



54^e SALON INTERNATIONAL
DE L'AÉRONAUTIQUE & DE L'ESPACE
PARIS · LE BOURGET
19-25, JUIN 2023

41 Skywin Members at Paris Air Show

Aerospacelab
ALX System
Amos
Any-Shape
BeCover
BeBlue Cryotech
Capaul S.A.
CastingPar
Cenaero
Centre Spatial Liège
Coexpair
Consolidated Precision Products BE
CRM Group
Dardenne
Deltatec
Dumoulin Aero
Feronyl
Fn Herstal
GDTech
JD'C Innovation
La nitruration moderne

Mecasoft
MPP sprl
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Pix Coating
Sabca
Sabena Engineering
Safran Aero Boosters
Sensy Load Cells
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Technical Airborne Components Industries
Telespazio Belgium
Thales Alenia Space Belgium
Thales Belgium
V2i
The von Karman Institute for Fluid Dynamics



PARIS AIR SHOW 2023

LE BOURGET → HALL 2b

19/06/2023 → 25/06/2023



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SPACE



DEFENCE

Small satellites, data & insights

Activities and experience

Aerospacelab is a Belgium "new space" scale-up founded in 2018 by Benoît Deper. The company's vision is to enhance efficiency across markets by making geospatial intelligence both actionable and affordable. With the objective of becoming the European leader in satellite-based intelligence, Aerospacelab follows a vertically integrated approach, developing expertise both in upstream and downstream markets.

Aerospacelab, therefore, offers solutions to customers in three distinct markets:

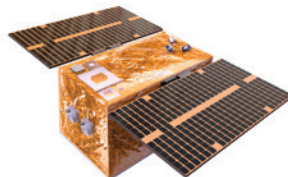
- Satellites
- Data (satellites' imagery)
- Insights (solutions based on artificial intelligence applied to satellites' imagery)

The company currently employs more than 180 full-time employees, and has an satellite assembly line close to its Mont-Saint-Guibert offices. In 2025, it will open a megafactory in Charleroi."

Technologies and products

Aerospacelab develops cutting-edge tools to automate a broad range of tasks ranging from surveying to monitoring. It processes heterogeneous datasets composed from various sources and can also customize the tools to incorporate your own proprietary datasets.

Aerospacelab offers high-performance satellite platforms, up to 150kg, for a pricing comparable to current 12U CubeSats. Leveraging investments already made for our own constellation's deployment, we have the capacity to design, manufacture, integrate and test 24 platforms a year with an unmatched performance-to-cost ratio. Platforms can accommodate various payload types, fulfilling demands from Institutional and Commercial actors. 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.



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DRONE



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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.

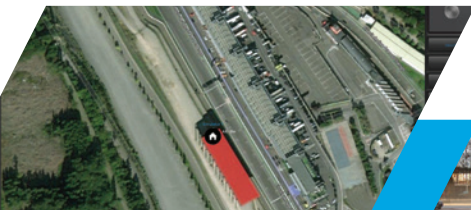
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The solution is dedicated to be easily integrated in any kind of structure, to make the UAV an extension of business process, which means, that it's completely open to the connection with other software

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 themselves, without knowledge, our image recognition AI engine



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AERO



SPACE



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DEFENCE

AMOS is a company specialized in design and manufacturing of high-precision optical and mechanical systems for space applications, astronomy, scientific applications or industries. It combines a strong know-how in small and large optics polishing with an expertise in high-end mechanics. The result are cutting-edge optical, mechanical and opto-mechanical systems, possibly compliant with vacuum and/or cryogenic temperatures.

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, assembly, integration and test,
- Precise and reliable solutions for long-term use.

Main area:

- Professional Astronomy Systems: turn-key telescopes, telescope subsystems, 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 in other countries across the world.



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AERO



SPACE



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DEFENCE

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 is your ISO 9001 / EN9100 and ISO 13485 accredited AM production partner (Design + Manufacture). We print, monitor, measure, test, validate and certify - all in one location.

Any-Shape competitive assets are based on three main pillars:

Engineering, co-conception & design for additive manufacturing:

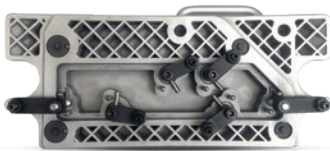
Any-Shape provides its customers with a professional support to exploit the full possibilities of industrial 3D printing while properly accounting for manufacturing constraints from the concept to the detailed design phase.

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.



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AERO



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DEFENCE

Beblue is proposing testing capabilities with cryogenic fluids, namely Hydrogen, Oxygen and Nitrogen both liquid or gaseous.

Beblue has a great expertise based on more than 3 decades in cryo tests.

We support our customer along their development from engineering support, material characterization to complex tests including test rig design.

Beblue is one of the 3 recognized ESA test centers.

Material Characterization

- Pin-on-disk tests in gaseous and liquid environments (N₂, O₂, H₂, He)
- Impact tests for material compatibility (LOx)
- Auto-ignition tests in Gox (120 bars , up to 500°C)
- Adiabatic compression test up to 1000 bars
- High cycling fatigue under cryogenic conditions (update for 2022)
- Cryogenic compatibility

COMPONENTS AND SYSTEM TESTING

Fully operational benches for tests in real dynamic conditions for space engine components

- Dynamic seals
- Bearings
- Valves
- Liquid or gaseous nitrogen and oxygen.
- Gaseous hydrogen
- 700+ sensors and measurement lines

Focus on H₂ based systems testing:

- Fuel cells with ULiege
- H₂ distribution & storage (composite)

OUR EXPERTISE to support your business

- Engineering office with strong expertise in testing:
- Cryotribology
- Expertise support
- Design capabilities for specific test rigs
- Test rigs integration & design
- Project management
- Test management & reporting
- 30+ years experience in cryotechnic technologies



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Aerodynamics test center Unique in Europe. BeCOVER will be able to test all types of compressors for the next generations of civil and military aircraft engines. The 3,000 m² facilities will be operational from 2023 and will serve as a genuine laboratory for industry and academia.

These new facilities will be used to validate breakthrough innovations in order to meet the major environmental challenges and requirements of tomorrow's aviation industry.

Covering a wide range of low and high-pressure compressor requirements, BeCOVER will have exceptional technical capabilities, including a closed air-loop system, making it possible to test turbomachine components under conditions at altitude and on the ground.

BeCOVER will offer a turbofan test capability, a multi-speed gearbox, heat resistance over 600°C as well as the possibility of co-piloting the tests remotely. These competences, initially applied to the field of aeronautics, could be used more widely by other sectors, for example, the energy sector. The 5 metres of usable space for installing the compressors will provide ample scope for diversity.

Safran Test Cells, the test cell unit of Safran Aero Boosters, will be in charge of building the test centre. The very best technologies for optimising resource consumption (energy, water, etc.) will be implemented.

Designed to serve the industrial sector, BeCOVER's facilities will also be made available to the academic and scientific world for experimental research in the field of turbomachine aerodynamics. The facilities will serve as a genuine laboratory for Belgian universities and research centres and help develop a network of common skills.



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DEFENCE

Precision is our passion. For more than 150 years, CAPAUL has been keeping its promises. We manufacture high-precision serial parts and assemble complex sub-assemblies. Our highly qualified staff control and certify the required quality according to ISO EN 9100:2018 and NADCAP. We also have extensive experience in the assembly of sub-assemblies for the aerospace, defense, and medical industries. We invest €1.5 million annually in our production facilities. A fully air-conditioned production hall (20°C) is available. Capaul specializes in the production of VERY complex components.

Our modern plant can offer the following capabilities:

- 5-axis milling and turning from 10 x 10 x 10 mm up to Ø 2000 x 1800mm in a fully air-conditioned 2000m² hall.
- High precision 3D control - 3000 x 2000 x 1000 mm
- Penetrating inspection, deburring, balancing, sandblasting
- Hard turning in an air-conditioned environment up to Ø420mm - Complete integration of sub-assemblies (SUMP LEAP, BOOSTER LEAP and CFM56)

Main References:

Certified: EN 9100:2016 and NADCAP for penetrant inspection

References of intermediate and final customers:

- Airbus
- Boeing
- General Electric
- Safran Group
- Snecma Motors
- Sonaca

- Technical Airborne Components
- Asco Industries
- John Cockerill GROUP
- FN Herstal
- OTTO FUCHS
- Thales

Working of following programs:

- CFM56
- Leap
- CF34
- A330/340
- A400M
- A380
- Embraer E2
- F7XC GE90
- GP7000
- TP400
- GE9X
- PP20
- Silvercrest



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AERO



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DEFENCE

Investment casting (lost wax process) and sand casting: titanium & steel technical parts for aerospace and defense.

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

- For aircraft and helicopters aerostructures and engines, door locking systems, wheels and brakes...
- Components for pumps like impellers 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 defense sector, CASTINGPAR supplies the oil & gas industry, nuclear and petrochemical markets, general engineering, food production equipments, fluids processing, defense, building, railway and automotive...

Rapid prototyping:

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

Technical data:

- Investment casting process (lost wax) and sand casting
- Parts from 1g to 500 kg
- All titanium, steel and stainless steel grades, nickel, cobalt and copper alloys
- Machining and surface treatments; ready-to-use parts
- Non destructive testing facilities (RX, FPI)

Certifications:

- EN 9100 / AS 9100
- ISO 9001
- NADCAP certified (NDT, welding)

References:

AIRBUS, SAFRAN, LATECOERE, RAYTHEON COLLINS GOODRICH, PRATT & WHITNEY, FN HERSTAL, NAVAL GROUP, JOHN COCKERILL, US NAVY

Investment casting strengths:

- Dimensional accuracy and surface quality
- Complex shapes, thin walls, design freedom
- Lower weight
- Reduced machining, welding and assembly



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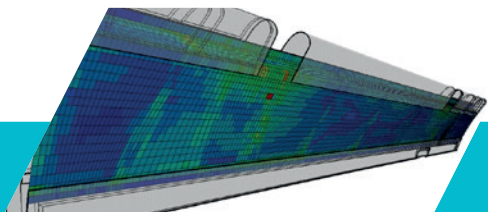
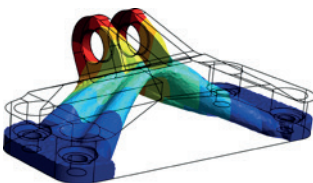
Cenaero is a private non-profit applied research center and provides to companies involved in a technology innovation process numerical simulation methods and tools to invent and design more competitive products. Internationally recognized, in particular through its research partnership with Safran, Cenaero is mainly active in the fields of Aerospace, Energy, Manufacturing, Buildings and Smart Cities.

Cenaero provides expertise and engineering services for high performance composites, optimization and uncertainty quantification, multidisciplinary topology optimization, metallic manufacturing processes modeling, high resolution computational fluid dynamics, hypersonic flows and ablative materials, thermo-fluid processes and systems modeling, turbomachinery design, and high performance computing.

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 the Tier-1 Walloon super-computing infrastructure, named "Lucia", of a capacity close to 4 PFlops on a mixed CPU and GPU architecture. More information: [www.https://tier1.cenaero.be/en](https://tier1.cenaero.be/en)

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



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SPACE

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 regional 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 micro-controllers, 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, space mechanisms for optical instruments, solar 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.

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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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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.

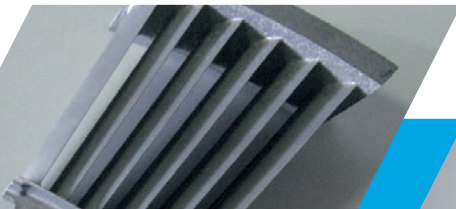
Consolidated Precision Products Belgium is a major supplier for the aerospace market including helicopter, missile and airplane engines.

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.



CRM GROUP



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AERO



SPACE



DRONE



DEFENCE

CRM Group is a private, non-profit, applied research & development center. CRM Group has a high level of expertise in metal industry, surface treatment, innovative design, hybrid & additive manufacturing...

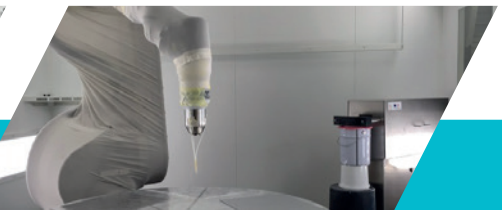
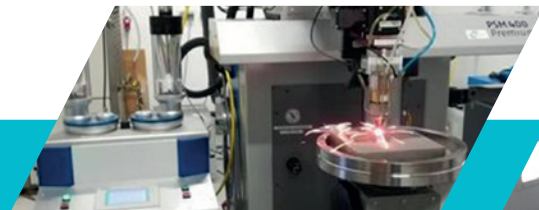
CRM Group is an R&D organization active in the field of metal and steel production with the mission to develop new processes, products and applications. CRM was funded in 1948 to become the collective research Centre for the Steel and Non-Ferrous Metal Industries with laboratories and pilot facilities located at Liège and Gent. CRM Group employs 275 employees and researchers.

At CRM Group, the activities are centered 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 (51 members in 2021).

CRM is involved in several projects and programs for AEROSPACE and DEFENCE industries allowing CRM to develop an extensive expertise:

- In the field of hybrid and additive manufacturing: Surface processing of parts made by AM (titanium, aluminium, iron-based alloys, etc.);
- Development of new titanium alloys for additive manufacturing;
- New additive manufacturing processes (direct energy deposition; laser and arc deposition methods);
- New repair processes (direct energy deposition, cold spray, etc.);
- In the field of functional and printed electronics: Development of integrated sensors on metals;

- Conductive and non-conductive layers for different applications (anti-icing, oleds, wiring, etc.);
- In the field of coatings: Thermal spray and HVOF coating systems;
- Anti-wear or anti-corrosion coatings;
- In the field of phase change materials heat storage devices devoted to electronic thermal stability.



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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...



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AERO



SPACE



DRONE



DEFENCE

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

DELTATEC is a high-tech design company, specialized in advanced hardware and software technologies with a strong focus on digital imaging applications.

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 started as 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.

Taking profit from its experience in both space and industry worlds, DELTATEC is also focusing on the NewSpace and supports the development of onboard equipment for aeronautics and drones sector.

As a design services company, DELTATEC role is systematically adapted to its customer needs: from pure hardware design, to the development of a dedicated software and to the full design (hardware, software and mechanics) of a product including its manufacturing management.

With a team of more than 80 high-level designers, DELTATEC has developed a broad range of competence centers to create competitive advantages for its clients: deep learning/AI, streaming, cloud, image processing, embedded systems, mechanics, electronics, thermics, FPGA and PCB.



DUMOULIN AERO



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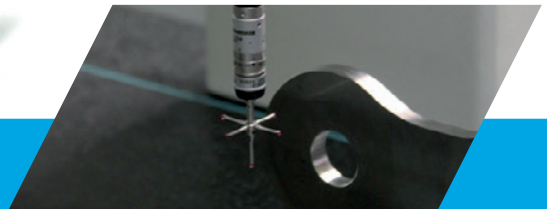
In 2003, Dumoulin Aero, specialized in the manufacturing of Fine Hunting Guns, has operated a significant diversification by launching a program to manufacture titanium and other allied steel parts for aircrafts.

For 20 years now, Dumoulin Aero has successfully implemented the quality requirements, the organizational, strict control and production aspects needed for the manufacturing of high precision parts for AIRBUS, EMBRAER or BOMBARDIER Aircrafts.

Today, Dumoulin Aero employs 50 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 in Wing moveables. 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 aerospace companies willing to establish a close and fruitful relationship based on know-how, reliability, flexibility and cost-effectiveness.



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AERO



SPACE



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DEFENCE

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. The company is affiliated with three other companies, creating a family owned cluster of advanced manufacturing capabilities in high precision areas: Sub-Alliance. 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.



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AERO



DRONE



DEFENCE

FN Herstal are world leaders in high added value defence solutions based on combat-proven small calibre firearms dedicated to multi-role military rotary- and fixed-wing aircraft. Our end-to-end services cover design, development, manufacture, and full integration of airborne weapon systems that combine full mission capability, maximum safety for the crew and protection for the carrier. Over 5,200 FN Herstal airborne weapon systems are deployed on a wide range of carriers across the world. As a one-stop-shop, we are also committed to providing a tailored 360-degree customer service, such as training, and maintenance, repair and overhaul (MRO). We are ISO 9001 and AS/EN 9100 certified.

FN Herstal integrated airborne weapon portfolio includes both crew served weapon solutions and fixed forward-firing solutions designed around proven FN® machine guns, rocket launchers and a complete range of ammunition.

Our airborne crew served weapon solutions can be window-, door-, ramp-, or externally positioned and provide:

- Outstanding firepower (1,100 rounds per minute) through the world exclusive .50 cal FN® M3M/GAU-21 machine gun
- Outstanding balance and accuracy
- Proven reliability and safety
- Multi-weapon/multi-calibre capability

Our airborne fixed forward-firing solutions 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. Main benefits are:

- 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

- Digital configuration available for easy integration into modern platforms: Can be complemented with a head-up display and pod controller
- Allows the integration of third-party equipment, such as 70mm laser guided and/or unguided rockets
- EO/IR equipment
- Multi-functional displays

FN Herstal continuously innovates to provide to provide Military Agencies and Original Equipment Manufacturers with state-of-the-art, groundbreaking solutions to guarantee the highest level of operational capability – today and tomorrow.



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AERO



SPACE



DRONE



DEFENCE

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

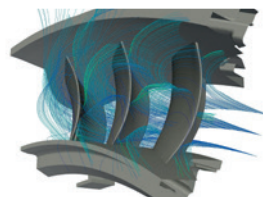
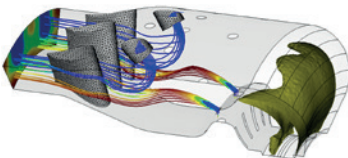
- Design and stress analysis
- Tools design and manufacturing
- Technical documentation
- Project management
- Engineering consulting

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).



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AERO



SPACE



DRONE



DEFENCE

Founded in 2006 by Jean Del'Cour, a 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 four core activities: Composite, Connectics, Machining 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 electromechanical components, connectics and electronics.

Machining

- Design and development, prototyping qualification
- Industrialization and series productions of metallic components with CNC machines

Quality Assurance: JDC Innovation and Jean Del'Cour are EN9100 – ISO 14001 and ISO 45 001 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 - JOHN COCKERILL - FN HERSTAL - SONACA AIRCRAFT - THALES ALENIA SPACE - SAFRAN AERO BOOSTERS, OIP...



LA NITRURATION MODERNE



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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.



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Mecasoft is specialized into metal precision machining using on one hand electroerosion and other high precision techniques, and on the other end a specific knowledge on micromechanics and micro-milling machining developed over the years, enabling us to perform precision operations in metals up to 1-2 μm of tolerance and roughness (Ra) of 0.03 for drilling, wire cutting and 3D control.

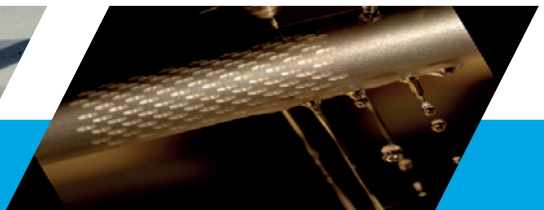
We manufacture parts for Airbus, Boeing, Safran, Embraer, Sabca, Sonaca, Euro Heat Pipes, Von Karman Institute, for their usual manufacturing programs (machining from 1 to 400mm) but also in their micro developments in order to gain weight and miniaturize metallic space components, like heat pipes, micro tubes for sensors and captors. We are certified EN/AS 9100 Aerospace since 15 years and therefore supply major aerospace manufacturers as well as tier-1 or tier-2 players.

Our other segments of interests are the precision industry - automotive, defence and instruments - as well as medical and pharmaceuticals (eg cryogenic microtubes, microdrops generators, microfluidics static mixers...).

Mecasoft R&D department frequently joins large academic research programs in applied or fundamental fields. We have several fields of interest, specifically machining of silicon carbide, as well as completing the structural weaknesses of metal additive manufacturing (ruggedness and precision) with EDM or other techniques.

References and certifications

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



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AERO



SPACE



DRONE



DEFENCE

Expertise Services & Training Center for Non Destructive Testing

MPP is a European service-engineering company for Research, Expertise, Inspection and Training related to Non-Destructive Testing (NDT). We propose those services in our Liège facility and on the customer site. We support Aerospace & Defense manufacturing and maintenance companies to validate their composites and metallic parts. Other sectors are Energy, Transport, Mechanic and Welding.

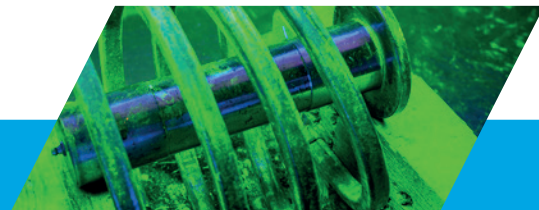
In addition to the NDT capabilities, we have a Precision Deburring & Polishing department.

MPP core competencies: multi-skilled & Qualified inspectors, state-of-the-art equipment and large panel of NDT technics.

NDT technics:

- Digital Radiography with 2 bunkers (6 x 4 x 3m - generator 225 kV + 1 x 1 x 1 m - generator 320 kV), 150 kV mobil equipment and flat panel resolution of 50 to 200 µm; Tomography (225 - 450 kV);
- Shearography (laser Interferometry) and Thermography with dedicated room (3 x 2 x 2 m parts);
- magnetic & penetrant inspection;
- Eddy current & ultrasonic inspection;
- visual inspection;
- Nital etching.

MPP is EN9100 and ISO9001 certified as well as NADCAP NDT (FPI, MPI, X-RAY) for its technical competencies. In addition, we have customer qualifications such as SAFRAN and SONACA. Those allow us to guaranty MPP dedication to its customer requirements and prove the quality of the work done by our team.



OPEN ENGINEERING



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AERO



SPACE



DRONE



DEFENCE

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 solver helps understand and optimise the performances of complex devices to make them more robust.

Our main expertise is in the area of:

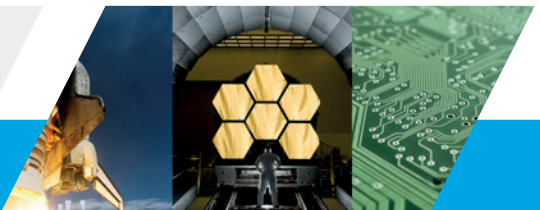
- Sensors, actuators, MEMS and microsystems
- Optomechanical systems and MOEMS
- Fluid-Structure Interaction applications
- Small satellites

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:

- Training 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



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AERO

Non-Destructive Testing Solution for Composite Materials and Structures

OPTRION, a spin-off of Centre Spatial de Liège and a branch of V2i, is a company specialized in optical metrology and non-destructive testing for composite material and structures.

PATRIA BELGIUM ENGINE CENTER

Patria

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<https://www.patriagroup.com>



Patria Belgium Engine Center (PBEC) is a one-stop shop for Maintenance, Repair and Overhaul (Depot and Intermediate) services, serving both commercial and military fleets around the world.

PBEC has served as an MRO Center of Excellence for the F100-PW for over four decades, currently supporting 15 air forces, including the U.S. Air Force.

Uniquely certified by the OEM as Authorized Overhaul Facility and by US Air Force as Source Approved, PBEC also offers spare parts provisioning and trading – with shorter lead times and off-the-shelf readiness.

Our excellence built over 40yrs of business makes PBEC capable of providing customizable services, repairs and assets management according to our customer's 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

PBEC is an ideal partner for NDI/NDT requirements.

Modern portfolio of repair capabilities

PBEC 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

PBEC can offer shorter lead times in hardware procurement with the ability to offer an attractive off-the-shelf 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

Located in the heart of Europe, only a few miles from a major cargo airport, PBEC leverages this highly industrialized area with an excellent infrastructure to offer more efficient transit time and lower logistics costs for our customers.



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<http://www.pixcoating.com>



Thanks to its 35 years of experience in complex paint applications, Pix Coating has been recognised as a key partner for Surface Treatments and Finishing for high added value industries. Its quality culture among with its increased production capacities allows it to be an evident partner for the treatment of your production.

Our company, among with its 35 professionals, is dedicated to realising high quality paintings for demanding industries (aerospace, aeronautics, defence and security, railways, etc.).

We are used to complex treatments and paint specifications. We can work on every substrate and are able to consult you on the best treatment choices.

We are certified ISO 9001:2015 and EN 9100:2018

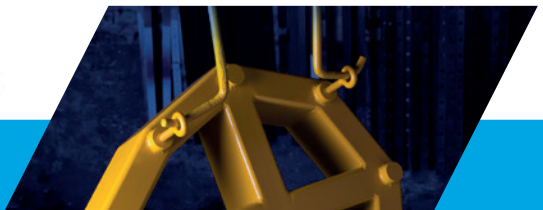
We are equipped with a small parts vertical blowing painting line (\varnothing250 kg and \varnothing 1 cubic meter). Our Flash Off and Curing zones are separated, allowing 4 people to paint at the same time.

Our big parts painting line (\varnothing3T and 3.5 x 5 x 16 m) allows 2 people to paint at the same time.

We've got a dedicated line for composites parts treatments (surface finishing). It allows us to complete the production of unperfect surfaces.

We are also equipped with a powder coating line and we take in charge surface treatments prior to paint.

Our capacity allowed us to treat over 200.000 parts in 2022.



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AERO



SPACE



DRONE



DEFENCE

The Sabca Group conducts operations from the three Belgian regions (Brussels Capital Region, Charleroi in Wallonia, and Lumen in Flanders), as well as from Casablanca, Morocco. Today, Sabca benefits from a large palette of expertise, built over its 100 years of experience in designing, manufacturing, maintaining, and upgrading large and complex elements for aircraft and space launchers. Its customers and partners belong to the elite of the aerospace industry.

Sabca offers a full range of services to the civil, space and military aviation markets and recently expanded into the commercial Unmanned Autonomous Systems market as an integrator of aerospace-grade solutions for the industry. For more information: www.sabca.com

Sabca is a part of Blueberry, a unique industrial ecosystem in the Belgian aerospace industry which is owned by Sabena Aerospace (holding company) and by the Société Fédérale de Participations et d'Investissements (SFPI/FPIM).

Through its subsidiaries, Blueberry is active in the design, development and manufacture of aviation and aerospace equipment, offers maintenance services for aircraft and brings solutions to drive the sustainable development of the industry as a whole. In doing so, the group addresses its customers business needs from end-to-end.

The group has four sites in Belgium (Zaventem, Haren, Gosselies and Lumen), is active in more than 10 countries around the globe and has more than 1200 employees in Belgium and abroad and a cumulated turnover of 250M€. For more information: www.blueberry.be



SABENA AEROSPACE



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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 boost enhanced features
- Partner of Airbus Safran Launchers for Ariane 5 & 6



SENSY LOAD CELLS



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AERO



SPACE



DRONE



DEFENCE

Established in 1985, SENSY LOAD CELLS is a Belgian manufacturer of both standard and custom-made load cells, load pins, force and torque transducers. These sensors are intended for systems for force, torque and level measurement, load limitation and for all industrial sectors, including the most demanding ones, such as in industry, Oil & Gas and Aerospace.

We are used to working for the aerospace and space sectors. Here are some applications examples of our standard and custom-made force sensors:

- stabilizer propulsion;
- sensors for cylinders;
- fatigue simulations;
- multi-axis measurement of force and torque for wind-tunnel testing;
- dual instrumentation designed for turbulence;
- force and torque actuators measurement;
- testing embedded systems;
- etc.

One of our major achievements is to work for ESA (European Space Agency) and also for some helicopters, airplanes and UAV's manufacturers. Some of our load cells are incorporated in VEGA and ARIANE rockets.

SENSY's quality system is ISO 9001:2015 certified. Our procedures and processes are in accordance with the EN9100 quality standards. We are also ATEX, IECEx and CSA certified in order to produce and sell intrinsic safety transducers all over the world.



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AERO



SPACE



DRONE



DEFENCE

Sichem is a start-up founded in 2022 (a spin-off from its parent company) specialized in research and development of innovative coatings for various industrial applications such as healthcare (Nobacoat®), energy, hydrogen as well as all areas of sustainability.

Sichem stands out by offering high-quality coatings that meet the specific requirements of its customers in terms of wear resistance, adhesion, and durability. The company invests in research and development of new technologies to stay at the forefront of innovation. Close collaboration with customers enables expert advice to be offered to meet the specific needs of each client.

Sichem offers a range of coating products for the hydrogen, energy, health, and sustainability sectors. These products include corrosion protection coatings, barrier coatings for anti-diffusion of the H₂ and hydrogen storage tanks, antibacterial coatings for healthcare equipment, and wear-resistant (mechanical and chemical resistance at high temperature) coatings.

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AERO



DRONE



DEFENCE

Sobelcomp is a Belgium industrial sub-contractor founded in 2006 who studies and produces parts made from composite materials for clients.

As a company 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.



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AERO



SPACE



DRONE



DEFENCE

Sonaca is a top 10 Aerostructure player

Sonaca is a global company with headquarters in Belgium active in the development, manufacturing and assembly of integrated structures for civil, military, and space markets. With revenues over half a billion dollars and 3500 employees, it is a leading Tier-1 player in the aerospace industry. Through its subsidiaries and production sites near its customers in Europe, North and South America, Sonaca provides fully integrated solutions to challenging problems from concept to detailed engineering and manufacture. All sites are robustly organized for one-stop-shop manufacturing with all necessary qualifications and approvals. Our integrated approach ensures that our customers receive the highest quality products, best customer service, and the most outstanding value in the industry. Every time you travel by plane anywhere in the world it is likely that Sonaca is helping you on your way.



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SPACE



DEFENCE

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 observation 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 and services 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 50 Space missions aimed at a better understanding of the Earth and the Universe.
- SPACEBEL offers Earth observation services for forestry, agriculture, soil movements 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 & Hoeilaart) and France (Toulouse).

Associated corporations: N7 Space (Poland) and ConstellR (Germany-Belgium)



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.

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

References and/or Certifications

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



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SPACE



DRONE



DEFENCE

Telespazio Belgium, a subsidiary of Telespazio Group, provides cutting-edge services and applications, engineering services and support in the field of space programs and high technology projects. As part of one of the world's leading operators in the field of satellite solutions and services, Telespazio Belgium is at the forefront of providing advanced and innovative satellite services in navigation, earth observation, satellite communications and space operations.

The company employs about 190 people of 22 different nationalities with an average age of 40, one third being women. Its headquarters are in Transinne, in the Galaxia Space Park, and establishments are present in the Netherlands, in Luxembourg and in the Czech Republic. The activity, initially focused on supporting the maintenance and operations activities of the Redu Space Station, first contract in 1982, is now extended to cover the Integrated Logistic Support of the remote sites of the Galileo ground segment and the provision of high-quality engineering and operational services to Space Agencies and Large System Integrators in the space domain.

Furthermore, being Telespazio Belgium part of a large international group, it offers great opportunities for Belgium to position itself as one of the European leaders in research and development in the space sector, representing a bridge between the local interests and the international dimension, contributing to the maximum achievement of Belgium's ambitions.

Concerning innovation, Telespazio is involved in a large number of projects aimed at improving the use of satellite technology and data for a wide range of domains, ranging from agriculture to maritime traffic and disaster management, from positioning and navigation to telecommu-

nications, quantum technologies, cybersecurity etc. Our flagship is surely the monitoring of the operations of the Galileo ground stations around the world performed from the Galileo Integrated Logistic Support Centre in Transinne: this is a perfect example of the important role we play on an international level.

So, while Telespazio Belgium has its head in space, it has its feet firmly planted on the ground, working for a future of sustainability and innovation.



THALES ALENIA SPACE IN 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 microsattellites 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.



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AERO



DEFENCE

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 300 people at 4 sites across Belgium, in Brussels, Herstal, Hasselt and Tubize. 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 as with our Multifunction Airborne Communication System (MACS)
- 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

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AERO



SPACE



DRONE



DEFENCE

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.

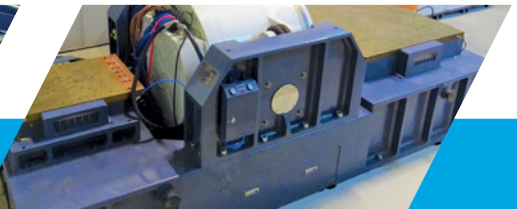
In addition to these services, V2i acquired a strong experience in the development of **tailor-made acquisition and monitoring systems** for test rigs and zero-defect manufacturing applications in Aerospace and other fields of industry.

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



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AERO



SPACE



DEFENCE

The von Karman Institute for Fluid Dynamics (VKI) is at the leading edge of Fluid Dynamic research for aerospace:

Aeronautics: aero-propulsion and energy conversion by means of rotating machines, performance of aircraft engines, lift performance

Space: space vehicle re-entry, thermal protection, cryogenic propellant management for spacecraft, electrical propulsion, CubeSat missions

The von Karman Institute for Fluid Dynamics (VKI) is a non-profit international educational and research organisation specialized in Fluid Dynamics, in the areas of Aeronautics & Space, Environmental & Industrial Flows, and Turbomachinery & Propulsion. What started in 1956 with international postgraduate education, has developed into a widely recognized center of excellence in fluid dynamics, combining education and research in a truly international and intercultural environment.

For aeronautical applications, VKI specializes in activities related to aero-propulsion and energy conversion by means of rotating machinery. Advanced aero-thermal research is carried out on the cold fan and compressor side, as well as on the hot turbine side. VKI teams up with the major engine manufacturers: VKI has been recognized a strategic research partner of the Safran group. VKI also performs research on high lift devices and on coatings to improve the lift of aircraft wings

For space applications, VKI focuses on the modelling, simulation and experimental validation of atmospheric re-entry flows and thermal protection systems. VKI has recently executed in-flight testing and validation of re-entry, with the Qarman CubeSat. VKI is also active in cryogenic propellant management and is pioneering in electrical propulsion.

VKI operates more than 50 different testing facilities and wind tunnels. 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 per second up to mach 14. The infrastructure is also the foundation for the cross-fertilization between experimental testing and numerical simulation. VKI acts as a reference laboratory for ESA.

