

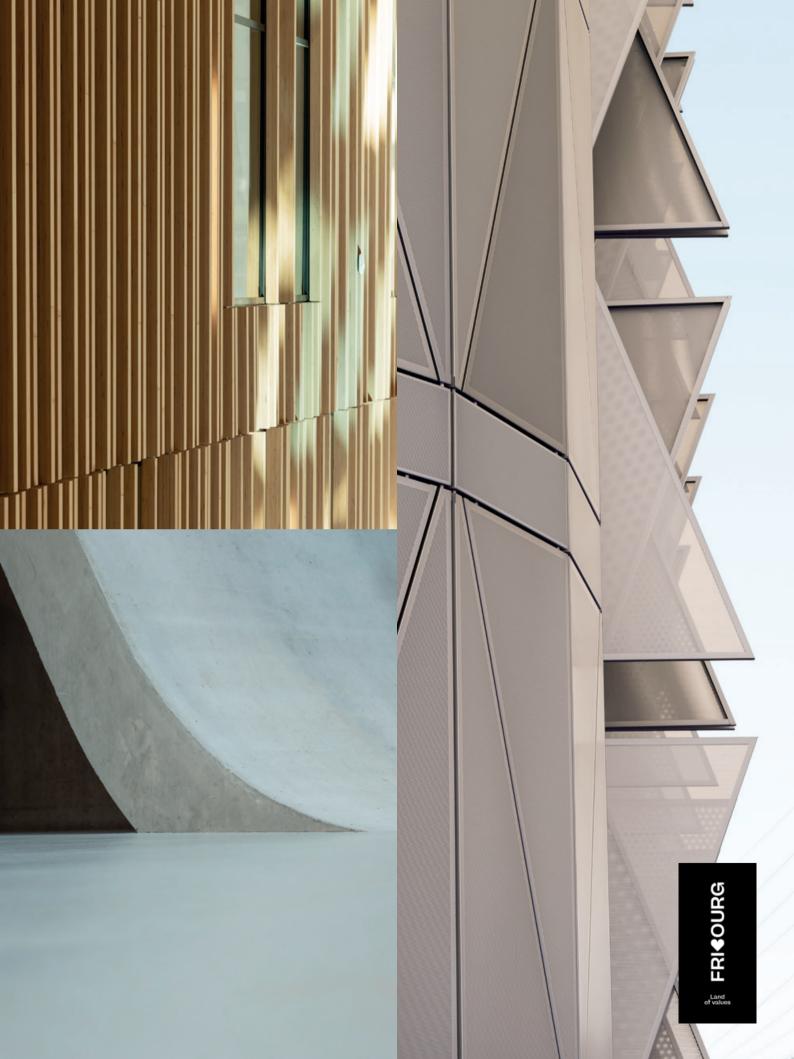
THE BUSINESS MAGAZINE OF THE CANTON OF FRIBOURG

2023

BUILDING THE FUTURE



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CORE



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Partners

Back row, left to right

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Front row, left to right

Beat Mauron, Head Manager Düdingen

Markus Jungo, Head Manager Fribourg

Christian Stritt, Head Manager Bern



Olivier Curty, State Councillor, Minister of Economic Affairs.

A MAINSTAY OF THE FRIBOURG ECONOMY

The construction industry is one of the largest employers in Fribourg and accounts for a important share of the canton's GDP and employment. The sector derives a great deal of its strength from Fribourg's dense network of national and international firms, high-caliber SMEs, cluster, competence centers and research organizations. Whatever the area of specialization – wood, metalworking, concrete, civil engineering or energy efficiency – Fribourg companies enjoy a stellar reputation throughout Switzerland and beyond thanks to the depth of their knowledge and expertise.

The economic development strategy pursued by the cantonal government prioritizes sustainability and promotes socially and environmentally responsible business conduct. The canton has designed and deploys a range of sector-specific measures to realize these objectives. For the construction sector, these include the strenghtening of the Building Innovation Cluster (BIC) and the integration of sustainable urban planning principles to all public projects.

Another strategic priority is nurturing ongoing exchanges between academia and industry in order to pave the way for the emergence of effective, innovative solutions which boost the competitiveness of firms and equip them to respond head on to the most pressing challenges of our time, such as climate change and energy security.

In the bluefactory innovation district, for example, the Smart Living Lab is a research and development center that draws on the combined expertise of EPFL, University of Fribourg and the School of Engineering and Architecture of Fribourg to imagine and create solutions for the built environment of the future. In 2026, they will move into a new purpose-built, experimental and multidisciplinary facility that will become a catalyst for progress.

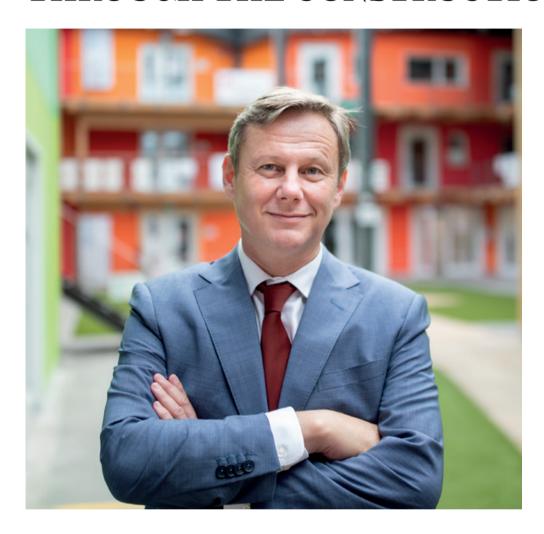
As you will see from the articles in this edition of Fribourg Network Freiburg, we can count on a high-performance construction ecosystem that has an unparalleled capacity to innovate and move with the times.

Enjoy!



JERRY KRATTIGER

"INNOVATION IS SWEEPING THROUGH THE CONSTRUCTION SECTOR"



Substantial state investment in research and development have helped Fribourg's construction sector to become more robust and prepare for future upheavals affecting the industry. Interview with Jerry Krattiger, Managing Director of the Fribourg Development Agency.

Why did you choose to dedicate this edition of Fribourg Network Fribourg to the construction sector?

Diversification is not only one of the Fribourg economy's strengths, but it has also made it more resilient. At the same time, we are in the fortunate position to have several big hitters too, like the construction industry. According to official statistics, it accounts for 10.9% of employment in the canton, almost three percentage points higher than the Swiss average. But these figures are pretty conservative. We estimate that more than 20% of employment in Fribourg is generated by sectors that are linked, directly or indirectly, to



construction and energy efficiency. The boom in the bio-sourced materials sector prompted us to include the construction industry in the strategically important bioeconomy.

What is your take on the radical transformation happening in the sector?

The climate challenge coupled with ever-diminishing resources are forcing the industry to reinvent itself and embrace sustainability. During Switzerland's presidency of EUSALP (the European Union's macro-regional strategy for the Alpine region), Fribourg successfully hosted a major international conference on the circular economy that demonstrated the importance of construction innovation. Whether it's the large-scale use of wood, reducing the environmental impact of concrete, or the unprecedented use of decarbonized steel and re-use pilot projects, the canton is leading by example. Other high priorities for us are Industry 4.0 and the development of digital tools, particularly in connection with BIM modelling and energy-efficient buildings.

Do we also need to think about the evolution of the built environment?

Yes, now more than ever. The groundbreaking redevelopment of the Richemont Group campus is a tangible example of how major companies are adapting to new workplace realities. Demographic, social and environmental challenges will also dramatically transform housing in the decades to come.

"The Smart Living Lab, the Building Innovation Cluster, which brings together industry players and provides the sector with a fresh impetus, coupled with a wealth of high-performing companies, big and small, are helping to create an environment where partnerships can be forged, and innovative projects can take shape."

Jerry Krattiger

We can expect initiatives at the individual building, neighborhood and city scales. Thanks to generous investments, experts at the Smart Living Lab, a center of research and development dedicated to the built environment of the future, are able to conduct wide-ranging, transdisciplinary research into building design processes, construction technologies, energy systems and user well-being. Innovation is sweeping through the construction sector.

Would you agree that the entire bluefactory innovation district, which is home to the Smart Living Lab, is a model of smart urban planning and sustainability?

Bluefactory, which is co-owned by the Canton and City of Fribourg, is resolutely forward-looking and a role model when it comes to the efficient use of energy and resources. The site has an excellent carbon footprint, and its 'sponge city' status makes it a Swiss water management pioneer. The current development phase includes the construction of building B and the Smart Living Lab facility. Both of these buildings will be con-

structed from timber and will form the centerpiece of the bluefactory site. They will also meet stringent sustainability standards. Thanks to building B, which is set to open at the end of 2023, the district will be able to grow its 60-strong community of innovative companies.

What about knowledge transfer?

I am a firm believer in technology transfers (see FNF 2021) and I would like to see these capabilities scaled up. The Smart Living Lab, the Building Innovation Cluster (BIC), which brings together industry players and provides the sector with a fresh impetus, coupled with a wealth of high-performing companies, big and small, are helping to create an environment where partnerships can be forged, and innovative projects can take shape. The conditions are excellent, the skills and the will are there, so all we need to do is harness their collective power to build our future!

→ www.promfr.ch

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→ www.fribourgnetwork.ch



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PHOTOVOLTAICS

FRIBOURG ENJOYS ITS MOMENT IN THE SUN



Kromatix technology, here on full display at the Innovation Center of Red River College (Winnipeg, Canada), is winning over architects around the world.

Thanks to a host of innovative companies, a strong creative spirit and a highly educated workforce, the future of the photovoltaic industry in the canton of Fribourg is looking bright.

The canton boasts one of Switzerland's leading solar energy companies, Soleol, founded in 2008 by Jean-Louis Guillet, a former dairy technologist with a real flair for business. Soleol manages Switzerland's largest photovoltaic solar power plant in Onnens (Vaud). With a surface area of 50,500 m², the equivalent to seven soccer fields, the plant generates enough electricity to power 2,300 households. But it was not all plain sailing, as Guillet explains, "We faced a whole host of technical challenges, starting with creating panels that would be 30% lighter than normal so that the existing structure could support the installation's weight."

Once this massive project was completed in 2016, Guillet plowed his energies into turning his company into a 'photovoltaic contracting' specialist. Under this solution, property own-

ers can lease out their roof or other types of unused space to third parties. Soleol oversees the installation of the panels, technical management, and maintenance, leaving the owner to sit back and enjoy their rental income and low-cost electricity without having to invest a single Swiss franc. Soleol's industrious CEO quickly points out that, "We were among the first to develop this business model in Switzerland." The market is booming in Switzerland, much to Guillet's delight, "By the end of 2023, we will probably have installed as many as 1,000 photovoltaic systems. On top of this are the 300 and more applications we receive every month!"

Unique technology

The order book of **Kromatix**, which is based in Romont, Switzerland's glass and stained glass capital, is also bursting at the seams. The company has developed a unique technology which uses atomic deposition rather than conventional paint and pigments to color solar panels. The process does not affect the performance of the photovoltaic cells and even makes

them more resistant to ageing than comparable untreated products. Rafic Hanbali, the Managing Director of Kromatix, extols the virtues of this game-changing product, "The technical features and integration options our product offers, such as its ability to replicate tile patterns, are highly prized by architects, and could feasibly be used on protected heritage assets as well."

Groupe E, the Fribourg-based energy specialist, is the brains behind Solar Access, the first training program of its kind in Western Switzerland for budding and existing photovoltaics and solar energy experts. The aim of the program is to double the number of employees working in the photovoltaics arm of Groupe E's business by 2025. After all, an abundant supply of skilled labor will be key to making the successful transition to cleaner and sustainable energy.

- → www.soleol.ch
- → www.kromatix.com
- → www.groupe-e.ch



32.2%



CONSTRUCTION SECTOR

The construction sector is a major contributor to the Fribourg economy. It provides 10.9% of the canton's full-time equivalent (FTE) jobs, compared to 8.1% nationwide.

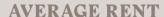
HEAT PUMPS

Fribourg is Switzerland's heat pump champion. They constitute the main heating system for 32.2% of residential properties in the canton compared to 17% nationwide.



10.9%

сн 1266



At an average of 1266 Swiss francs per month (excluding utilities), residential rents in the canton of Fribourg are 127 Swiss francs lower than the national average.



OWNER-OCCUPIERS

In the canton of Fribourg, 41.4% of homes are owner-occupied compared to only 36.3% nationwide. The share of owner-occupiers varies across the population: 26.4% for single people; 31.1% for single-parent families; 49.4% for couples with no children; and 53.8 % for couples with children.





REAL ESTATE

One sign of Fribourg's vibrant economy is that the canton has the highest share of new building stock in Switzerland. A total of 27.8% of residential properties in the canton were built after 2000, compared to

27.8%

Sources: Federal Statistical Office (FSO) and the Canton of Fribourg Statistics Office (SStat); 2020 and 2021 figures.

SMART LIVING LAB

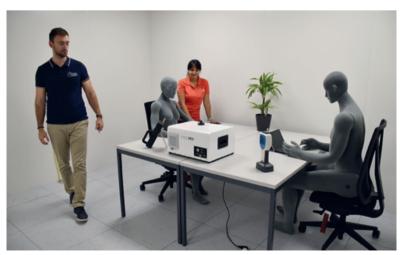
A BYWORD FOR INNOVATION •

Whether climate-, health- or energy-related, one crisis after another is forcing us to rethink the way we design, construct, and use buildings. This is also the fast-changing context in which the Smart Living Lab operates. Based in downtown Fribourg, the research and development center for the future of the built environment has become a byword for innovation. It is powered by the combined expertise of EPFL, the Fribourg School of Engineering and Architecture (HEIA-FR) and the University of Fribourg (Unifr) and attracts world-class basic and applied research students and scientists from around the globe.

Martin Gonzenbach, Operational Director of EPFL Fribourg and the Smart Living Lab, is rightly proud of his organization's work and achievements to date, "The Smart Living Lab brings added value to Fribourg and its bluefactory innovation district thanks, among others, to its participation in major national and international collaborative projects like SWICE, a project funded by the Swiss Federal Office of Energy that aims to reduce the country's energy consumption through direct engagement with the public. Another great example is the ARC-HEST program. It taps into existing cooperation between Switzerland and South Korea to explore urban planning solutions inspired by different cultures and policies."

The Smart Living Lab will soon have its own purpose-built facility in the heart of the busy and exhilarating bluefactory ecosystem, alongside a wide range of industrial players and start-ups already based in the innovation district. True to its name, this unique structure will be a dedicated experimental space that will foster greater public-private interaction and dialogue on construction technologies, entrepreneurship, and sustainability.

-- www.smartlivinglab.ch



Researchers use this climate chamber to conduct controlled indoor air quality experiments.



"STIMULATE THE TRANSFER OF TECHNOLOGIES TO INDUSTRY GIANTS"

KAREN SCRIVENER, DIRECTOR OF EPFL'S BUILDING MATERIALS LABORATORY

Does concrete deserve its poor environmental reputation?

The production of concrete is responsible for 7 to 8% of global greenhouse gas emissions, so it's not surprising that concrete has an image problem. Yet, a number of recent studies has shown that concrete's environmental footprint – per kilo or per square meter – is actually pretty low. The problem therefore is not the material's intrinsic properties but the fact that it is used in such huge volumes. That said, there is still plenty of room for improvement, which is why we are focusing our research efforts on making concrete and cement, one of its key ingredients, better.

You have developed a low-carbon cement which generates up to 40% less carbon dioxide than conventional cement. How has the industry responded to this innovation?

The sector has long been very conservative and resistant to change. However, the current state of the environment coupled with pressure on the industry is forcing it to step up to the mark. Our low-carbon cement is already manufactured on several continents, and producers approach us almost every week, looking for more information about it.

Could the creation of a Center for Worldwide Sustainable Construction (CWSC) in Fribourg further accelerate this trend?

This project would align the various players in the construction chain, stimulate the transfer of technologies to industry giants, and work on a global scale to develop more sustainable solutions in materials and building management.

BLUEFACTORY

BUILDING CLIMATE RESILIENCE THROUGH INNOVATION (*)



How the bluefactory innovation district and the new Smart Living Lab plug-and-test facility will look by 2026.

The bluefactory innovation district is a real hive of activity. Created in 2014 on the site of the former Cardinal brewery in downtown Fribourg, bluefactory has recently embarked on the first phase of its ambitious three-part development plan, which will take to two decades to complete. Work is already underway on the construction of 'building B' and the new purpose-built Smart Living Lab facility. Once completed at the end of 2023 and in 2026 respectively, the two sites will cover a surface area of 13,400 m². The second phase will focus on the rehabilitation of two listed buildings: the grain silo and the 'Gray Hall', Cardinal's former bottling hall.

As Philippe Jemmely, the bluefactory Director, explains, "building B will be planned, built, and operated using the BIM (Building Information Modeling) method. Once finished, it will boast a new 700 m² prototyping space and should eventually double the on-site workforce." The Smart Living Lab facility will provide workspaces and research infrastructure for 130 scientists from EPFL, the Fribourg School of Engineering and Architecture, and the University of Fribourg. "It really will be a fully modular, scalable living laboratory."

Exemplary water management

Ambitious sustainability and circular economy principles underpin the entire project. Take water management, for

example. Given that the project plans to re-use existing facilities as far as possible, the on-site reservoir will collect and store excess rainwater, as well as water from the Les Pillettes spring, which was once used to make Cardinal beer. Wastewater will also be harvested and treated on site using innovative biological processes like phytoremediation. Once cleaned, this water will be used to supply the sanitary facilities, irrigate the vegetation and clean public areas. As for brown and yellow water, these will be converted into natural fertilizers. Project Manager, Virginie Dulucq, is excited about the opportunities that this approach has opened up for the innovation district, "bluefactory is part of the VunaNexus experimental program with the European Space Agency to transform urine into fertilizer."

This exemplary approach to water management, known as 'Sponge City', coupled with the use of local and natural resources, urban renaturing and energy self-sufficiency, will equip the bluefactory ecosystem to cope with the challenges of climate change while preserving user comfort and well-being. According to Communication Manager Véronique Grady, "We don't just want to welcome innovative companies. We want to be innovative too, and break new ground."

→ www.bluefactory.ch



ROOMZ

STREAMLINED, SMART AND SUSTAINABLE

"Digital sobriety is integral to the solutions we offer and sets us apart from our competitors." This statement from Roger Meier, CEO of ROOMZ, reflects the growing importance of reducing the environmental impact of the smart, high-tech objects and devices which have become a ubiquitous feature of everyday life. The solutions offered by the Fribourg-based company are not only 100% wireless but also low-energy. As Meier explains, "Our flagship product, the ROOMZ Display, runs on E Ink, only connects for a few minutes a day to retrieve the reservation data, and consumes on average 10,000 times less energy than a conventional tablet." The company is also committed to combating planned obsolescence: all ROOMZ devices have a service life that is as much as three times longer than cabled color solutions. They also have limitless runtime when powered by a solar cell, which works even when indoor lighting is poor. If battery powered, the runtime is at least two years. Last but by no means least, everything is designed, manufactured, and assembled in Fribourg!

But ROOMZ has not forgotten its primary mission: to improve the management of not only classrooms and conference rooms, but also workstations. According to the CEO, "The rise in remote working and coworking since the pandemic have made our tools all the more relevant. In addition to wireless screens, our presence sensors and analysis tools provide invaluable data on occupancy rates for meeting rooms and offices, which in turn can optimize the use of these spaces. Our strength lies in offering a

complete and innovative hardware and software solution, which is simple to install, use and maintain."

800 ROOMZ screens at ETH Zurich

Given its growing number of customers, ROOMZ is clearly on the right track. "When we set up the company in 2015, Switzerland was our main target market. Today, our solutions are used across Europe and beyond, and our customers include a host of SMEs and major concerns like Lonza and Swiss Post." ROOMZ has also developed a tailor-made solution for the education system. Back in 2016, ETH Zurich, one of the top 10 higher education institutes in continental Europe, installed 400 ROOMZ screens. Seven years later, the Zurich-based university for science and technology has twice as many of these digital signage displays.

The future looks bright for the Fribourg-based firm. "We have recently started to turn a profit, and our business is growing at a sustained but healthy rate of 50% per annum." ROOMZ CEO is delighted with his company's trajectory so far and is especially glad that he chose to set up his business in Fribourg, "We enjoy a whole host of benefits, from the invaluable support from organizations like the Fribourg Development Agency and Capital Risque Fribourg right through to the region's bilingual status and our central location in the city's bluefactory innovation district."

→ www.roomz.io



Unlike some of its competitors, the ROOMZ Display solution, which was developed in Fribourg, is easy to install use and maintain.

INSTITUTE OF SWISS AND INTERNATIONAL CONSTRUCTION LAW

FRIBOURG, THE GOLD STANDARD FOR CONSTRUCTION LAW



"Construction law is hard to avoid. In Switzerland, it accounts for a third of all cases brought before the courts. Whether it is buildings, roads, railways, heritage, landscape or environmental protection, regional planning or land ownership, construction law touches on all our lives. And Fribourg is considered a national center of expertise in this field." Professor Jean-Baptiste Zufferey is well-placed to make such a declaration: he holds the Chair of Administrative Law at the University of Fribourg and co-directs the Institute of Swiss and International Construction Law with Professor Hubert Stöckli.

Every two years, the Institute organizes the Swiss Days of Construction Law. Since 1975, some 1,500 legal experts, economists, public administration and construction professionals have flocked to Fribourg to attend this unmissable and important conference. According to the conference coordinator, "The event is held in French and German and runs over several days. It serves as a national center of construction law expertise. As well as offering an overview of the latest precedents in public and private law, it takes a closer look at a select choice of topical issues." The most recent conference, which was held in January 2023, included a deep dive into the world of building permits, an examination of the legal relationship between public law and climate-related issues, as well as the adaptation of prices and deadlines due to supply chain bottlenecks.

A renowned continuing education provider

Every other year, the Institute holds the Public Procurement Symposium (Colloque Marchés Publics), which explores the latest developments in the field and analyses key matters of substantive and procedural law. The research work carried out by members of the Institute team is frequently cited by the Swiss courts and the Institute's academic journal is "read by every judge, lawyer and legal practitioner working in the administration or in a construction and real-estate company in Switzerland."

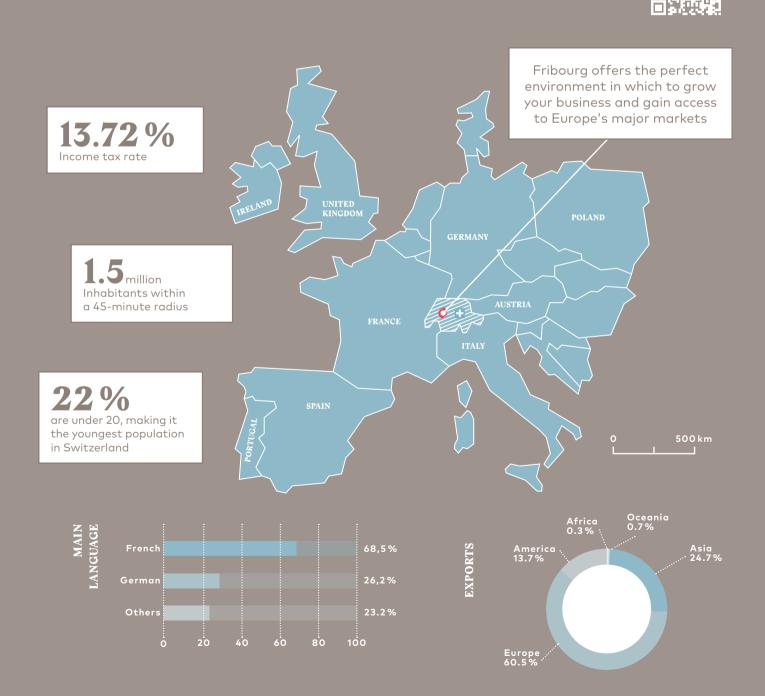
But an overview of the institute and its work would not be complete without mentioning its continuing education courses, which have grown considerably in recent years. "Our Certificate of Advanced Studies in Construction and Real Estate Law is extremely popular and attracts seasoned professionals from across Switzerland." Professor Zufferey is delighted at the course's success, "It's a great advertisement for the University and the Law Faculty." In addition to all these activities, the Institute team uses its expertise to draft legal opinions, conduct mediation and arbitration processes, carry out thought leader missions, and work closely with the Smart Living Lab on specialist research projects.

→ www.unifr.ch/ius/baurecht

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"WE CHOSE FRIBOURG FOR ITS INFRASTRUCTURE, TALENTS AND ITS CIRCULAR BIOECONOMY STRATEGY"*

* Remy Buser, CEO, Bloom Biorenewables Ltd



FRIBOURG - LAND OF VALUES

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



bluefactory is a member of the Switzerland Innovation Park network.



Marly Innovation Center

- Specialization: fine chemicals and 3D printing
- ▶ Location: Marly
- $\longrightarrow \ \, \text{www.marly-innovation-center.org}$



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, five 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



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

SECTORAL CLUSTERS

Building Innovation Cluster

→ www.building-innovation.ch

Food & Nutrition Cluster

→ www.clusterfoodnutrition.ch

Swiss Plastics Cluster

→ www.swissplastics-cluster.ch

CENTERS 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.smartli<u>vinglab.ch</u>

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.ami.swiss



School of Management & Innovation Lab

→ wwww.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!



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.

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), Geberit (Switzerland), Ladurée (France), Johnson Electric (China), Liebherr (Germany), Mapei (Italy), Medion Grifols Diagnostics/Grifols (Spain), Michelin (France), Nespresso (Switzerland), Pall Corporation (USA), Parker Meggitt (USA), Richemont International (Switzerland), Rolex (Switzerland), Scott Sports (Switzerland), Sika (Switzerland), Spiro (Sweden), UCB Farchim (Belgium), VeriSign (USA) and Wago Contact (Germany)

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





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



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

→ www.platinn.ch

FRIBOURG - THE PLACE TO INNOVATE



and the Fribourg Cantonal Bank honor Fribourg's most finalists learnt who would be taking home one of three

SUSTAINABLE ECONOMY AWARD: PMF-SYSTEM (*)

SMEs and sheltered workshops. By displaying information facilitates learning and new product development. The tool also fosters the integration of people with disabilities in the workplace. The project was co-funded by the Swiss Confederation and benefited from the support of the Fribourg School of Engineering and Architecture, the Fribourg School of Management, the Center for Socio-Professional Integration and the Fribourg Development Agency.

→ www.pmf-system.ch

START-UP AWARD: NEURIA 🕩



Could your smartphone hold the key to combating weight problems and obesity? Neuria, a Fribourg-based start-up, certainly thinks so. The engineers and neuroscientists at the University of Fribourg spin-off have developed a video game that helps users sustainably transform their eating habits. restrictive diets and have an almost 90% failure rate, the

BUSINESS AWARD: COMET (>)

Faulty batteries can be a major fire hazard. To mitigate this technology - MesoFocus - that enables end-of-line quality controls of electric vehicle batteries. The innovative solution from Comet has already attracted a great deal of interest automation, and additive manufacturing industries as well.



The transformation is spectacular: the Richemont Group has treated its Fribourg campus (see photos) to a stunning two-year-long makeover, and just in time to celebrate its 50th anniversary in Villars-sur-Glâne. This vast redevelopment and construction project, completed in summer 2023, provides the Group's 1,400 employees with a unique work environment.

Inside, there are adaptable high-quality hybrid and collaborative workspaces that promote operational excellence and spark creativity. As Edgar Vandel, the site manager, explains, "In the past, each environment had a clearly defined function. Today, all of the spaces are multimodal. This decompartmentalization takes conventional open-plan layout to another level because the space is designed to facilitate communication between residents. It gives the site a campus feel, which in turn enhances our corporate culture."

Outside, the grounds are a green oasis offering spaces to relax and unwind. According to Suzanne Lévesque, Company Secretary of Richemont, "One expression of our commitment to sustainability is our ambitious human-powered mobility plan. It has allowed us to do away with a lot of our above-ground parking, freeing up 40,000 square meters - almost half the surface area of the campus – for gardens, terraces and green spaces." As well as gorgeous outdoor spaces, site residents can enjoy an impressive range of high-end services and events, including a restaurant with the Terroir Fribourg label, several cafés and lounges, in-house boutique, gym, wellness area, etc., "which add a real Community Manager role to the list of employer obligations we are required to fulfill".

Head and heart

Thanks to the extensive redevelopment of the Fribourg site, Richemont is now in an excellent position to sharpen its competitive edge and attract new talent who will help the Group scale new heights. The site has expanded considerably since the Cartier lighter factory opened in Villars-sur-Glâne back in 1972. It is now home to a Cartier watchmaking manufacture, a global logistics center, as well as multiple centers of expertise in fields as varied as distribution, operations, finance, human resources, digitalization, e-commerce and IT. Suzanne Lévesque concludes, "The Fribourg campus is a strategically important site for Richemont. It is both the head and the heart of the Group."

→ www.richemont.com

RE-USE

DECONSTRUCT, NOT DEMOLISH

Construction and demolition waste accounts for two-thirds of all refuse generated in Switzerland. Of course, it is possible to recycle building materials and use them to build a new structure, but this process can be extremely energy-intensive. A more sustainable alternative is the re-use of the existing building or salvaged building materials for a similar purpose while altering the fabric as little as possible.

This age-old practice, which gradually fell out of favor during the industrial era, is now enjoying a revival of sorts, at least among the research community. The Fribourg-based POLYNORM project aims to demonstrate the potential of this approach by dismantling and reusing a load-bearing structure in its entirety.

"The POLYNORM industrial warehouse dates from 1958 and was slated for demolition. Its lightweight and highly innovative design makes it the perfect subject for a pilot study," explains Agnès Collaud, a research associate at the TRANSFORM Institute, which initiated the project and is part of the School of Engineering and Architecture of Fribourg (HEIA-FR).

The project has attracted a great deal of interest from the building industry, including Morand Constructions Métalliques. The Fribourg firm is one of POLYNORM's many partners and was responsible for dismantling the former warehouse's metal load-bearing frame. According to Managing Director Jean-François Suchet, "We're

always looking for ways to reduce our environmental footprint. So, following the completion in summer 2022 of Switzerland's first decarbonized steel structure which was produced entirely from recycled materials and renewable electricity, we were keen to take part in this project. It was an opportunity to make a name for ourselves in the re-use field and acquire deconstruction expertise."

A role model

Although this approach is not especially cost-effective at the present time, Agnès Collaud believes that the explosion in energy and raw material prices could soon change all that, "Our primary objective was to develop a building deconstruction methodology and a large-scale re-use model, and in the process record the obstacles and levers we encountered along the way. Our experiment raises many questions about the way we plan our buildings." Metal is not the only material under the re-use spotlight. At the Smart Living Lab, the Structural Xploration Lab (SXL) and the TRANSFORM, iTEC and ENERGY institutes (as part of the ConcReTe project) hope to demonstrate the technical feasibility, environmental efficiency, and economic viability of reusing elements like slabs, walls, beams and columns which have been extracted from reinforced concrete structures. Corentin Fivet, director of the SXL laboratory, is delighted with the progress made so far, "Each new finding is more promising than the last."

→ www.smartlivinglab.ch



Built in 1958, the former Polynorm warehouse was the ideal candidate for a pilot project that seeks to renovate and re-use an industrial facility in its entirety.

METAL SCHOOL

LOCAL FIRMS UNITE TO ATTRACT THE NEXT GENERATION

The popularity of steel construction is on the up and up. Fribourg-based companies working in this sector export their metalworking expertise throughout Switzerland and beyond. In 2005, four of these firms – CMA Construction, Morand Constructions Métalliques, Progin SA Métal and Sottas SA – joined forces to create the Ecole du Métal Sàrl, the first school of its kind. Around 20 apprentice metalworkers enjoy personalized support and benefit from the collective expertise of the school's founders. The institution is part of Switzerland's world-renowned and much imitated dual-track apprenticeship system which combines on-the-job training with attendance at a vocational college.

The budding metalworkers spend the first year of their four-year course at the Ecole du Métal (Metal School). During their time at the school, they learn the basics of their trade free from everyday workplace stresses. "Our business is becoming increasingly complex. With the advent of 3D design, BIM and Industry 4.0, the machines and techniques we use are constantly evolving", explains Patrice Magnin, the school's superintendent and head of training. This means that the next generation of metalworkers need to have an in-depth knowledge of their trade even before they set foot in a workshop.

"We also pass on the craftsmanship that is the basis of our companies' know-how but has almost disappeared from everyday working life. The apprentices must be able to demonstrate these skills in our final exams." According to Magnin, it would be wrong to dismiss this craftsmanship as redundant in today's workplace. For him, it is precisely these traditional manual skills that instill in the young metalworkers a deep understanding and love of the trade.

Retaining qualified workers

In the second year, apprentices return to their companies where they continue their on-the-job training. In the third and fourth years, they return periodically to the Ecole du Métal. The head instructor explains that "The in-company trainers, instructors from the Ecole du Métal and vocational college teaching staff liaise on a regular basis for the entire duration of the four-year course. We also provide individualized support to the students who need it."

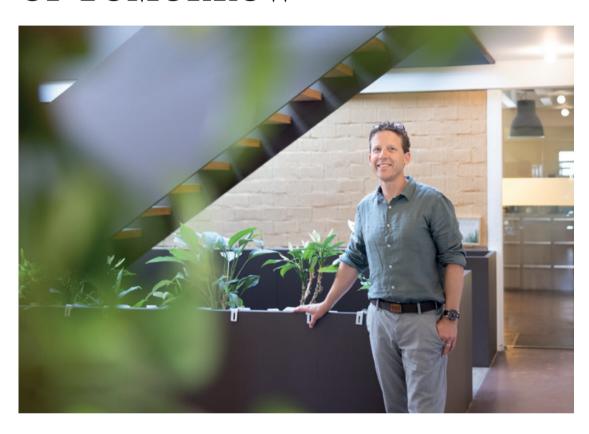
The model works so well that it has been taken up again in 2021 to create the Ecole Romande du Métal. This school, which was the brainchild of the managers of Sottas SA, Metaltec Fribourg and Metaltec Valais, specializes in training metal fabricators with technical drawing expertise. The aim of these private initiatives is to resolve the industry's shortage of qualified labor. As Patrice Magnin concludes, "We are able to retain qualified professionals thanks to first-rate supervision we offer apprentices throughout their training."

→ www.ecole-du-metal.ch



LUTZ ARCHITECTS

"BUILD TODAY WHILE THINKING OF TOMORROW"



Fabrice Macherel, Associate Director of Lutz Architects, in Green Offices, which is not only the company's headquarters but also a fine example of environmentally responsible construction.

As far back as the early 1970s, the Fribourg-based Conrad Lutz was a vocal advocate of energy-efficient building design. Some saw him as a dreamer, others as a crank. But when the 1973 oil crisis hit, doubters soon realized that Lutz had been right all along. With the introduction in the late 1990s of the Minergie construction standard for low-energy buildings, Switzerland had finally started to treat the issue with the seriousness it deserved. The founder of Lutz Architects retired in 2017 but his successors continue to keep his pioneering spirit and innovative thinking alive. Fabrice Macherel, Associate Director of this illustrious architecture practice and a green architecture expert, shares some insights on the past, present and future of energy-efficient building design.

'Green Offices', the Lutz Architects office, was built 16 years ago but remains a paragon of green construction. Why?

Our Minergie-P-Eco-certified office building, which also houses other companies, stands out for its very low environmental impact. It uses close to 90% less energy than a standard office building built in 2007, and there are several reasons why. For example, the building materials have low levels of embodied energy, and the property is fitted out with dry toilets and a rainwater collection system. As a winner of the Watt d'Or award in 2008 and the Prix Lignum in 2009, Green Offices is a great reference for our architecture firm.

The Prix Lignum recognizes innovative timber construction projects. It seems that you naturally prefer to work with wood.

It's all about using the right materials for the job at hand. It is perfectly fine to use concrete if you're laying foundations or building tunnels. However, as soon as you start building above ground, wood is better because it greatly reduces the level of CO₂ emissions and could even be recycled once the structure reaches the end of its lifecycle. We need to start paying more attention to the embodied energy of building materials. Switzerland's forests are still underexploited. Drawing energy exclusively from the sun, it takes the forests a little over one minute to produce enough timber to build a family home.

Would you agree that energy-efficient building design has never been more topical as it is now?

The climate and energy crises have led to a lot of media coverage on the subject. This should spur us on to fully commit to sustainability, especially since buildings guzzle nearly 50% of the energy consumed in Switzerland. Given the ambitious targets that Switzerland has set itself, the legal framework is going to become tighter, and we must not shy away from investing in energy efficiency, for both financial and ecological reason. Even water, which was long thought to be inexhaustible in Switzerland, could become much more expensive in the future, as has already happened with heating oil and electricity. Today, it is possible to construct passive buildings, i.e., buildings that generate more energy than they consume.

What about renovating existing buildings?

We absolutely need to do this. Sustainable construction is one thing, but renovating existing stock is quite another. One of our many collaborations in Switzerland and Europe is the 'Coccum' research project which our firm launched. Together with the Building Innovation Cluster (BIC), the Fribourg School of Engineering and Architecture and other private and public partners, we are working on developing a reproducible, standardized renovation technique to improve the envelope efficiency and airtightness of a building, while enhancing its architectural quality at the same time. The project has so far led to the first Minergie-P renovation in Western Switzerland of a 1950s rental property.

How do you see the future?

The major challenge will be to supply housing stock of sufficient quantity and quality for our rapidly growing population. We have already managed to turn a space that was originally designed for one household into a house that can accommodate two or three families without negatively impacting their quality of life and comfort. We also need to think about the flexibility and modularity of houses and apartments over time. More generally, we have to re-embrace circular economy thinking while re-designing urban spaces so that they are better thought out in terms of housing, mobility and infrastructure. Our motto sums it up: build today while thinking of tomorrow!

→ www.lutz-architectes.ch

FRIBOURG - A CHAMPION OF ENERGY EFFICIENCY 🗗

The Fribourg-based start-up **Yord** wants us all to heat smarter. It has developed a solution that uses artificial intelligence to cut energy consumption by up to 40%. The solution has two components: a box which connects to the boiler, as well as a network of sensors that measure brightness, humidity, temperature and CO_2 levels. But that's not all: Yord's solution is compatible with heating systems of all ages and types, and can be installed with no adjustments needed.

Fribourg is home to another energy efficiency champion: **Ecco2**, the leading Swiss provider in its field is the brains behind the multi-award-winning Building Intelligence solution. Its predictive heating control technology can be used even on large-scale real estate holdings and generates certified results in under two years. Whether you are a portfolio manager, property manager, heating

technician or janitor, Ecco2 offers a range of tools – from customized dashboards to mobile applications – to suit any user profile.

Energy efficiency is also a public issue. The Cantonal Competence Center in Building Renovation **CCRB**, created in 2022, is a one-stop shop for anyone interested in or involved in renovation projects. Its many missions include acting as a facilitator between project partners; proposing simple, tried and tested solutions; and developing and adopting new types of implementation plans and business models.

- → www.yord.ch
- → www.ecco2.ch
- → www.ccrb.ch

WOOD CONSTRUCTION

INNOVATIVE WOOD-BASED SOLUTIONS



I he interior load-bearing structure and exterior facades of Le Tournesol day nursery in Renens were expertly crafted by Charpentes Vial.

Wood is one of humanity's earliest building materials. From traditional chalets to state-of-the-art industrial facilities and multi-storey apartment blocks, Fribourg's carpenters and joiners have a demonstrated capacity to adapt their tried and tested techniques to changing needs. At the same time, they have forged partnerships with local higher education institutions to develop innovative solutions that ensure wood keeps its edge in the competitive construction market and remains an attractive alternative to less sustainable building materials at a time when the climate crisis is pushing us to reinvent our practices and way of life.

"Since we were involved in building four bridges over the Bulle* bypass in 2004, we got to work on creating a highly innovative notch system for fastening wood to concrete", as Grégoire Vial, Managing Director of the Fribourg-based joinery firm **Charpentes Vial SA**, explains. "We partnered with the Fribourg School of Engineering and Architecture (HEIA-FR) to perfect the system and make it industry-ready." The advantages of wood-concrete hybrids are many: lighter structures, greater design and architectural versatility, excellent durability, and sound thermal and acoustic performance.

Charpentes Vial SA has recently put this principle into practice when it worked on the construction of several five- and six-storey school and housing cooperative buildings in Western Switzerland. According to Vial, research work with the HEIA-FR continues apace, "At the moment, we're running tests on building slabs made from recycled concrete."

Pushing the technology further

Assembly systems are also the subject of another innovative project, led by Fribourg-based **JPF-Ducret SA** in partnership with the Vaud School of Engineering and Management (HEIG-VD). The patented Ferwood® system uses metal rods which are sealed into the wood with epoxy resin, which makes it possible to connect wood components and bond them with other materials. "For high-performance building projects, we push our technology even further." These include massive structures that require large-scale load-bearing elements like industrial premises, shopping malls and ice rinks.

Since 2020, the **Grisoni Group** has been making inroads in the wood construction sector, notably thanks to its acquisition of Dougoud Construction Bois SA and Lanthmann Constructions Bois SA. As Alexandre Lanthmann, the Managing Director of the company that shares his name, explains, "Modular construction and workshop prefabrication not only save us time, but also allow us to take full advantage of the benefits that the latest technological innovations offer." According to Lanthmann, the planned creation of a center of excellence in wood construction will enable the company to expand its product range.

 ${}^{\star}\mathrm{The}\ \mathrm{second}\ \mathrm{largest}\ \mathrm{city}\ \mathrm{in}\ \mathrm{the}\ \mathrm{canton}\ \mathrm{of}\ \mathrm{Fribourg}$

- → www.vialcharpentes.ch
- → www.jpf-ducret.ch
- → www.groupe-grisoni.ch

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BUILDING INNOVATION CLUSTER (BIC)

INNOVATION THROUGH COLLABORATION

The mission of the **Building Innovation Cluster** (BIC) is to cultivate value creation and innovation in the construction sector. As Blaise Clerc, the Director of BIC, explains, "Our network, which has around 100 members, facilitates dialogue and interaction between the industry's many different players, for example, by running conferences and workshops on specific topics. Some of the themes we've dealt with recently include the use of bio-based materials in renovation projects, renewable energy storage and the re-use of building materials in new builds."

Another important part of BIC's work is, "setting up collaborative and competitive projects that can benefit from the support of academic institutions and the New Regional Policy (ed.: a stimulus program launched by the federal government with help from the cantons)." The cluster, which works closely with the Smart Living Lab and the School of Engineering and Architecture of Fribourg, has set itself three strategic priorities: sustainable funding, innovative renovation practices and digitalization, "as part of a wider approach that adheres to circular and sustainable economy principles."

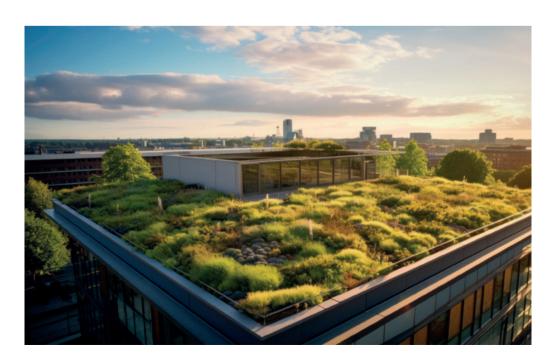
Rooftop vegetable gardens

One project that BIC has helped to launch is 'Green Roofs' (see photo), which aims to create intensive rooftop gardens that use sustainable substrates and come with an

in-built system for collecting, pumping and reusing rainwater. According to Clerc, "The solution is promising and addresses several challenges facing urban habitats today, such as promoting biodiversity, hydrological restoration, as well as temperature regulation to tackle the growing problem of heat islands in cities." Another upside of the green roof solution that tends to be overlooked is the creation of vegetable gardens, as the BIC director happily points out, "New York's experience with the Greenway Initiative has proven that urban gardening can produce high-quality vegetables!"

Other ongoing projects include 'Light Budget' which prioritizes construction strategies and techniques that provide the best ratio of light quality to CO_2 emissions; 'BIM UP' which explores support measures that could facilitate the transition to digital solutions in the construction industry; and 'TASer' which centers on the feasibility of a new economic model to incentivize renovation projects. Ultimately, the role of BIC, according to its director, is "to work hand in hand with our financial partners to devise new business models that can accelerate the transition to cleaner energies."

→ www.building-innovation.ch





The construction of Immomig's new headquarters in Düdingen marks the start of a new growth phase for the leading real-estate software developer in Switzerland.

In the space of almost 20 years, IMMOMIG SA has gone from a tiny start-up created by a young computer science student at the University of Fribourg to Switzerland's leading real estate software developer. According to Patrick Maillard, the founder and CEO of the flourishing IT firm, "Realtors, property managers, architects and property developers represent our main customer base." One of the major factors behind the company's success is that every step of the development process is carried out in house coupled with ongoing improvements and upgrades to the game-changing Immomig® CRM real-estate marketing software. "In 2004, our software became the first webbased tool of its kind", Maillard proudly recalls. "Today, it still saves our customers a great deal of time because it automates many of their routine management tasks. For example, you can create a professional PDF marketing brochure in multiple languages and formats (print or web quality) with a single click and in a matter of seconds." The form fields filled in by Immomig users are used to feed the customer's website and automatically publish targeted advertisements on a range of real estate portals.

Non-stop innovation

After conquering the Swiss market, IMMOMIG SA has set its sights on Germany and Austria. The company is currently building a new head

office in Düdingen and is constantly on the lookout for IT specialists to join its team. "Innovation is the secret behind our growth", Patrick Maillard explains. "It requires us to constantly research, develop, and market new solutions that better meet our customers' needs." Over the years, Immomig has come up with a raft of innovative products, including a tool that makes it possible to use in-house databases to automatically generate websites for real-estate projects comprising several lots.

The company also developed an à la carte multiple listing system (MLS) network that lets realtors work with their competitors, publish other brokers' listings, or share their own, in return for a commission. And the CEO has many more ideas up his sleeve, such as the DigiRENT-AI digital rental software, as well as a project to integrate artificial intelligence into Immomig's real estate solution. The latter benefits from federal financial support as well as the invaluable scientific input of the Fribourg School of Engineering and Architecture. At Immomig, innovation never stops.

- → www.immomig.ch
- \longrightarrow www.digirent.swiss

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smart living lab → Carbon Footprint → Circular Economy → Low-Tech → Digital Twins → Artificial Intelligence → Occupant Wellbeing → Building Technology Indoor Environmental Quality Human-Building Interactions → Living Lab Experimentation → Energy Systems **EPFL** generates over 20 startups annually EPFL, the leading international university driving innovation in Western Switzerland, joined forces for its Fribourg campus with the School of Engineering and Architecture HEIA-FR and the University of Fribourg to develop the Smart Living Lab

Addressing the grand challenges of the energy transition, climate change, urbanization and digitalization through the advancement of science and technology

smartlivinglab.ch







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