR, etc. The team has the ability to join those expertises in order to design, integrate and validate global electronic systems for the space payloads.

Surface Engineering

Our lab mastered surface treatments based on deposit coatings, ion beam figuring, reactive plasma etching, surface micro texturing and related metrology.

Lasers & NDT

The competences of the group are centered on laser metrology system developments. Typical systems developed are a high resolution holographic camera for non-destructive testing and full-field deformation metrology, laser distance-meter, ... The group extends its expertise to other techniques: shearography, thermography, laser ultrasounds.

Optical design & Metrology

The Optical design and metrology lab covers different activities: Development of optical ground support equipment, new metrology tools, flight metrology instrumentation, and support to industry in metrology problems..

Mechanics & Thermics

Amongst the wide spectrum of our competences, we want to highlight: Cryogenics, qpace mechanisms for optical instruments, qolar concentration, thermal control.

Test facilities

The CSL performs various qualifications on space instruments or equipments by submitting them to environmental space conditions. The specific CSL assets in the test laboratory are: Hyperclean environment, tailored thermal environment from cryogenics (4°K) to hot cases (160°C), optical oriented design and calibration expertise.

Quality

The lab is especially becoming a reference in organic contamination analyses, performed to verify that the stringent contamination and cleanliness specifications applied to spacecraft materials and associated equipment are met.

ISSEP

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AERO SPACE DRONE ENGINEERING

The Scientific Institute for Public Services (ISSeP) is a Public Research Organisation carrying in-situ measurement of environmental data since 1990.

ISSeP has a legacy of over 100 years of research and expertise in environmental monitoring in Wallonia. It is the worthy successor to the Mining Institute (1902-47), the National Institute of Coal Industries (INICHar-1947-67), and the National Institute of Extraction Industries (INUEx-1967-90). The Institute supports administrations and private companies in risk assessment and environmental metrology, with networks for air, waters, soil, waste, sediments, and ionizing radiations.

By characterising the environment through regulatory, normative and technical observations as well as comparing data, ISSeP supports the regional and local authorities in making the right decisions when it comes to environmental policies. ISSeP is also distinguishable for its benchmark laboratory, the only one in its field in Wallonia. ISSeP provides all those involved in the public and private sectors with an independent, transparent, and impartial public service.

Since 2016, a new unit integrates in-situ and Earth Observation data in environmental decision making. Current studies within the Remote Sensing and Geodata Unit focus on land cover/use monitoring, change detection, risk assessment and geodata integration. Earth Observation data processed include satellite, aerial and RPAS data. The unit participates to international project in Europe and Africa. Finally, ISSeP is a member of the Copernicus Relays Wallonia and organizes, with the Spatial Cluster Skywin, the Earth Observation Working Group (GTEO) gathering numerous institutions from the Walloon EO ecosystem.

MATERIA NOVA

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AERO SPACE DRONE ENGINEERING

Materia Nova is a research and development center focused on advanced and disruptive technologies in the field of sustainable materials, multifunctional surfaces, polymers and composites, materials for energy and biotechnology.

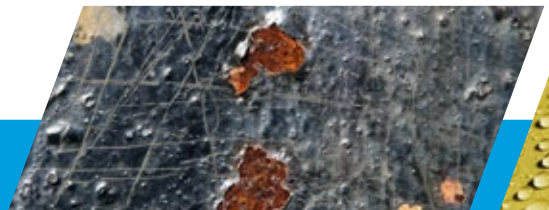
Materia Nova offers partnership with small, medium or large companies for research and/or development projects and facilitates the technological transfer from the academic to the industrial world. This transfer helps companies to test in a real environment the solutions brought by the research, from lab to pilot scale, before industrialization. Today, this technological transfer is made possible by, among others, the subsidiaries of Materia Nova: IONICS and NANO4, specialized in surface treatments and nanomaterials, respectively.

Materia Nova proposes the following products and services:

- R&D projects in the field of new materials, multifunctional surfaces, energy, biotechnology, bio-based solutions and recycling
- Upscaling on pilot or industrial equipment
- Characterization, testing, Impact assessment of materials and bio-based materials.
- Life Cycle Analysis
- Theoretical and practical trainings on new developed technologies
- Market studies, state of the art, technology watch and targeted consulting

The main R&D research axes of Materia Nova are focused on surface modification by different technologies: wet coatings, plasma technologies, (bio)polymers and (bio) composites, white biotechnology, energy management and life cycle thinking.

More specifically, Materia Nova is specialized in the formulation and deposition of hybrid coatings (sol-gel/organic resin), the surface modification by plasma processes including ion implantation and electrochemical deposition (anodization, electroplating, electropolymerization) covering a large field of properties and applications (anti-corrosion, anti-dirtying, optical layers, wear resistance. In the field of polymers and composites, Materia Nova is specialized in reactive extrusion and compounding with special focus on flame retardant composites, conductive materials and self-healing.



MULTITEL

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AERO SPACE DRONE DEFENCE ENGINEERING

Multitel is an innovation centre, leading applied research and development activities for industry leaders and SMEs.

Multitel's mission is to promote innovation by providing market-driven scientific and technical support for developing, implementing and monitoring new technologies, in a variety of technological domains

More precisely for aerospace sector, activities of Multitel concern:

- prototyping of optical fibre sensors for SHM (Structural Health Monitoring), fibre lasers (for LIDAR applications), material processing (composite materials, surface texturisation) and non-destructive characterization (THz, OCT), custom optoelectronic systems
- (speech oriented) HMI for aeronautics
- GCS/UAV communication systems (5G network)
- satellite based IoT systems
- satellite/drone image processing (visible, IR, hyperspectral,...)
- image oriented non-destructive quality control.

SIRRIS

sirris
driving industry by technology

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AERO SPACE DRONE DEFENCE ENGINEERING

Sirris, the Collective Center for the Belgian technological industry.

Sirris is the collective research center of the technological industry created to strengthen the competitiveness of this sector through technological progress and innovation.

By offering its services, Sirris helps companies in a targeted way to make the transition from technological know-how to marketable innovations. With 70 years of experience, field expertise, practical help and tailor-made information, Sirris helps its members to progress.

We can offer several key assets for industry that want to remain innovative:

- a pool of experts in all relevant disciplines, for example: intelligent, lightweight or miniaturized product design; software engineering; mechatronics; data processing
- many contacts in a solid network with the academic world and industry
- several specialized labs, for a quick assessment of feasibility:
  - Smart Connected Innovation Lab > for products with software components
  - Product Development Hub > for intelligent, lightweight, or miniaturized products
  - Software Engineering Lab > for products with a high software component
  - Data Innovation Lab > for challenges in the field of data analysis
  - Mechatronics experts
- a holistic view of value and technology chains
- continuously updated knowledge on key technologies and processes
- a long list of references
- several demonstrators illustrating the challenges and opportunities

VON KARMAN INSTITUTE FOR FLUID DYNAMICS

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secretariat@vki.ac.be
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AERO SPACE DEFENCE ENGINEERING

At the leading edge of fluid dynamic research

Space vehicles re-entry, safety of nuclear reactors, noise and pollution reduction, performance of aircraft engine and renewable energy systems define to a large extent the research performed at the VKI.

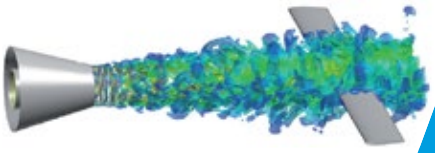
Located near Brussels, the von Karman Institute for Fluid Dynamics (VKI) is a non-profit international educational and scientific organization created in 1956 providing post-graduate education specialized in fluid dynamics and encourages "training in research through research". VKI has a permanent staff of approximately 100 persons. Besides the permanent staff, about 190 students and temporary researchers are involved in the different academic programs and 580 in the lecture series and workshops.

The Institute performs experimental and numerical research in the fields of Aeronautics and Aerospace, Turbomachinery and Propulsion, Environmental and Applied Fluid Dynamics and carries out research contracts for industry

In the 60+ years since its creation, VKI has acquired an expertise and research infrastructure (more than 50 wind tunnels and laboratories), which is renowned around the world. This infrastructure is the backbone of VKI's unique position in the world of Fluid Dynamics research; it allows VKI to study complex flows with speeds ranging from a few mm to a several km's per second. In other words, VKI's focus is on the 'high-end' of the market as depicted hereunder.

Some references of intermediate and final customers: ARCELORMITTAL, ATLAS COPCO, BEKAERT, EUROPEAN COMMISSION, EUROPEAN SPACE AGENCY, NUMECA, SAFRAN Group (SAFRAN AERO ENGINES, SAFRAN AERO BOOSTERS), SCK-CEN, SONACA, UMICORE

Center of Excellence: In recent years, VKI has been recognized as a Center of Excellence by several customers, such as SAFRAN Aircraft Engines, the European Space Agency (ESA) and the Belgian Center for Nuclear Studies (SCK-CEN). Since 2011, VKI acts as reference laboratory of ESA. CETIM (Centre technique des industries mécaniques) in France has established a common laboratory with VKI, a laboratory for two-phase flows and hydraulic technologies (Ledith).



Training Centers

TECHNIFUTUR

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Training, awareness, advising, e-learning and e-business are our assignments. They cover various fields, such as aeronautics, assembly, automation, design, measurement and inspection, machining, image and multimedia, etc. They meet the requirements of the regional, national and international industrial environment.

We target company staff, job seekers, teachers and students (for more information, go to our website www.technifutur.be).

More particularly and for more than 10 years now, Technifutur has been providing training to aircraft maintenance mechanics in the aviation sector. In 2007, the "Service Public Fédéral de la Mobilité et du Transport Aéronautique" granted the PART 147 approval, officially acknowledging Technifutur's competency and their right to conduct training and examination and to issue certificates for aircraft maintenance mechanics in accordance with the requirements of PART 66 levels A1, A2, A3 and A4.

On the basis of this recognition, of the acquired experience and the needs expressed by the aircraft industry, Technifutur now aims at expanding their skills and achieving the approval to provide levels B training and examination.

Technifutur is also recognized worldwide for its welding and non-destructive testing training courses.

WAN

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The WAN is an "assembly ground" of training. The WAN relies on different partners, such as centres of competency, aeronautical schools, Belgian Air Force and major players of industry (SONACA, SABCA...). The WAN covers all the needs of the aerotechnical sector.

Production

All technologies and methodologies linked to design, manufacture, repair and inspect cells, engines, avionics. Such as: CAD/ CAM (CATIA v5 & v6), analysis and functional dimensioning, operating gamuts, process understanding and assembly techniques (metallic/ composite), non destructive testing, finite element analysis and resolution methods (SAMCEF/ NASTRAN), quality (EN9100/EN4179), Lean Manufacturing, SPC methodologies...

Maintenance

Trainings for jobs in airports or industrial aeroplane workshops, propulsion mechanisms, onboard equipment. Approved as official training centre (EASA BE.147.002), the WAN provides recognised (meets EASA Part-147 requirements) basic training for Part-66 Aircraft Maintenance License A1, A2, B1.1, B1.2, B2 and aircraft type training for Airbus or Boeing ranges for B1.1, B2 and C. Many others tailored courses and exams are possible in French or English. For its training, lectured by highly qualified senior instructors, the WAN owns a functional Boeing 727 and various aircraft parts, engines, avionics.

Automated Fiber Placement

An AFP machine manufactures complex shapes using composite material. An Ingersoll AFP is installed at SONACA facilities. The centre is able to conduct research for advanced aerospace applications and industrial process development. The WAN's main target is to train specialised people using AFP technology.

Partners

AWEX

Wallonia.be

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The Wallonia Export-Investment Agency (AWEX) is the Wallonia Region of Belgium's government agency in charge of foreign trade promotion and foreign investment attraction. The agency has a worldwide network of 109 Economic Commercial Advisors.

As a **foreign trade agency**, AWEX carries out a mission of promotion and information for the benefit of both Wallonia and the foreign business community.

Upon request, AWEX assists buyers, decision-makers, importers and foreign prospects by:

- Providing economic data on Wallonia and its export potential
- Disseminating information on products and services from companies located in Wallonia
- Identifying companies in Wallonia for international partnerships
- Distributing lists of exporters from Wallonia

As an export partner for Wallonia-based companies, AWEX offers a wide range of export-oriented services and activities:

- General and commercial information on foreign markets
- Market studies tailored to specific areas upon request
- Organization and planning of marketing activities (international trade shows, economic missions, sector-based contact days...)
- Establishing contacts with international organizations
- Promoting Wallonia's export potential abroad
- Financial support and export financing
- Training in international careers

As a foreign investment agency, AWEX has an overall responsibility for the attraction of foreign investment in Wallonia. This includes seeking out and providing information to potential foreign investors. The agency also offers a pro-active follow-up service to investors already established in Wallonia. In addition, it is in charge of identifying new foreign investors for the acquisition of industrial sites under restructuring process.

TECHNOLOGICAL AND SCIENTIFIC NETWORK

SPW Recherche

The operational Directorate General for the Economy, Employment and Research (Research Department) offers a range of incentives and forms of assistance to increase the technological potential of researchers based in the Walloon Region.

http://recherche-technologie.wallonie.be

EEN network

Assistance to your SME to develop and exploit your technological expertise by setting up European partnerships

www.wallonieeurope.be

InnovaTech

The coach for your technological innovations witch helps you to structure your technological innovation projects from the emergence of the idea until its commercial exploitation.

www.innovatech.be

LIEU Network

Provides access to the resources and competences of universities and higher education institutions

www.reseaulieu.be

NCP-Wallonie

Free professional assistance at every stage of your European research project.

www.ncpwallonie.be

PICARRÉ asbl

Decision-making assistance for developing a management policy for your intellectual assets.

www.picarre.be

Wallonia Clusters

Network of technological clusters active in Wallonia

http://clusters.wallonie.be

Skywin
Aerospace cluster of Wallonia

Skywin is the Walloon Aerospace cluster (Belgium) consisting of an association of companies, research organisations and training centres engaged in public-private partnerships and in the implementation of innovative collaborative projects.

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