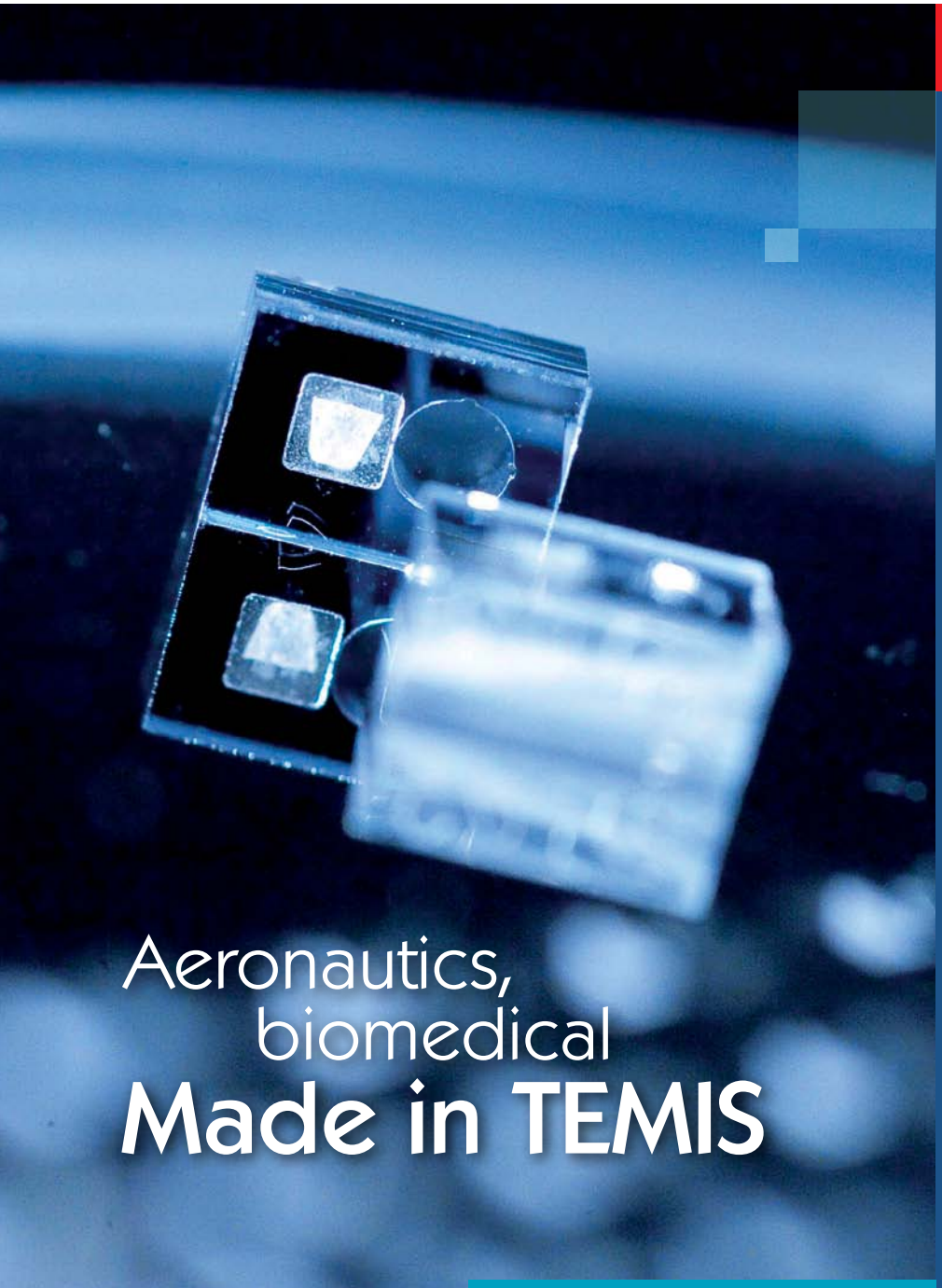
TEMIS news
ISSUE 47
JUNE-JULY-AUGUST 2015
www.temis.org
BESANÇON - FRANCHE-COMTÉ - FRANCE



Aeronautics, biomedical Made in TEMIS

P2 MEDTEC France
Come and see TEMIS at Booth B111

P4 Aeronautics and space expertise at TEMIS

Editorial

Each and every day, TEMIS continues to establish its reputation as the site of choice for innovative entrepreneurs and high-tech businesses.

It boasts a particularly strong reputation in the medical sector, and the technology park has now become a genuine health innovation ecosystem. Businesses and laboratories join forces to develop innovative medical devices, driven by a determination to improve treatment provision and patient comfort. The latest developments in the sector will be presented at Medtec France 2015, which returns to Besançon for its seventh edition. We are delighted that this major national event, bringing together key players and decision-makers from the medical sector, is once again being held in our region.

TEMIS is also something of a hotbed of expertise in the aeronautics, space and defence sector. In an industry driven by an ambition to produce ever-lighter and ever-smaller technologies, local businesses that have diversified into this market are now finding new opportunities. What's more, this trend is likely to intensify following recent successes in the French military aviation sector.
As well as hosting businesses, TEMIS is also a hub of strategic research resources for the sector. Time-frequency, optics and surface treatments are just some of the specialist scientific fields that are in demand in the aeronautics and space industry.

This year also saw strong attendance from the region's luxury goods businesses at the EPHJ/EPMT watch and jewellery trade show in Geneva in early June. The event was the first time that the "Luxury expertise, know-how and trades in Franche-Comté" exhibition was presented in Switzerland. These areas of expertise can also be found at TEMIS.
Now, more than ever, our technology park has become the cradle of innovation in Franche-Comté, helping to serve the industries and sectors of the future. I have no doubt that the sheer diversity of businesses and organisations at TEMIS, its environment and the expertise that it hosts, will boost the attractiveness of the future combined region.

Jean-Louis Fousseret,
Mayor of Besançon
President of TEMIS and Grand Besançon

TEMIS BESANÇON
TECHNOPOLE MICROTECHNIQUE & SCIENTIFIQUE

MedTechWorld France Medtec
Technologie · Réseautage · Éducation
10-11 Juin 2015 Besançon, France

MEDTEC FRANCE 2015, THE LEADING FRENCH-SPEAKING EVENT FOR THE MEDICAL DEVICES SECTOR, IN BESANÇON

The main players of the medical devices industry will be in Besançon for the **7th edition of MEDTEC France**. Leading French meeting place for medical devices, combining conferences and exhibition, MEDTEC France encompasses all the technologies and skills in the medical device sector.

Practical information
For details of the programme and to register
Visit the trade show website, at:
www.medteceurope.com/fr/france

New for 2015

This year's new developments include a **series of free lectures,** a Business Meeting and a Job Fair.

- This year's **lecture series is open** to all exhibitors and visitors. Medical device authorities will be speaking throughout the event, focusing on matters of importance to professionals in the sector.
- The **Business Meeting**. *Wednesday 10 June*. The Micro-technology cluster is offering a targeted meeting service, based on the Speed Meeting principal, in the Networking area at the trade show.
- The **Job Fair**. *Thursday 11 June*. This event is organised by ISIFC – a Besançon-based medical device engineering school that delivers training in technical, regulatory and medical subjects – in conjunction with the network of French biomedical engineering schools.

The **third Innovation Awards** will also be held in 2015, recognising original and innovative projects in the medical device and manufacturing process sector. Results and prize-giving ceremony *Thursday 11 June, 3 pm*

Come and meet TEMIS Technopole and its partners

Booth B111 will play host to research, technology transfer and innovation players in the medical sector, who will be on hand to inform and advise you throughout the trade show.

FRANCHE-COMTÉ / FRANCE Pôle des microtechniques Inside everything

ISIFC Génie Biomédical

THEY ARE IN TEMIS, THEY ARE ALSO AT MEDTEC

Development of nitinol components with Cisteo Medical

Cisteo Medical designs and manufactures all types of medical device.
Its services cover all stages of the project from initial concept to the production of the finished, market-ready medical device in a controlled atmosphere.

Cisteo Medical now uses **in-house manufactured Nitinol* components in its devices**. This new phase in our development reflects our focus on class III implants and instruments for mini-invasive cardiac and spinal surgery. Cisteo developed its components in partnership with researchers specialising in this material from the University of Franchse-Comté.

Christophe MOUREAUX, President
Mobile: +33 (0)6 28 05 37 12
Skype ID: christophe.moureaux
E-mail: cmoureaux@cisteomedical.com
www.cisteomedical.com

Alcis turns its attentions from epilepsy to transplants from every angle

Alcis is a research and consulting firm that specialises in the marketing of medical devices and the manufacture of active and non-active implants.
It helps its customers and partners to optimise medical device production logistics, focusing on aspects such as silicon moulds, laser welding, porous titanium, assembly, cleaning, sterilisation, etc. It also handles the pre-release certification and authentication process for these products.
Building on its extensive experience in the treatment of drug-resistant epilepsy and neural implants (*see photo*), Alcis is participating in the **BioTOM** project. The aim of this project is to increase the number of transparent assessment parameters and improve the associated treatment conditions.

Yoann VALORGE, Operational Marketing Manager, Application Engineer
Tel. +33 (0)3 81 61 69 93
E-mail: yvalorge@alcis.net • www.alcis.net

IIN MEDICAL

IIN Médical (Innovation INspired by the deed) develops and sells surgical microdevices in niche sectors overlooked by major biomedical companies.
The first product to be released by the new company is a miniature lamp, which is ideal for lighting dark areas during micro surgery procedures, particularly those involving the hand.
IIN Medical also works with surgeons to develop several innovative systems for orthopaedic, urological, gynaecological and paediatric surgery.

Loïc LE BOURNOT, Business Manager
Mobile: +33 (0)6 50 67 96 62
E-mail: loic.le.bournot@iin-medical.fr
www.iin-medical.fr

*Shape memory nickel/titanium alloy

THE MICRO-TECHNOLOGY CLUSTER
DRIVING INNOVATION TO SERVE HEALTHCARE

The **businesses, laboratories and training organisations within the** Micro-technology competitiveness cluster work together, in partnership, to develop solutions to challenges in the medical sector. The cluster has so far approved around 75 projects in the healthcare sector, representing a total of approximately €60 million. At present, 25% of these projects involve multidisciplinary skills, combining specialist fields such as medicine, micro-mechanical engineering and optics – in other words, they stand at the crossroads between materials science and process innovation.

Focus on CORTECS

The CORTECS project, launched in 2010, is now complete.
The project **focuses on the development of technology modules to improve the energy efficiency of operating suites**.
Jointly approved by the Micro-technology cluster and the S2E2 cluster, the project involves **Besançon-based telemedicine specialist Covalia. It is part funded by the Franche-Comté Region and the Conurbation of Grand Besançon**.
As a result of the work completed under the project, the necessary technology components have now been developed:

- a **high-performance power source, featuring a smart interface,** to supply electricity to the various devices in the operating suite
- the **Covosmart trolley** (developed in conjunction with Covalia), an innovative communication system that supports multimedia communication with the outside world
- development of a **3D camera** capable of reproducing stereoscopic images (textured images).

Alban DE LUCA
Biomedical Research Engineer
Jean Minjoz Teaching Hospital
Mobile: +33 (0)6 08 66 37 00
Tel. +33 (0)3 81 21 91 99 (DECT)
E-mail: alban.deluca@gmail.com
www.chu-besancon.fr

Safety Insufflation Mask (SIM)

This project is approved by the Micro-technology cluster and is managed by the Accident & Emergency Unit at the regional university hospital (CHRU) of Besançon.
The aim of the project is to design a new device to conduct instant respiratory system performance assessment, helping paramedics to deliver respiratory support aligned with the clinical needs of the patient.

The project is the brainchild of Dr Khoury, A&E practitioner, and Alban De Luca and Fatimata Seydou Sall, both research engineers. Dr Khoury explains the project in detail: "*This new device is designed with the needs of A&E doctors and paramedics in mind. In an initial study, we identified the reasons behind "poor performance" in existing manual respiratory support practices.*
This study involved the Departmental Fire and Rescue Service, the Anaesthesia and Intensive Care Department at CHRU Besançon, the Tilleroyes Nursing Training Institute, and the Jussieu Secours Besançon ambulance service. Around 140 professionals, anaesthetists, A&E practitioners, nurses, fire-fighters and paramedics helped us to collect the data we needed for the study. "

Medical and economic benefits

The SIM project is a new, disruptive type of technology that differs markedly from existing devices. This innovative new device will help to improve treatment for patients in respiratory distress.
To achieve this result, the researchers worked closely with Besançon-based company **Polycaptil**, which developed the mechanical and electronic components necessary for smart management of the device. Eventually, this partnership will lead to the creation of a startup to market the new device.

AERONAUTICS AND SPACE EXPERTISE MADE IN TEMIS

Franche-Comté is reputed for its network of subcontractors working for major international customers. Thales, Eurocopter, Turboméca, Techspace Aéro, Dassault, Safran, Boeing, Airbus, Cassidian or DGA are the traditional customers of the companies of the region. TEMIS has become a genuine hub of aeronautics, defence and space expertise. These businesses also have access to a high-quality research cluster at the technology park – a critical asset in these extremely demanding industries.

"… This type of expertise is in strong demand in the high-tech industry, and especially in the aeronautics, space, defence and nuclear sectors.

Immediate boarding for Cryla

In addition to his responsibilities as Chief Technical Officer and Sales Director, Julien Roussel was appointed as Managing Director of Cryla on 1 April 2015. Thierry Bisiaux, meanwhile, remains as CEO, but will now focus on developing Excamed (of which Cryla is a 100% subsidiary). The company has posted strong performance in the aeronautics and space sectors, and will be attending SIAE 2015 at Le Bourget. Interview with Julien Roussel.

Is Cryla deliberately repositioning itself in the aeronautic sector?

JR: "We have extensive multi-technology expertise in miniature and high-precision engineering. This type of expertise is in strong demand in the high-tech industry, and especially in the aeronautics, space, defence and nuclear sectors. These sectors now account for 55% of our turnover. "

What products do you manufacture specifically for these markets?

JR: "We have two main lines of business: manufacturing complex parts and small assemblies for civil and military connectors, and producing highly technical parts using exotic materials. The vast majority of our customers are international groups such as Artus, Zodiac Aerospace, Souriau and Radiall."

Does the future look bright for the aeronautics and space industries? Is there a positive outlook for your company?

JR: "Yes, provided that we can make improvements in terms of quality, cost and deadlines. While Airbus and Boeing order books are full for the next 7 to 8 years, there is a clear need to reduce subcontracting costs. This is not a simple task. In response to these new demands, we need to make further improvements to our processes. This is why, for example, we have reorganised our assembly workshops. Some of these workshops are now entirely dedicated to the aeronautics sector. We've also invested around €4 million over the last two years constructing a new site, improving our organisation and boosting the performance of our equipment. The aim of this investment is to make us even more competitive."

Julien ROUSSEL, Managing Director
Mobile: +33 (0)6 28 25 85 62 • Tel. +33 (0)3 81 50 14 11
E-mail: julien.roussel@cryla.fr • www.cryla.fr

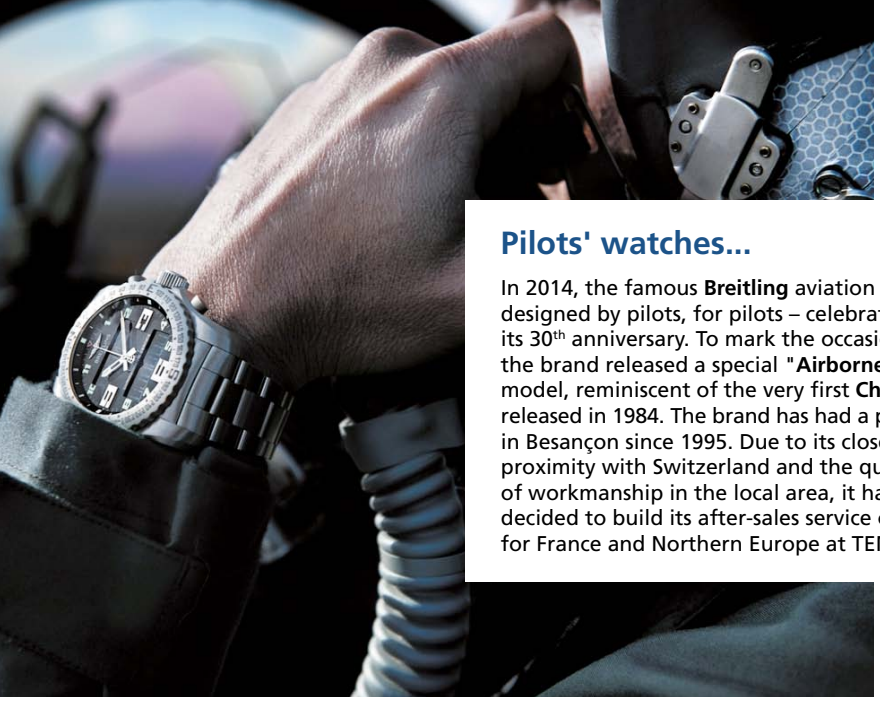
The emergence of drones with CM Drones

CM Drones designs, builds, sells and operates professional drone systems. The company has been hosted in the TEMIS business nursery since February. It conducts a variety of different activities, including audiovisual production with C'ma Cam, imaging and training with **Photocoptère**, and the development and sale of small pilotless aircraft under the **Skyrobot** brand.

Jean-Philippe Culas, the founder of CM Drones, is a firm believer in the need to innovate to uncover new practices and meet growing demand in the sector. Skyrobot is one of 40 French manufacturers approved by the Ministry of Transport – **a testament to its expertise and reliability**. The company has also attracted the attention of the Ministry of the Interior, leading CM Drones to begin developing **a machine capable of neutralising a drone in flight**. It is also working on other types of drone. "*One of our projects involves a drone that will capture clues at crime scenes, while another will "sniff" gases to prevent contamination and explosion risks,*" explains Jean-Philippe Culas.

CM Drones is also working with the FEMTO-ST Institute and UFC on a series of research projects, with a view to developing applications for drones, as well as new prototypes.
CM Drones is currently collaborating with the Institut Polytechnique des Sciences Avancées (IPSA) in Ivry, as well as with the University of Arizona, Tucson, on specific drones.

Jean-Philippe CULAS, Manager
Tel. +33 (0)3 81 25 09 01
Mobile: +33 (0)6 51 73 85 72
Email: contact@photocoptere.fr
www.photocoptere.fr



Pilots' watches...

In 2014, the famous **Breitling** aviation watch – designed by pilots, for pilots – celebrated its 30th anniversary. To mark the occasion, the brand released a special "**Airborne**" model, reminiscent of the very first **Chronomat** released in 1984. The brand has had a presence in Besançon since 1995. Due to its close proximity with Switzerland and the quality of workmanship in the local area, it has now decided to build its after-sales service centre for France and Northern Europe at TEMIS.

Conquering space

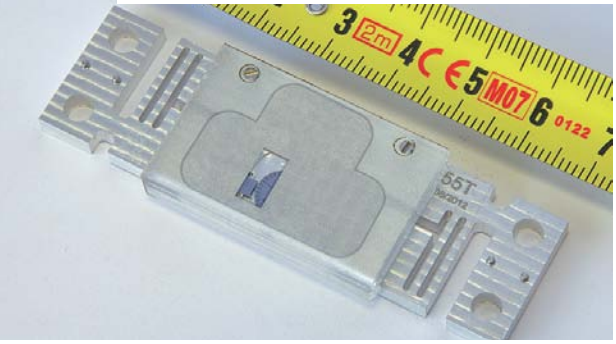
Photline Technologies, now a subsidiary of iXBlue, is currently building its new site at TEMIS. The company is now expanding its operations in the space sector, designing satellite equipment for industry-leading clients such as NASA.

Henri PORTE, CEO of Photline Technologies
Tel. +33 (0)3 81 85 31 80
E-mail: contact@photline.com
www.photline.com

SilMach receives a DGA award

In 2014, SilMach **was awarded the** awarded the "Ingénieur Général Chanson" award for its ChronoMEMS technology by the DGA (French Defence Procurement Directorate) at Eurosatory.
SilMach, which specialises in **MEMS** (Micro-Electro-Mechanical-Systems), has a portfolio of patents which it holds jointly with the DGA for ChronoMEMS. This tamper-proof, 100% passive and highly resilient technology can be used to detect and memorise external mechanical events affecting a structure. It requires no external power supply, and is able to monitor the health of a structure throughout its lifespan. This technology has been deployed in an operational capacity by the French Armed Forces since 2011, and is now enjoying growing commercial success in various civilian and military sectors.

Vianney SADOULET, R&D Engineer
Tel. +33 (0)9 72 44 35 96 • E-mail: vsadoulet@silmach.com • www.silmach.com



Worldplas sees its future in aeronautics

Worldplas is a TEMIS-based company the manufactures thermoplastic assemblies and sub-assemblies. Originally operating as a subcontractor to the **automotive sector**, the business has now moved to the next level and branched out into the **aeronautics industry**. It has managed this transition successfully, with automotive accounting for just 27% of its turnover, compared with 30% to 40% for aeronautics. The company produces dashboard components for **Zodiac Aerospace**.

Denis GUNES, President
Tel. +33 (0)3 81 47 44 99
E-mail: dgunes@worldplas.com
www.worldplas.com

Frec|n|sys

Frec|n|sys designs, manufactures and supplies sensors, filters and radio-frequency sources on thin piezoelectric materials.
These components are used in the measurement, defence, space and telecommunication sectors.
The company was founded at TEMIS in 2013, designing and producing surface acoustic wave (SAW) devices, which are protected by several patents. **Frec|n|sys** is currently undertaking a research programme to enhance its capabilities in the **RF-MEMS** field.

Sylvain BALLANDRAS, CEO
Tel.: +33 (0)3 81 25 53 63
E-mail: sylvain.ballandras@frecnsys.fr • www.frecnsys.com

ZODIAC AEROSPACE

World leader in aerospace equipment and systems on board commercial, regional and business aircraft, **Zodiac Aerospace** has chosen Besançon as the home of its microtechnology operations. The Zodiac site manufactures electrical systems, aircraft cockpit panels, internal and external lighting and aircraft windscreen wipers.

ZODIAC AEROSPACE, Registered office
61, rue Pierre Curie - CS20001
78373 Plaisir Cedex - France
Tel. +33 (0)1 61 34 23 23

STRATEGIC RESEARCH RESOURCES FOR THE AERONAUTICS AND SPACE SECTORS

Time-frequency, optics and surface treatments are just some of the specialist scientific fields that are in demand in the aeronautics and space industry. The laboratories based at TEMIS in Franche-Comté possess widely recognised expertise in these fields.

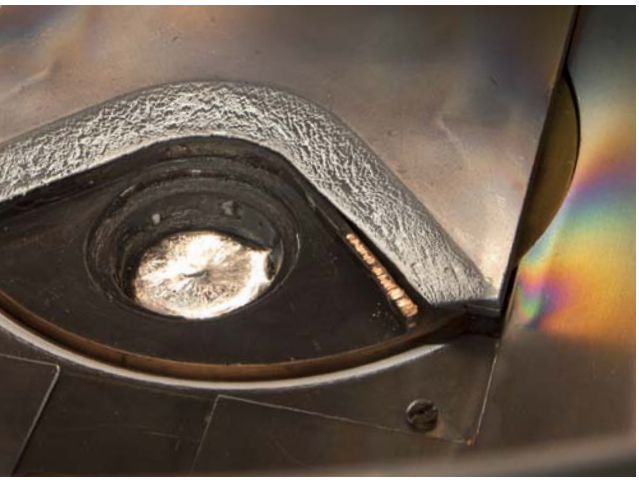
Time-frequency

The FEMTO-ST Institute is one of the largest laboratories in France in the field of engineering science (700 people). Its Time-Frequency laboratory (LNE-LTFB) is involved in developing national and international timekeeping devices. **Its holds the world record for time measurement to 10^{-14} seconds**, and the department conducts research and development activities recognised by the National Research and Innovation Strategy (SNRI).

UTINAM is a mixed research unit between the University of Franche-Comté and the CNRS. It conducts research in astronomy and chronometry. Founded in 2007, UTINAM conducts research that extends from the galaxy to the molecule.

Optics and photonics

The FEMTO-ST Institute conducts research in the optics and photonics fields, exploring new concepts in areas such as nano-optics, nonlinear optics and optoelectronics. Current research programmes focus on fibre-optic data processing, ultra-miniaturised sensors, stable-frequency optical mini-resonators, complex shape machining using femtosecond lasers, neuro-inspired photonic processing for complex systems, distributed fibre-optic sensors, and single photon counting for environmental monitoring. All of these applications are of particular interest in the aeronautics sector.



Francis MILLER,
FEMTO-ST Communication Manager
Tel. +33 (0)3 63 08 24 08
E-mail: francis.miller@femto-st.fr

// OF NOTE //

2 investments for the future to serve aeronautics and space

- Through its Time-Frequency department, FEMTO-ST works alongside **the UTINAM institute**, a major player of **top laboratory FIRST-TF**, which works on the development of projects for a large number of applications in the area of the environment, space and telecommunications.
- With their top-notch **EquipEX OSCILLATOR-IMP**, FEMTO-ST and UTINAM now make up a metrology platform dedicated to frequency stability. It will make it possible to join up the different frequencies used by different oscillators and measuring instruments.

Surface treatment

FEMTO-ST, **UTINAM** and others act as ambassadors of the region's expertise in surface treatment processes for multiple applications.
UTINAM is currently involved in a number of projects with the Materials, Metallurgy and Methods Research Institute (IRT M2P), with a view to identifying alternative solutions to existing processes in the aeronautics industry affected by the European REACH regulation.

The Franche-Comté region is home to several surface treatment training courses that enjoy a strong reputation among professionals in the industry. At the 2013 Le Bourget trade show, students on the **Masters in Formulations and Surface Treatments** were awarded the technical process prize, while students on the **Vocational Degree in Surface Treatments and Environmental Management** received the creativity prize.

France's leading region for surface treatment, supporting durability and resistance in the aeronautics and space sectors

LUXURY EXPERTISE, KNOW-HOW AND TRADES IN FRANCHE-COMTÉ
... AND AT TEMIS

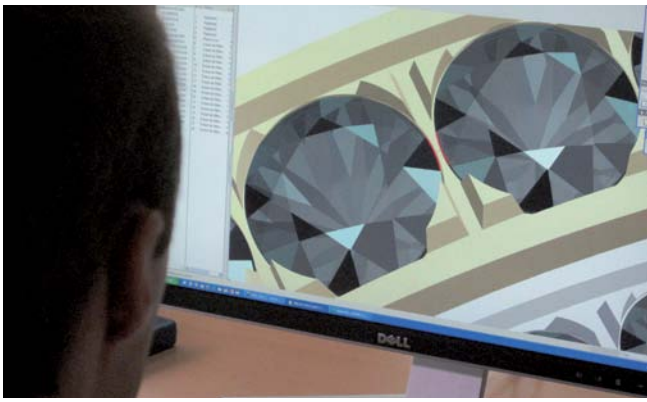
With 43 exhibitors, Franche-Comté once again had the highest representation of any French region at EPHJ/EPMT in Geneva – a major professional trade show for the watches and jewellery sector. The event was attended by some 18,000 professional visitors, and featured an exhibition entitled "**Luxury expertise, know-how and trades in Franche-Comté**". The exhibition was funded by the Franche-Comté Region and deployed by ARD, showcasing the multiple facets of this dynamic sector. It reflected some of the exceptional luxury-sector expertise and know-how that can be found at TEMIS.

Watchmaking expertise

Breitling opened its European training and after-sales service centre at TEMIS Technopole in 2013. Designer Benjamin Muller set up his own brand in 2010. In Besançon, major players such as **Swatch Group France**, **Audemars Piguet**, **Dodane**, **SMB** and **UTINAM** work along side specialist subcontractors and designers, contributing to the revival of the watchmaking industry.

Spectacle design

Cartier has selected Besançon as the home of a workshop devoted to the manufacture of high-quality frames for prescription spectacles and sunglasses.



The art of the future

ENSMM offers trainee engineers a course which is unique in Europe: microtechnology and design - luxury and precision sector. Meanwhile, **Lycée Jules Haag**, a former watchmaking school, boasts a strong technological and industrial culture.

Expert jewellers

Decayeux Luxe, located at TEMIS and working with **Techlam**, supplies products to famous leather goods companies and jewellers. Elsewhere in Grand Besançon, companies such as **Maty**, **EBS Bijou** and **GEP Gravure** also deploy their expertise and creative skills in the jewellery sector.

Rising to challenges

The **FEMTO-ST Institute**, which specialises in engineering, delivers expertise to watchmaking manufacturers (modelling, surface treatments, new materials, etc.).

Meanwhile, the **Besançon Observatory** provides its prestigious "viper hallmark" to chronometers that are accurate to within half a second.

in_brief

BIOSOLVER: a "round optimisation solution" to improve healthcare professional logistics

In 2016, all public and private sector laboratories will need to comply with the ISO 15189 standard. This standard imposes strict obligations in terms of biological sample traceability. Startup For-Age has selected **FEMTO-ST Institute** and the **Besançon Mathematics Laboratory** to develop a "round optimisation solution" in order to calculate optimal routes for couriers, freelance nurses and laboratory sample collectors, reflecting the requirements and obligations that apply to these professionals.
"*There are a multitude of requirements, covering aspects such as time restrictions and skills.*
We need to consider factors such as point of departure, latest return time and working hours for sample collectors," explains Julien Coupey, research engineer at FEMTO-ST Institute's Automation and Micro-Mechatronics Systems department.

All other things being equal, Biosolver is able to deliver **a 30% saving in terms of human resources**, total distance travelled and, therefore, CO_2 emissions.
With the support of BpiFrance and the Regional Council, Biosolver is currently undergoing trials in several biology laboratories, including Biopole 21 in Dijon.

PICOXEA: Aurea Technology's "all-in-one" time-correlated single photon counting fluorescence detection system

Aurea Technology designs, manufactures and sells a new generation of high performance, compact, rapid and easy-to-use optical measuring instruments, using single photon counting technologies capable of detecting extremely low levels of light. **Aurea Technology** produces single photon counting modules with exceptional **quantum efficiency**, that deliver an exceptionally low dark count rate.

Aurea Technology received the 2015 Innovation Prize at the CLEO trade show in San José (USA), in partnership with the Optical Society of America (OSA) and Laser Focus World magazine, in the Photonic Analysis Instruments category.
Aurea Technology won second prize in 2014 for its Twin Photon Source. In April 2015, it went one better, taking first prize for PicoXea, an integrated time-correlated single photon counting (TCSPC) analyser. This unique product comprises a picosecond laser, a single photon counter and a time-correlated fast processor, providing users with an "all-in-one" and easy-to-use optical analysis tool. **PicoXea** can easily be interfaced with a confocal microscopy system for fluorescence imaging applications in the biomedical analysis sector.

This award recognises Aurea Technology's commitment to innovation and provides an important boost to its international growth strategy.

Johann CUSSEY, Managing Director
Tel. +33 (0)3 81 25 29 83
E-mail: johann.cussey@aureatechnology.com
www.aureatechnology.com

Innovation Days

a key international event for the medtech, biotech and pharma sectors
5 - 06 October 2015 -
Cité Universitaire de Paris

A two-day conference and networking event that focuses on promoting Innovation in Life Sciences. The event will be attended by stakeholders from across the biotechnology sector, including entrepreneurs, startups, academic researchers, pharma, investors, incubators, clusters, public innovation support bodies and opinion-leaders.

THE EVENT WILL INCLUDE:

- a series of original speeches,
- a business convention with targeted appointments made via the "one-to-one business meetings" online platform,
- an Innovation Gallery in the exhibition hall,
- the 6th Innovation Prize award ceremony

Until 31 July, get a special TEMIS 20% discount.
Send an email to **quentin.vogel@universalmedica.com** after pre-registration.

Find out more:
www.lifescience-outlook.com/innovationdays/

TEMIS BESANÇON
TECHNOPOLE MICROTECHNIQUE & SCIENTIFIQUE

TEMIS NEWS - June-July-August 2015
• www.temis.org • Editor: Jean-Louis Fousseret • Contact: Bruno Favier • Tel. +33 (0)3 81 50 46 95 • E-mail: bruno.favier@temis.org • Technology Park management - 18, rue Alain Savary - 25000 Besançon, France • SedD Marketing: Tel. +33 (0)3 81 41 86 69- Fax: +33 (0)3 81 41 46 51 • Pictures: DR - ARD/FEMTO-ST/Laurent Cheviet, Fotolia, Cisteo Medical, Alcis, IIN Medical, Mélodie Pardonnet, SilMach, Olivier Perrenoud, ARD/MGO/SFM, ARD/Pequignet/Laurent Cheviet, Cartier, GEP, EBS, Decayeux, Jean-Charles Sexe, JC AUGÉ, Covalia, CHRU, Cryla, CM Drones, AUREA Technology • Design, Content and Production: JC. AUGÉ • ISSN no.: 2110-1051.