

2022

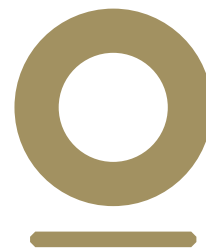


INDUSTRY 4.0:

OPPORTUNITIES OF VALUE CREATION







When it comes to the future, experience counts.

With offices in Dürdingen, Bern and Fribourg, we support private clients, SMEs, large corporations, public-sector administrations, NPOs, associations, clubs and foundations on both sides of the «Röstigraben», the metaphorical divide between the French and the German-speaking parts of Switzerland.

Our staff of nearly 70 are highly trained and are proud of their many years of experience. Together, we offer a broad range of services in the following fields of activity.

Accounting

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Christian Stritt,
Head Manager Bern
Markus Jungo,
Head Manager Fribourg
Beat Mauron,
Head Manager Dürdingen

Missing

Reto Käser



Olivier Curty, State Councillor, Minister of Economic Affairs.

FRIBOURG GETS SMARTER

Industry 4.0 – also known as the fourth industrial revolution – marks the advent of a new economic era dominated by the digital transformation of processes, trade and products. Fribourg recognizes that this transition is inescapable; in fact, it has already begun. The cantonal government has made this disruptive concept a centerpiece of its development strategy, and has taken steps to ensure that it is well-equipped to provide the Fribourg economy with the support needed to make this shift.

At Le Vivier technology park, a hotbed of industrial innovation, high-tech start-ups are busy breaking new ground and opening up opportunities in their respective fields, whether it is manufacturing 3D bioprinting systems, developing autonomous security robots or revolutionizing forging techniques, to name but a few.

The Marly Innovation Center is home to the iPrint Institute, a Fribourg School of Engineering and Architecture spin-off. Its internationally renowned applied research and development expertise in the field of inkjet and digital printing technologies has attracted collaborations with many of the industry's major players, including the Japanese printing giant Epson, which recently opened offices on the technology campus in Marly.

As for the bioeconomy, a sector in which Fribourg excels, manufacturers have developed innovative processes that offer the exciting possibility of enhancing raw materials with new forms of value-added.

Across the canton, digital transformation is already well under way among Fribourg's flagship companies, from aeronautics experts to specialist providers of metal construction elements and building chemicals. It is a process facilitated in some cases by the use of proprietary solutions developed by local firms at the forefront of fields like the Internet of Things and semiconductors.

You can read more about these companies and research institutes in this edition of Fribourg Network Freiburg, and you will find lots more content on the new and improved FNF website.

Enjoy!

JERRY KRATTIGER

INDUSTRY 4.0: “THE SKY’S THE LIMIT”



The concept of Industry 4.0, which originated in the German automobile sector, quickly snowballed. With its dynamic economy and first-rate framework conditions, the canton of Fribourg has made this digital switchover a pillar of its development strategy. In the following interview, Jerry Krattiger, Managing Director of the Fribourg Development Agency, explains why.

Industry 4.0 has become a must in the business world, yet it is still not well understood by the general public...

Industry 4.0 is the name given to the new industrial shift caused by the digitization of trade and production. It follows on from the three major industrial revolutions that were ushered in by mechanization, electrification and automation, respectively. The connection of physical products and their ability to process information is transforming how companies operate. Smart factories are basically the norm in the manufacturing sector now. Thanks to cutting-edge technologies like the Internet of Things, artificial intelligence, robotics and



3D printing, the various tools and workstations all along the production chain communicate constantly with each other in real time. The service sector

“The challenge will be to provide training that reflects these new realities.”

Jerry Krattiger

also plays its part in this widespread transformation by developing innovative commercial processes and models.

Where do Switzerland and the canton of Fribourg stand in the digital transformation of the global economy?

Switzerland's research expertise, skilled workforce and high-performance infrastructure put it in an excellent position compared to other countries. The canton of Fribourg has made Industry 4.0 a pillar of its economic development strategy. Specialization in this field – which already accounts for 12% of the canton's GDP and 8% of its employment – should enable us to assert ourselves as a major player in the transition, by focusing our energies on what we excel at, such as 3D printing, robots, machines, sensors, big data and autonomous vehicles.

This is a game changer not only for companies directly producing 4.0 technologies, but also for the entire manufacturing sector?

Yes, and it is critical that these firms receive the support they need to keep adapting their means of production so that they can rise to the challenges

posed by the digital revolution. We are in the fortunate position to have a first-rate environment, with several innovation sites that are fully paid-up members of Industry 4.0, like Le Vivier, a real industrial cluster specializing in automation and robotization, and the Marly Innovation Center, which is home to iPrint, a world-class research institute in the field of digital printing.

What other advantages does the canton have to offer?

The blueFACTORY site is home to the competence center ROSAS and its spin-off CertX. Both are at the vanguard of technologies and certification standards for autonomous vehicles. We also have iCoSys, a research institute specializing in artificial intelligence and complex systems, which develops interdisciplinary approaches and plays an important role in promoting the transfer of knowledge and technology from academia to the regional economy. The proximity and adaptability of our higher education providers remain one of our greatest strengths. It is entirely possible that the impact of Industry 4.0 will eventually spread to all of Fribourg's primary and second sectors, especially the bioeconomy, in which we lead the way (see *FNF 2021*). The movement has been launched and we are already supporting a number of projects through the New Regional Policy, which we hope will lead to the emergence of high value-added interfaces.

Can you provide some examples?

SmartFarming, a collaborative project that uses digital data recorded by sensors and drones, aims to

optimize agricultural production processes. Real-time information on hygrometric conditions or on the presence of potential pests enables farmers to take targeted, highly effective and less costly action. This constitutes a truly virtuous circle and is the result of Industry 4.0-driven processes. When it comes to potential synergies, the sky's the limit.

Should we fear the impact of Industry 4.0 on the labor market?

Industrial revolutions have always unsettled the public. Every time, though, the facts have belied these fears. Sure, there will be major upheavals and some jobs are likely to disappear. But, at the same time, many new jobs will be created in other sectors and new skills will appear. The challenge will be to provide training that reflects these new realities. Much more than a risk, Industry 4.0 presents a tremendous opportunity for our economy and society.

→ www.promfr.ch

AN EVEN BETTER ONLINE EXPERIENCE!

Head over to the multilingual Fribourg Network Freiburg website (English, French and German) and enjoy lots of exclusive online content, including videos, photos and additional articles. And, don't forget to check back regularly for brand new content.

→ www.fribourgnetwork.ch



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COMET

AT THE HEART OF THE INTERNET OF THINGS



RF Syntario® is the new patented power delivery platform from Comet. It is powered by the company's own disruptive process technology and has undergone thorough testing.

"The third industrial revolution took the workers out of the factory, but the one we are living through now affects absolutely everyone." Industry 4.0 continues to grip the imagination of Stephan Haferl, the new CEO of the **Comet** Group. Indeed, the pioneering Fribourg-based X-ray and radio frequency technology provider is ideally placed to embrace this paradigm shift. "The main challenge facing industry today is exploiting the full potential of digitalization so that it can proactively know when, how and why product maintenance or replacement is required. The Internet of Things, one of our core competencies, precisely enables that." The products manufactured at the Flamatt site allow customers to monitor and record all data related to the manufacturing process, which in turn "allows them to adapt

their procedures as they go along, almost in real time."

Avoiding a nightmare scenario

The radio frequency technologies developed by Comet PCT (Plasma Control Technologies) make it possible to control the plasma processing of silicon wafers, which are a key component of a variety of applications and products, such as integrated circuits. As the Comet CEO explains, "These are tiny technological miracles due to their microscopic size and high performance. Their manufacture is highly regulated and every step in the process must be carefully monitored, which is precisely what our products do." The Comet Group works closely with most of the major international companies in the semiconductor industry.

X-rays and computed tomography also have the advantage of providing valuable data to help avoid "supply chain disruptions, one of industry's worst nightmare scenarios." Haferl is convinced that "Industry 4.0 is only the start of a new era." Comet will continue to focus its technological and financial undertakings in that direction. To achieve its ambitious goals, the group plans to pursue its current investment strategy of allocating over 10% of its turnover back into its research and development activities.

→ www.comet-group.com

LIIP

OPENING UP A WORLD OF POSSIBILITIES

"For us, Economy 4.0 is as an opportunity to build a better and more sustainable world." Gerhard Andrey has woven his environmental credentials into the fabric of the company he co-founded in Fribourg in 2007. **Liip** now has six offices across Switzerland, employs over 200 people and, with more than 100 awards under its belt, is one of the most innovative and influential digital agencies in Switzerland. 'Liipers', as company staff call themselves, specialize in the development of custom web solutions for all kinds of organizations: start-ups, multinationals, government offices, retail outlets and the mobility sector.

Take UrbanConnect, for example. This solution makes it easier for the staff of major companies to travel to work using fleets of smart electric bikes, cars and scooters. As Andrey points out, "the innovation was building a no-key smart lock system using the Internet of Things and controlled via the smartphone."

The first smart public transport ticket

In a country with an incredibly dense, but also complex, public transport network, Liip worked with the Swiss start-up FAIRTIQ to design the first smart public transport ticket. By swiping the START and STOP button on their smartphone screen, users of the FAIRTIQ or partner app will always have the right ticket at the best price for their bus, train, tram or boat journey anywhere in Switzerland. A mini mobility revolution!

Another sustainable mobility project that Liip was heavily involved in was 'Houston', which transformed the Transports Publics Fribourgeois (TPF) into one of the most advanced public transport companies in Switzerland. According to the Liip co-founder, "Replacing radios with VoIP (voice over IP) technology, each bus becomes truly connected. This project shows just how much digitalization can cut energy consumption and costs, while improving coverage and offering a whole range of additional innovative functionalities. It opens up a world of possibilities."

Liip is a staunch open-source advocate and assists its clients – industry, service providers, app developers and many more, ensure that their digital transformation is as socially, environmentally and economically responsible as possible, "We now have the capabilities to objectively measure the contribution that our digitalization projects make to the 17 UN Sustainable Development Goals. With this ambitious new approach, digitization should enable us to help our customers make the world demonstrably better."

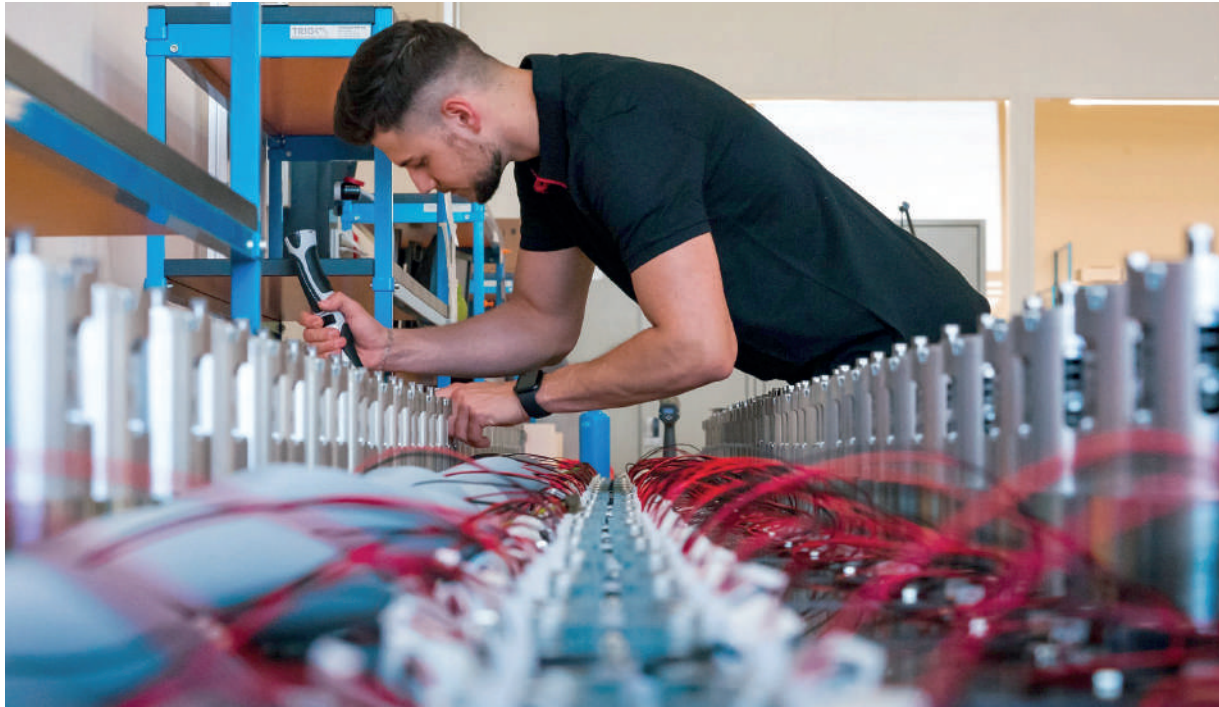
→ www.liip.ch



Liip is an example of Holacracy in action. The digital agency does not have a traditional management hierarchy and affords its employee a great deal of autonomy.

NIVALIS GROUP / LE VIVIER

A HIVE OF INDUSTRIAL ENGINEERING



Le Vivier technology park is home to numerous business success stories, including Asyrii, the leading provider of flexible feeding systems.

Le Vivier Technology Park is a Swiss hub of industrial engineering and innovation based in Fribourg. It has attracted a host of trailblazing companies like Rovenso, which provides autonomous robots for industrial site surveillance and security; REGENHU which uses 3D bio-printers to produce human tissue and organs; and Asyrii, which specializes in the development and manufacture of ingenious 3-axis feeding and sorting systems. The Fribourg incubator, spearheaded by the **Nivalis Group**, provides businesses with critical support to further develop and fine-tune their cutting-edge industrial products and processes. As Christophe Fragnière, president and co-founder of the Nivalis Group and Le Vivier, explains, "By investing financial and human capital in promising start-ups, we free up entrepreneurs to focus on realizing their business idea and identifying the added value they can bring to it." In 2002, this 'engineering sciences campus' was born out of the desire on the part of CPAutomation to outsource some of its innovation activities. According to Fragnière, "This was when we became aware of the difficulties and obstacles that entrepreneurs can come against when trying to implement their ideas." CPAutomation, which

now provides standard and special machine solutions for industries like watchmaking and medtech, was the first company to move in.

eForging, one-of-a-kind technology

Among the latest start-ups to arrive at Le Vivier is Bionomous, which develops laboratory instruments for the automated manipulation of miniature biological entities used in life sciences research. The ability to generate faster and more reliable results will be a major boon for many fields like cancer diagnostics, drug development and toxicology research.

EPoS Technologies, a start-up that recently raised CHF 1 million in a late seed funding round led by Nivalis Group, specializes in the development of a unique and disruptive electro-sintering technology. Commonly referred to as eForging, this technology makes it possible to create completely new materials and to produce parts with unprecedented precision, density and resistance.

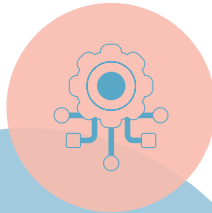
→ www.nivalisgroup.ch

→ www.vivier.ch



INDUSTRIAL REVOLUTIONS

1



MECHANIZATION

Technical advances like the invention of the steam engine, which began to emerge towards the end of the 18th century, ushered in mechanization, which profoundly changed methods of production and paved the way for new industries like textiles and metallurgy. Before long, skilled artisan workshops were replaced by factories.



ELECTRIFICATION

The second industrial revolution was driven by new sources of energy: gas, oil and, above all, electricity, which came into widespread use in the 1880s. Steel won out over iron, and chemical synthesis was born. At the turn of the 20th century, automobiles and airplanes transformed transportation, while mass production and assembly lines gradually became the norm.

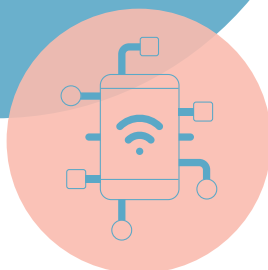
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4

DIGITALIZATION AND CONNECTIVITY

Industry 4.0 is the name given to the industrial shift recently brought about by the digitalization of products and communication. It is powered by cutting-edge technologies like artificial intelligence, the Internet of Things, robotics, data collection and 3D printing, and has led to the advent of 'smart' factories where all parts of the production process – machines, workstations and other equipment – are interconnected and collect and share data constantly and in real time.



AUTOMATION

The third industrial revolution began in 1970. It was an era that saw a rise in automation thanks to advances in cybernetics, computing and electronics. A series of discoveries by the chemical industry made it possible to manufacture a growing number of synthetic products.

3

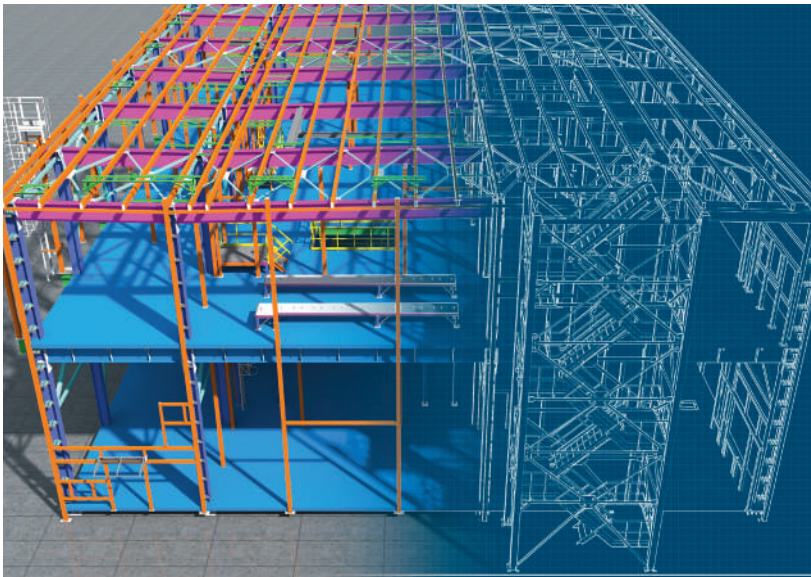


BIM / ELEMENT

CONSTRUCTION REINVENTS ITSELF

The construction industry is undergoing a digital revolution of its own. Among the most significant advances is **BIM** (building information modeling), a sort of evolving 3D digital model (see photo) that captures and documents all the physical and functional characteristics of a built structure. But there is much more to BIM than that. "It is a series of multidisciplinary processes that are deployed throughout the design, construction and use of a building," explains Christian Erik Peter, managing director of the Fribourg-based company **Element** Ltd, the Swiss market leader in precast concrete building components. In addition to improved operational efficiency and enhanced collaboration between the various trades working on any given construction site, BIM also helps to raise the technical and environmental performance of building projects, stabilizes processes and leads to greater cost transparency. The recent collaborative project BIM-UP, based in the canton of Fribourg and launched by the Building Innovation Cluster, brings together some 15 private and institutional partners to explore ways to support construction and facility management companies as they transition to digital. According to Peter, "Element SA is at the forefront of BIM-related technological developments, but we still have a long way to go before they are fully integrated into all small and medium-sized companies in our sector."

→ www.element.ch



"USER EXPERIENCE IS A TOP PRIORITY FOR US"

ANNE MAILLARD, MEMBER OF
THE GOVERNING BOARD OF THE
FRIBOURG CANTONAL BANK (BCF)

Is the BCF strongly affected by digital transformation?

Digital transformation is sweeping through the banking sector, and the BCF is no exception. We have always responded very quickly to major digital innovations like eBanking and mobile banking, and continue to develop FriBenk, our online mortgage tool which we launched in 2016. There is also our client portal 'MaBCF', the first of its kind in Switzerland.

What developments are currently under way?

Improving user experience is a top priority for us. Digital technologies and the associated changes in behaviors not only provide an opportunity to optimize costs but also constantly push us to reinvent ourselves. Our customers want simplicity and immediacy. So, we have to take steps to ensure that lots of pretty straightforward banking operations like ordering foreign currency or receiving and sending documents meet these demands.

And internally?

The bank has to become more agile organizationally and take more focused actions, like client situation analyses, for example. Drawing on pre-defined scenarios will not only save us considerable time but will also allow our advisers to concentrate on personalized actions and building that all-important direct relationship with clients.

→ www.bcf.ch

POLYTYPE

PRINTING GOES HYPER-PERSONALIZED



Polytype's digital printing system 'DigiCup' brings hyper-personalization to the masses.

What do spectators at a professional baseball game in Mexico have in common with amateur cyclists competing in a road race in Belgium and guests at a South African firm's end-of-year party? It is more than likely that they all are holding a cup or water bottle that has been personalized using a machine developed by **Polytype** in Fribourg, the leading provider of direct-to-packaging printing systems worldwide. As Florian Fässler, head of digital development at the Fribourg-based company, explains, "We export our digital printing system 'DigiCup' all around the globe. "Demand is particularly high in the US, "where the sports industry is mad for customized cups."

According to Fässler, "All printing processes used to be mechanical, so it took several weeks to print the packaging." This also meant that profit was only to be had from bulk orders. But, around 10 years ago, the company revolutionized its business practices by embracing digital printing. As well as being quicker than earlier printing solutions, this technology makes it possible to handle very small printing orders without incurring any extra cost. "Even a single water

bottle or cup pays off. The era of hyper-personalization is here!"

Economical and ecological

"Our machines help our customers digitalize their entire production chain." Fässler also notes that "the machine can generate shipping labels as well." Another advantage of the Polytype print-to-packaging solution is the fact that "it is in sync with today's more environmentally aware consumer society, for whom reusable packaging is becoming the norm. "As well as being in line with what customers want, small-scale production also cuts waste. Given the volatile nature of the packaging market and fast-changing design and color trends, printed merchandise can all too often become dead stock.

The head of digital development points out a further benefit, "The much shorter production lead times mean that small firms selling customizable containers can now also compete in the e-commerce marketplace. "Polytype wants to build on this success and is currently exploring possible new applications for its technology, including silicone cartridges for the construction industry and wine bottle closures.

→ www.polytype.com

“FRIBOURG GIVES US ACCESS TO HIGH QUALITY WORKFORCE AND GOOD INFRASTRUCTURE”*

* Per H. Dybwad, Executive Chairman, Condis Ltd



13.72 %

Income tax rate

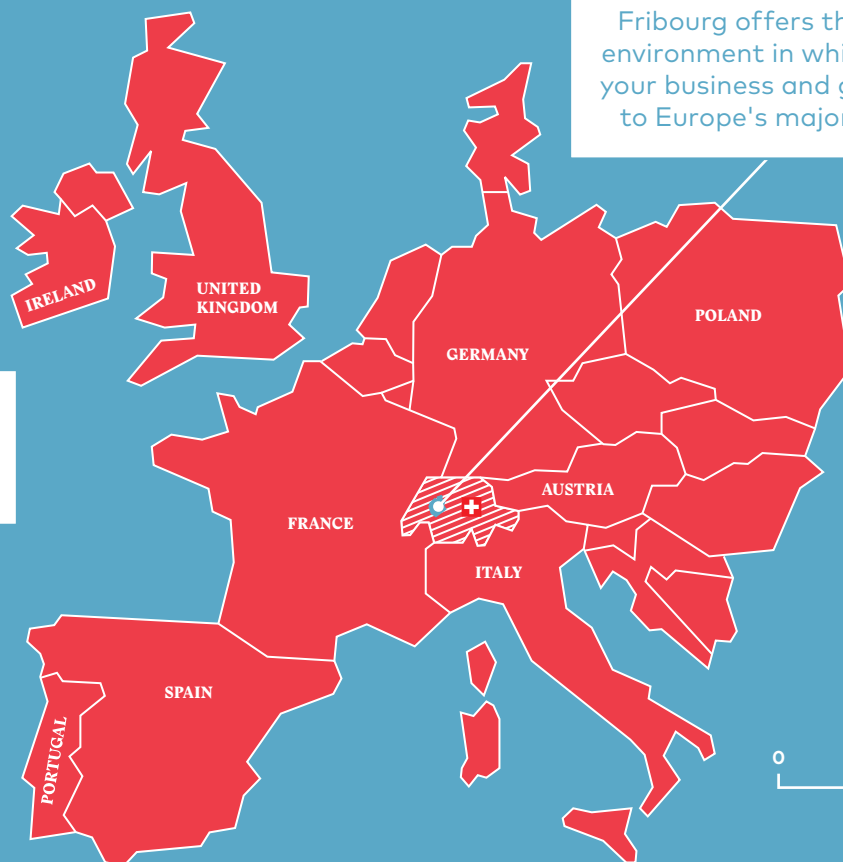
1.5

million
Inhabitants within
a 45-minute radius

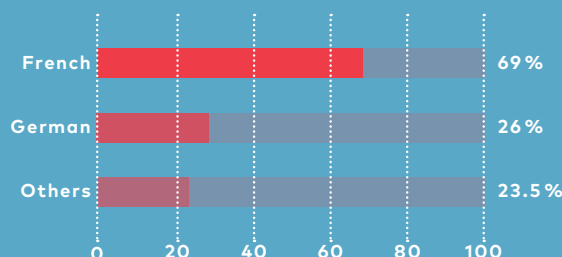
22 %

are under 20, making it
the youngest population
in Switzerland

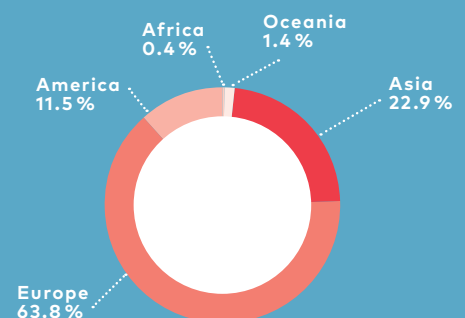
Fribourg offers the perfect environment in which to grow your business and gain access to Europe's major markets



MAIN
LANGUAGE



EXPORTS



“FRIBOURG HAPPY!”

Fribourg has so much to offer. First, there is its enviable central location that includes excellent transport links to the main Swiss and European road and rail networks. The country's main cities and airports – Basel, Bern, Geneva and Zurich – are only a 90-minute journey away.

The canton's unspoiled nature, diverse landscapes, vibrant sporting and cultural life, rich history, and exceptional cultural and culinary heritage are some of the reasons why Fribourg is such a great place to live, work and study. The people of Fribourg are famed for their down-to-earth, open-minded, optimistic and friendly approach to life. At the same time, their drive has transformed the canton into a dynamic region and an ideal breeding ground for a host of innovative and exciting projects. Why not come see for yourself?



FRIBOURG – A HIVE OF INNOVATION

The Global Innovation Index has repeatedly ranked Switzerland among the most innovative countries in the world. It is fair to say that the canton of Fribourg has played its part in this designation thanks to a development strategy that is focused on promoting innovation and high value-added activities. Since 2011, five innovation hubs have sprung up across the canton. Offering first-rate infrastructures and superlative services, these technology centers are now home to many start-ups and hightech companies.



AgriCo

- Specialization: agrifood and biomass
- Location: Saint-Aubin
- www.agrico.swiss



blueFACTORY

- Specialization: built environment of the future, circular economy, mobility and human health
- Location: Fribourg city center
- www.bluefactory.ch



La Maillarde

- Specialization: biopharmaceuticals and environmental technologies
- Location: Romont



**SWITZERLAND
INNOVATION**
CONNECTING GREAT MINDS

blueFACTORY is a member of the Switzerland Innovation Park network.



Marly Innovation Center

- Specialization: fine chemicals and 3D printing
- Location: Marly
- www.marly-innovation-center.org



Le Vivier

- Specialization: automation and robotization
- Location: Villaz
- www.vivier.ch



Fribourg Innovation Award

The biennial Innovation Award, organized by the Fribourg Development Agency and the Fribourg Cantonal Bank (BCF), celebrates Fribourg's most pioneering and visionary companies. Since 1991 more than 50 companies have reaped the benefits of this showcase of Fribourg entrepreneurial creativity, raising the visibility of their company and their products in the process. www.innovation-fribourg.ch

FRIBOURG – A TECHNOLOGY TRANSFER POWERHOUSE

The transfer of knowledge and technology is a core feature of Fribourg's economic ecosystem. It allows industry to remain innovative and competitive, fosters collaborative projects, and generates win-win outcomes. There is a wealth of resources and specialist services to help companies leverage technology transfer to grow their business.

They include three sectoral clusters, six centers of expertise, a material sciences research center (AMI), the technology platform INNOSQUARE and a dedicated technology transfer office.

On top of all this, the Fribourg School of Engineering and Architecture has 10 applied research institutes

in three distinct fields: information and communication technologies, construction and environment, and industrial technologies. They work hand in hand with companies to find novel solutions and develop innovative products and processes.

TECHTRANSFER FRIBOURG



TechTransfer Fribourg is the official technology transfer office of the University of Fribourg, the Adolphe Merkle Institute, the Fribourg School of Management and the Fribourg School of Engineering and Architecture. It offers advice on intellectual property issues and acts as a link between academic research and industry.

→ www.tt-fr.ch

INNOSQUARE



INNOSQUARE is a technology platform that helps companies develop and realize their innovative ideas, and facilitates collaborative single- and multisector projects that bring together industry, the public sector and academia.

→ www.innosquare.com

SECTORAL CLUSTERS

Building Innovation Cluster

→ www.building-innovation.ch

Food & Nutrition Cluster

→ www.clusterfoodnutrition.ch

Swiss Plastics Cluster

→ www.swissplastics-cluster.ch

CENTERS OF EXPERTISE

Biofactory Competence Center (BCC)

→ www.bcc.ch

Digital Printing Competence Center (iPrint)

→ www.iprint.center

Plastics Innovation Competence Center (PICC)

→ www.picc.center

Robust and Safe Systems Center (ROSAS)

→ www.rosas.center

Smart Living Lab

→ www.smartlivinglab.ch

Swiss Integrative Center for Human Health (SICHH)

→ www.sichh.ch



adolphe merkle institute
excellence in pure and applied nanoscience

The **Adolphe Merkle Institute (AMI)**, is a center of excellence in nanosciences and material sciences research and education. Through collaborations with industrial partners, AMI seeks to stimulate innovation and foster industrial competitiveness. The AMI is also home to the internationally respected Bio-Inspired Materials National Center of Competence in Research (NCCR).

→ www.ami.swiss

FRIBOURG – A BEACON OF EDUCATION AND SCIENCE

Fribourg has the youngest population in Switzerland and a higher education landscape that is as diverse as it is dense. Alongside its cosmopolitan university, where over 10,000 students are enrolled in a wide range of undergraduate and postgraduate programs, the canton has five specialist higher education institutes: the School of Engineering and Architecture, the School of Management, the School of Social Work, the School of Health Sciences and the School of Teacher Education. It is also home to the Adolphe Merkle Institute, Switzerland's leading research and teaching center in the field of nanosciences

and material sciences. The renowned EPFL (Swiss Federal Institute of Technology in Lausanne) has a satellite here.

Added to these is a plethora of colleges specializing in fields such as business administration, agriculture, music, art, multimedia and hospitality. Of course, there is a broad host of primary, junior and senior high schools, as well as vocational training schools and colleges. Throughout the education system, classes are taught in French and German, while English is the language of choice for many postgraduate programs.



University of Fribourg

→ www.unifr.ch



Adolphe Merkle Institute

→ www.am-institute.ch



School of Management & Innovation Lab

→ www.heg-fr.ch



School of Engineering and Architecture

→ www.heia-fr.ch



EPFL Fribourg

→ fribourg.epfl.ch

FRIBOURG – A STAUNCH SUPPORTER OF BUSINESS

Since 1971, the Fribourg Development Agency has been helping local businesses get off the ground, outside companies to relocate to the region, and established companies to expand their operations. We are on hand to advise and guide you through the many support mechanisms and opportunities offered by the canton of Fribourg. A dedicated project manager will be appointed to assist and coordinate your project, and will take the lead and put you in touch with the right people for: financial assistance and tax incentives, finding the ideal site or premises for your business, staff recruitment, applying for and obtaining work and residence permits, apartment/house hunting, the social integration of your family and your personnel, contacting institutions of higher education, and any other issue that might arise. Get in touch. We're here to help!

→ www.promfr.ch

THE BEST PLACE FOR THE BEST COMPANIES

These companies, among many others, have chosen to locate in Fribourg: Alcon (Switzerland/USA), Cartier (France), Cailler/Nestlé (Switzerland), Covestro (Germany), Geberit (Switzerland), Ladurée (France), Johnson Electric (China), Liebherr (Germany), Mapei (Italy), Medion Grifols Diagnostics/Grifols, (Spain), Meggitt (UK), Michelin (France), Nespresso (Switzerland), Pall Corporation (USA), Richemont International (Switzerland), Scott Sports (Switzerland), Sika (Switzerland), Spiro (Sweden), UCB Farchim (Belgium), VeriSign (USA) and Wago Contact (Germany)

→ www.promfr.ch/en/establish/references



Neue Regionalpolitik **npr**
Nouvelle politique régionale **npr**
Nuova politica regionale **npr**

The **New Regional Policy** is a stimulus program launched by the federal government with assistance from the cantons. Its mission is to foster innovation both in industry and tourism by providing financial support in the form of loans, non-repayable grants and subsidies.

Innosuisse is Switzerland's national innovation promotion agency. It provides consultancy, networking services and financial resources to help turn scientific research into economic results.

FRI UP



Fri Up is the canton of Fribourg's official business start-up support agency. It offers free support for new entrepreneurs and fosters innovation.

→ www.friup.ch

PLATINN



Based in Fribourg, Platinn is the Western Switzerland Innovation Platform. Its mission is to foster the innovation capabilities and competitiveness of start-ups and SMEs through its coaching services.

→ www.platinn.ch

TESTIMONIALS



“Fribourg’s higher education institutes are really important for our company, as both project partners and a source of well-trained personnel.”

Gil Menétrey, Managing Director,
Ascenseurs Menétrey SA
→ www.menetrey-lift.ch



“There were several reasons why we chose Fribourg, not least because of the Marly Innovation Center, which offers an environment where we can build infrastructures and grow our business quickly, and because of the canton’s strategy which dovetails with our focus on the circular economy and the bioeconomy.”

Remy Buser, CEO and co-founder,
Bloom Biorenewables Ltd
→ www.bloombiorenewables.com



“Fribourg is the ideal base for a company like ours that works in both French- and German-speaking Switzerland.”

Sebastian Tobler, CEO
and co-founder, GBY Ltd
→ www.gby.swiss

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IPRINT INSTITUTE TAKING ON THE FOURTH DIMENSION

When we think about inkjet printing, all too often many of us still see it in two-dimensional terms. Yet, this technology, which has developed in parallel with end user computing, has made a spectacular leap into the third dimension. According to Gioele Balestra, co-director of the **iPrint Institute**, inkjet printing could soon be entering the fourth dimension. Researchers at the Institute, which is part of the Fribourg School of Engineering and Architecture and based at the Marly Innovation Center, are leading the charge. "The location of our facility is highly symbolic – one of Switzerland's oldest paper mills had operated on this site since the 15th century."

The team at iPrint, almost the only institute of its kind in the world, are firmly convinced that the future of printing, and production, lies with inkjet technology and are working on the development of new inks, substrates, equipment and applications. As Balestra explains, "Digital 2D printing is far from being a dying technology. In fact, it is experiencing a real boom in a few specific fields like packaging, labelling, and direct-to-object printing, starting with the decoration on ceramic tiles."

As for the limitations of 3D printing, which consists in creating objects of all shapes and sizes by adding layer after layer of material using a 3D model, they are constantly shrinking thanks to the use of increasingly varied functional inks,

from metal and ceramic nanoparticles, to polymers, cells, proteins, and even foodstuffs. The resulting products are used in a range of sectors, including the energy, biomedical, electronic, automotive and agrifood industries.

Printing emotions

According to Balestra, "This fully digital solution means that printing can be done at any time, so no warehousing needs, and anywhere, so no transport needs." An added advantage is much less waste because it keeps the use of material to a minimum. Needless to say, these economic and environmental benefits are attracting a great deal of interest, especially from industry.

iPrint has recently created an inkjet ecosystem to assist firms to make the move towards this solution. The printing giant Epson Europe B.V. joined in 2022 and "We are currently in discussions with other internationally renowned groups." At the same time, researchers at the Institute continue to pursue other innovative avenues, such as sensory stimulation and, in turn, the generation of emotional experiences. "Soon, printing will be capable of activating our sense of smell and taste. We really will be in the fourth dimension when this happens!"

→ www.heia-fr.ch



'Direct-to-shape (DTS)' is the name of iPrint's joint project with two companies, Polytipe and MABI Robotic. The trio aims to develop a more effective robotics-based method of printing directly on to large 3D objects.

SOTTAS

STEEL CONSTRUCTION GOES DIGITAL



"Even the most skeptical members of the team did not want to go back to the old way of working", notes Laure Sottas Solenghi, member of the Sottas SA board, and Florian Pittet, Connect Manager at the metal construction specialist.

What do the global headquarters of Scott Sports, the Nespresso factory in Romont and the Rolex Learning Center at EPFL have in common? The structural frame or facade elements of all three buildings were made by **Sottas Sa**. This family business boasts not only 40 years of metal construction expertise but also a proven ability to adapt to fast-moving developments and changes in the building industry. Sottas has tackled challenging and unprecedented construction projects with aplomb and never stops innovating. Today, it is a major player in the Swiss market and is expanding its footprint in Europe. Although structural components and facade elements have become larger and more complex, their production still involves a high degree of craftsmanship. Every building is unique; so too are its components. As board

member Laure Sottas Solenghi, and Florian Pittet, Connect Manager at Sottas, explain, the Fribourg company has embraced Industry 4.0 without sacrificing its commitment to individualized service delivery.

What does digitalization bring to a company like Sottas Constructions?

Laure Sottas Solenghi (LSS): When it comes to designing metal structures, our engineers and technical drawers been using 3D tools for more than 20 years now. Before, they would incorporate all the measurements and dimensions into 2D plans, which were then printed out and sent to their colleagues in the workshop. We have since done away with hard copies. Now, when the workshop team starts assembling the element, they consult the 3D models directly on computers or tablets. Even with new-generation theodolites, it is

possible to import 3D models, which also facilitates the measuring and checking processes.

Are there any other benefits besides saving paper?

Florian Pittet (FP): Back in the day, when an assembly worker spotted that a dimension was missing, they would call a technician who would go down to the shop floor, discuss the issue, go back to the office to redraw the part, reprint the plan and hand it over to the assembly worker. It was tedious and time-consuming. Now, the assembly worker simply goes and gets what he needs to finish the job, which makes him feel more self-reliant and involved. **LSS:** The computers in the workshop allow us to monitor, in real time, how the work or project is progressing. Previously, everyone had to complete a worksheet. A technician then collected

and compiled them to generate an overview of the project status. Today, every single member of our team who is involved in the production process has access to a single chart, which they fill out in real time.

Does robotization feature heavily in your workshops?

FP: We are not involved in mass production. Most of our projects are unique. Robotization allows us to optimize manufacturing flows, as well as simplify and facilitate the work of our team. Co-robotics is interesting, though, because the robots work alongside rather than replace humans. For example, the robots are used to transport loads or perform high-precision operations. This is an area where we still have room for improvement.

Digitalization also generates huge volumes of data. How do you use this information?

FP: Many of our machines provide us with data on things like the duration of operations, the number of parts produced, the material used and productivity rates. We long overlooked this data but now we collect and analyze it. From this information, we are able to identify if our machines are actually adapted to our needs. So, when we have to invest in new equipment, we

have tangible data points that help us make informed decisions.

What about your products? Are they also connected?

LSS: We do indeed offer smart facades, which come with sensors. Some types of glass can switch from transparent to opaque depending on the data collected by these sensors. Solutions like these also make maintenance management more efficient: rather than providing these services after a certain amount of time has elapsed, they can be delivered as and when required.

Were these new approaches easy to implement in a company like yours?

LSS: Although Sottas has always been very innovative, it retains a traditional, artisanal feel. It is a sentiment shared by the workforce. Therefore, we had to win them over to the new ways. Having said that, we didn't simply impose change. We started off with trials, using old computers we reclaimed. After six months, we validated the solution that worked well and installed it in other workstations. Within a year, we had computerized the entire joinery workshop. Even the most skeptical members of the team did not want to go back to the old way of working.

→ www.sottas.ch

TRANSITION SUPPORT

Business digitalization is a core issue for the economy. The Chamber of Commerce and Industry of the Canton of Fribourg (CCIF) launched a collaborative project that brought together local actors, including Sottas SA and the Fribourg School of Engineering and Architecture. Their ideas and input led to the creation of a transition plan for companies. Interested firms go through a connectivity audit, receive support during the transition phase and can take the 'Digital Manager 4.1' training course. This CCIF program takes 16 months. Although much of the training focuses on technology, there are several lean management and green management modules too. Sottas has gone through this process already. As Florian Pittet explains, "Although not all of the topics covered were directly transferable to our company, the training course opened our eyes to the potential of Industry 4.0."



Scott Sports' headquarters in Givisiez is one of the iconic buildings built by metal construction specialist Sottas SA.

NESPRESSO

SMART COFFEE PRODUCTION... WHAT ELSE?

Synonymous with innovation, quality and expertise, 'Made in Switzerland' is a core value at Nespresso. Today, the brand, whose famous capsules are exported around the world, produces its entire coffee range in Switzerland. As Guillaume Fraysse, manager of Nespresso's factory in Romont explains, "Over the past 10 years, **Nespresso** has invested 900 million Swiss francs in production, logistics, IT and commercial operations in Switzerland, including 700 million in its three production centers." By the end of 2022, Romont will double its production capacity thanks to the gradual introduction of 10 new filling and packaging lines. When asked whether the Fribourg production facility benefits from Industry 4.0 technologies, Fraysse's answer is unequivocal, "Every critical parameter of every single line is relayed to servers in real time so as to record and guarantee the quality of our products. These data allow us to monitor equipment, predict when maintenance is needed and make improvements like cutting our energy consumption."

Improved product quality and consistency

The Internet of Things has also arrived at the group's production centers. To ensure that the facilities maintain their high standards of industrial excellence, WiFi sensors and radio signals gather detailed information on

the vibration behavior and thermodynamics. As Fraysse enthusiastically explains, "When analyzed in aggregate, the recorded parameters allow us to find correlations which would have been unthinkable not that long ago, as well as open up potential for improvements, particularly as regards the interplay between humidity, granulometry, density and percolation time."

Other tools deployed at the Nespresso plant in Romont include predictive modeling and machine learning, "During the roasting process, for example, our system suggests to the operator what the ideal temperature profile should be for optimizing the taste of our coffees. We are talking about a complex natural product, which can vary from one valley and one harvest to another. These models guarantee accurate results." Even after the coffee is put into a capsule, it continues to undergo physical and chemical changes for seven days, "With machine learning, we are able to predict the final result and thus maximize the sensory performance of the coffee." George Clooney is impressed!

→ www.nespresso.com



Nespresso's Vertuo coffee capsules continue to gain market share. They are made exclusively at Nespresso's production center in Romont, from where they are exported to 24 countries in North America, Asia and Europe.

SIMON & JOSEF

A GREENER GUEST EXPERIENCE



A simple QR Code lends hoteliers, guests and the environment a helping hand.

When you stay in a hotel for several nights, do you really need your room cleaned every morning? The start-up **Simon & Josef** have come up with an innovative solution that finally lets the hotel guests decide if and when they would like the housekeeping team to pass by their room.

The principle is simple, "As soon as the guests arrive in the room, they scan a QR code using a smartphone to access a questionnaire," explains Raphaël Gaudart, co-founder – alongside Markus Aeby – of Simon & Josef. The first question on the survey is, "Would you like your room cleaned tomorrow?" If the hotel guests answer no, the questionnaire closes automatically and housekeeping staff will bypass the room the next day. If the answer is yes, the guests can stipulate what housekeeping services

they require: bed-making, vacuuming, fresh towels, etc. The whole selection process is over in a matter of seconds.

Smaller carbon footprint

This platform offers an array of benefits. Process optimizations means that the hotel owners use fewer natural resources and reduce their costs. "Our system also replaces the famous red and green 'Do not disturb' and 'Please make up this room' cards, which means the housekeeping team no longer wastes precious time going back and forth to check whether the guest has vacated the room or not," adds Gaudart. For the guests, the platform lets them enjoy customized room service while reducing their carbon footprint into the bargain "Our flexible and modern solution avoids waste and is better for the environ-

ment. This has a positive impact on not only the owner's bottom line but also the customer experience. It's a win-win all round!"

In the future, the Simon & Josef platform could see some promising developments. According to the start-up co-founder, "We have already identified a number of new fields of application, such as managing other services like the minibar, breakfast and even the restaurant. There is huge potential out there and we are carefully listening to and working closely with hotel owners." Given its growing list of hotel partners, it is clear that Simon & Josef are tapping into a real need in the market.

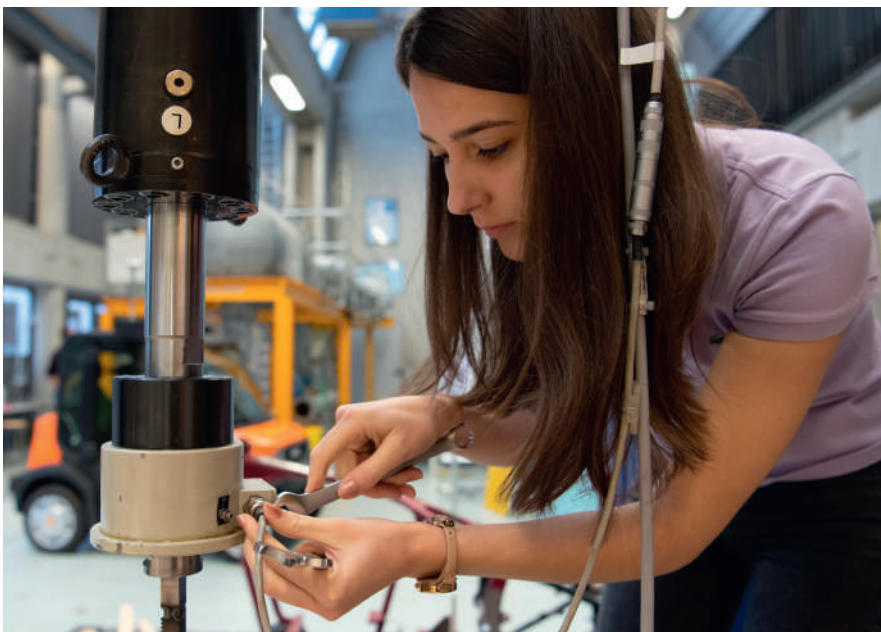
→ www.simonandjosef.com

MOTION CONTROL ACADEMY

BROADENING THE SKILLS OF FUTURE ENGINEERS

The **Motion Control Academy** is a fine example of a public-private partnership. Since 2019, the Fribourg School of Engineering and Architecture (HEIA-FR), together with local companies Boschung, Contrinex, CPAutomation and Polytype, have run an extracurricular training program which gives students in mechanical (see photo), electrical and computer engineering the opportunity to acquire valuable interdisciplinary skills. "It is divided into three parts: a five-week Summer School, during which students receive an allowance, followed by two semester projects and finally the undergraduate thesis. All are interdisciplinary and benefit from the active support of our industry partners," explains Jean-Nicolas Aebischer, director of HEIA-FR, who is fully convinced of the advantages this approach offers. "In the modern industrial world, the acquisition of a shared foundation, a global vision, or simply an openness to others constitutes real added value and reflects the future work of engineers, whether they are computer scientists, mechanical engineers or electrical engineers. As for the companies, they benefit from spotting potential future employees and the launch of interdisciplinary applied research projects. They also have the added bonus of being able to sign up their existing staff to the Summer School.

→ www.heia-fr.ch



“FRIBOURG CAN DRAW FROM A DEEP WELL OF EXPERTISE”

**BÉAT KUNZ, CO-FOUNDER AND CREATOR
OF SWISS CYBER SECURITY DAYS (SCSD)**

**Can you explain how SCSD has become
the cybersecurity event in Switzerland
since it was launched in 2019?**

We noticed that there was no national platform in Switzerland that brought together experts in this field and focused on the latest insights and emerging cybersecurity challenges. Tackling these challenges required close and intensive cooperation between all concerned, especially since the pandemic has accelerated digital transformation and the cybercrime risk. The proposal was credible, innovative and persuasive, so everyone got on board.

Why Fribourg?

One of the first questions we had to resolve was the venue. Bearing in mind that we wanted the event to be national in reach, Fribourg was ideal because it is halfway between Switzerland's two centers of IT security expertise: the regions of Zurich and Lake Geneva. It has the added advantage of being bilingual. Also, the political authorities were very supportive, not to mention the fact that Fribourg has its own considerable cybersecurity resources.

What are they?

ROSAS, the center of scientific excellence, is an important player. There is also CertX (Ed.: a ROSAS spin-off and the first functional safety and cybersecurity certification body in Switzerland), and a host of cutting-edge firms like CISEL, eb-Qual, Softcom and Verisign. Fribourg can draw on a deep well of exceptional expertise.

→ www.swisscybersecuritydays.ch

SIKA

DATA – THE NEW GOLD

Gunther Schaar is convinced that the future of industry lies in leveraging data's full potential. According to the Head of Operations at **Sika Manufacturing SA**, "While Industry 3.0 has taught us to centralize data so that we can respond as quickly as possible to the on-site needs of our customers, Industry 4.0 goes even further." Sika is the leading global provider of chemical-based construction materials and solutions and is present in 101 countries around the world. One of its largest manufacturing sites is its Düringen plant, which is overseen by Schaar. Nearly 95% of PVC waterproofing membranes and sealants made there are destined for the export market. "Exploiting the full potential of data allows us to accelerate the entire production chain and move closer to on-demand, just-in-time manufacturing." This means "a reduction in surplus stock, transport needs and CO₂ emissions." The top executives at the Swiss multinational have devised a three-pillar strategy for the group. As Schaar explains, the first is "Customer centricity. Here, our marketing and sales teams endeavor to improve the collection and management of data." The second is operational excellence. The aim here is to make production more efficient and ecological, "Connected machines and sensors generate lots of data. Smart analyses of this information will make it easier for us to solve problems and even identify them before they happen." The third and final pillar is effective

knowledge work, with a particular focus on in-house data sharing. "Communication is vitally important in a group which has some 30,000 employees and a decentralized operational structure."

50% increase in production

At Sika's major production facility in Düringen, efforts will concentrate on implementing the operational excellence part of the strategy. "For years now, we have been doing everything we can to automate our processes and boost supply chain efficiency," notes Schaar. In Switzerland, the Fribourg site is already considered a model of efficiency. It is set to cement this status thanks to Sika's continued investment in the canton, "We plan to increase production by roughly 50% between now and 2028."

→ che.sika.com



When it comes to efficiency, Sika's production plant in the canton of Fribourg is a role model for many of the group's 90 subsidiaries around the globe.

MEGGITT DIGITAL ASCENT



Meggitt has come up with an innovative solution that is set to make aircraft tire pressure checks faster, safer and more efficient.

The **Meggitt** facility in Fribourg has developed a new system to improve flight safety. The Wireless Tire sensor, which uses Bluetooth™ technology, speeds up aircraft tire pressure checks, cuts maintenance time and avoids interventions that risk damaging the plane. With all of the world's major aircraft manufacturers already on the company's books and nearly 75,000 aircrafts worldwide fitted with its products, Meggitt's breakthrough technology is sure to make its mark on the industry before long. For the development team, miniaturization was the main challenge that they had to overcome. The sensor had to be compatible with different wheel types and withstand extreme environmental conditions. Luckily for the developers, the Fribourg plant was perfectly equipped to tackle these difficulties head on, "We have a fully integrated site with the capabilities needed to manage a product from start to finish, including the machining process and electronic assembly." Another major factor was the collective expertise of the development team, who specialize in vibration sensors. "The Wireless Tire Pressure Sensor not only allows our customers to save time, but it also collects data that can be used to identify trends and anticipate future operational problems."

Trialing digital management solutions

The development of the Wireless Tire sensor is also fully in line with Meggitt's Industry 4.0-driven strategy. In recent years, the group, which has a global workforce of close to 10,000, has made considerable advances when it comes to

digital transformation. "Our Fribourg facility is one of the sites that our head office chose to introduce digital production management and digital work instructions on a trial basis." The VisualFactory© solution allows workers to access all production-related processes, including work instructions, time and non-compliance reporting, test rig results and traceability. For Pierre Teyssot, Head of Operational Excellence, "This platform offers a host of exciting opportunities." Meggitt's impressive digital ascent could kick up a gear if the proposed takeover by US giant Parker-Hannifin goes through.

→ www.meggitt.com

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