

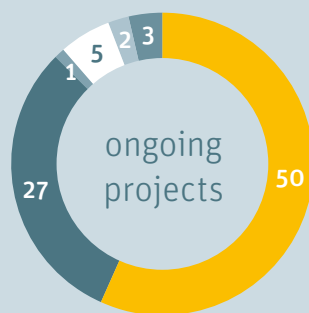


Bern University
of Applied Sciences



Applied Research
and Development

88



- Innosuisse
- Federal agencies
- Funds and foundations
- Other national grant programmes
- International grant programmes
- SNF

22

newly acquired projects

315 ongoing service contracts

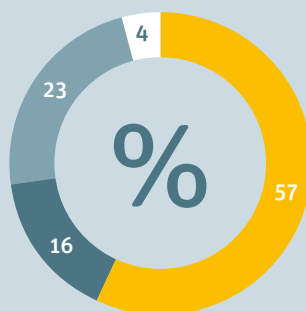


8.7 million

CHF generated third-party funds

SERI-projects – market share

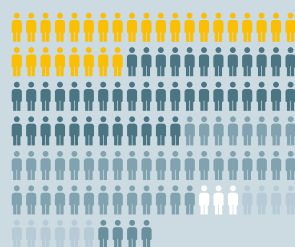
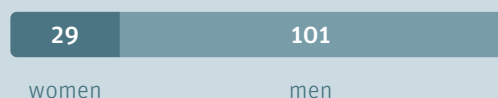
2015 to 2019, Architecture, Civil Engineering and Planning Division



- Bern University of Applied Sciences
- Lucerne University of Applied Sciences and Arts
- University of Applied Sciences and Arts Northwestern Switzerland
- Zurich University of Applied Sciences

Source: State Secretariat for Education, Research and Innovation SERI competition analysis

130 staff



- Lecturers
- Research associates
- Assistants
- Laboratory assistants
- Technical staff
- PhD students

New solutions for a sustainable future

3

Switzerland has a long-standing tradition of innovation in which universities play an important role. Application-oriented research at universities of applied sciences focuses on new ideas and their economic implementation. Even during the pandemic, we continued to tackle exciting and innovative projects in collaboration with our business partners and were able to count on the support of Innosuisse, the Swiss Innovation Agency, or funding bodies such as the Wood Action Plan of the Federal Office for the Environment (FOEN). For that we are very grateful.

Another important funding instrument is the National Thematic Networks (NTN) – Innovation Booster, which Innosuisse initiated in 2021. These networks bring together the most important players from science, industry and society in Switzerland. We are actively involved in the NTN Applied Circular Sustainability and the NTN Innovation Booster – Circular Building Industry. The pursuit of innovative solutions for a more sustainable future for the construction industry is also a major driving force behind our research institutes. From the material (Institute for Materials and Wood Technology IWH, see page 6) to the building (Institute for Timber Construction, Structures and Architecture IHTA, see page 10) and housing developments (Institute for Urban Development and Infrastructure ISI, see page 14), right through to the company with its processes (Institute for Digital Economy in the Construction and Wood Industry IdBH, see page 18).

In addition to focusing on sustainable research content, BFH is also committed to training experts in the circular economy and sustainability. In 2022, a new interdisciplinary Master's programme will be launched at BFH: the Master in Circular Innovation and Sustainability. The strong practical emphasis of the course integrates students closely in the research institutes. We support them in combining their newly acquired knowledge of circular systems, resource efficiency and sustainable development with business management skills. We are looking forward to it. bfh.ch/msc-sustainability

The shift towards more sustainability is not our only focus; we are also spurred on by the trend towards open science and open innovation, driven by national and international funding organisations and programmes. This has motivated us to modify our structures, expand support for funding applications and IP rights, and intensify our commitment to start-ups and spin-offs. We would also like to see more low-threshold exchange with our business partners. Why not send us your first sketches for new product ideas (see page 22) or combine your next company outing with a tour of our technology park? We look forward to the opportunity to compare notes.



From left to right: Frédéric Pichelin, Martin Geiser, Jolanda Jenzer and Norbert Winterberg

Cover photo:
Modelling tests of
a mudslide in
Upper Emmental,
[bfh.ch/en/research/
reference-projects/
murgang-im-
oberemmental](https://bfh.ch/en/research/reference-projects/murgang-im-oberemmental)

A holistic perspective on the planning and construction industry

- 4 With the vision of a sustainable construction industry, our research and development activities work hand-in-hand with other disciplines. We maintain a consistent focus on practice and comprehensively cater to your concerns, from the material to the structure and the built environment, to the company with its processes.



Institute for Materials and Wood Technology IWH

We research, develop and optimise innovative and sustainable materials for the timber and construction industry.

→ 6



Institute for Timber Construction, Structures and Architecture IHTA

From the design and planning to the structural implementation of new and existing buildings: we are your partner for innovative, real-world solutions.

→ 10



Institute for Urban Development and Infrastructure ISI

We research housing developments that are pleasant to live in as well as efficient infrastructural structures, and support you in creating resource-friendly, integrated spatial developments.

→ 14



Institute for Digital Economy in the Construction and Wood Industry IdBH

We analyse markets, methods and technologies and develop new, economical solutions for the construction and timber industries of tomorrow.

→ 18

Possible forms of collaboration

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We tackle real-world problems and seek scientifically sound, innovative solutions. From student theses to accredited product testing and international research collaborations: we accompany you from the initial idea to the marketable product.

Student theses



Project theses,
bachelor's or master's thesis,
study weeks



Weeks to months



Client contributes to cost

Contract research and services



Planning, coaching, tests,
expertises, analyses;
performed by experts



Weeks to months



Market prices

Accredited product testing



Accredited
product testing*



Weeks to months



Market prices

R&D cooperations



Subsidised cooperations:
medium and larger projects with
Innosuisse, SNF or the EU



Months to years



Partially financed by
public subsidies

* Product tests accredited to ISO/IEC 17025 by the Swiss Accreditation Service (Accreditation No. STS 0317) in the areas: materials, furniture, coating materials, surfaces, wood and construction adhesives, materials and wood chemistry, construction material emissions, indoor air quality, load-bearing structures, windows, doors and (curtain) walls, building physics, anti-burglary protection and geotechnics.



We research, develop and optimise innovative and sustainable materials for the timber and construction industry and accompany you from the idea to the marketable product.

Head of Institute: Dr. Frédéric Pichelin, +41 32 344 03 42, frederic.pichelin@bfh.ch
bfh.ch/iwh

At the Institute for Materials and Wood Technology IWH, we develop and optimise multifunctional wood and composite materials, as well as innovative products for the timber and construction industries, with a focus on the sustainable use of resources. This is based on bio-based raw materials such as wood or other renewable raw materials. Our comprehensive knowledge of these raw materials enables us to find new applications for them. Our activities focus on high process reliability and product quality.

For our customers and research partners, we combine the outstanding, practice-oriented expertise of our staff in individual and interdisciplinary teams. Specialists from the fields of material sciences, wood technology, chemistry and engineering work closely together at our institute.

Areas of expertise

We develop innovative adhesive and composite systems from renewable raw materials and seek solutions for the protection of bio-based materials with paints, surface modifications and impregnation systems. The eco-compatibility of materials, processes and products, and a healthy quality of indoor air, are important concerns for us.

Composite Materials

With a focus on bio-based composites, we develop technologies for the innovative use of wood and other raw materials as primary materials for building materials and products.

Contact: Dr. Heiko Thoemen, Professor of Wood Materials Technology
+41 32 344 03 31, heiko.thoemen@bfh.ch

Furniture Development

We support the furniture and interior design sector with classic standardised tests and design optimisations through to the development of products and processes and the virtual imaging thereof.

Contact: Dr. Heiko Thoemen, Professor of Wood Materials Technology
+41 32 344 03 31, heiko.thoemen@bfh.ch

Wood Modification

In the area of wood modification, we develop processes and systems that permanently increase the value of solid wood and wood-based materials.

Contact: Dr. Thomas Volkmer
Professor of Materials and Surface Engineering
+41 32 344 03 46, thomas.volkmer@bfh.ch

Surface Treatment

In the area of the surface finishing of wood and wood-based materials, we develop coating systems as well as application and drying processes.

Contact: Dr. Thomas Volkmer
Professor of Materials and Surface Engineering
+41 32 344 03 46, thomas.volkmer@bfh.ch

Adhesive Technology

We develop and optimise synthetic and natural adhesive systems for use in load-bearing and non-load-bearing applications in the composite wood and furniture sectors as well as the construction industry.

Contact: Dr. Frédéric Pichelin
Professor of Adhesive Technology and Wood Materials
+41 32 344 03 42, frederic.pichelin@bfh.ch

Polymer Chemistry

We develop polymer-based products with applications in the areas of adhesives and wet and powder coatings.

Contact: Dr. Reto Frei, Professor of Chemistry
+41 32 344 03 81, reto.frei@bfh.ch

Wood Chemistry

We develop high-performance material technologies and products based on chemical base constituents and extractives of wood, bark and other vegetable raw materials.

Contact: Dr. Ingo Mayer
Professor of Wood Chemistry and Materials Emissions
+41 32 344 03 43, ingo.mayer@bfh.ch

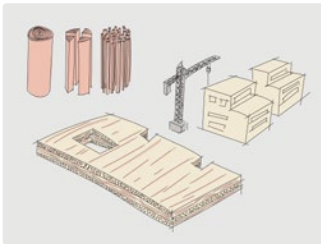
Material Emissions

Working with manufacturers of materials, building materials and furniture, as well as construction companies, we develop practical solutions to ensure good indoor air quality.

Contact: Dr. Ingo Mayer
Professor of Wood Chemistry and Materials Emissions
+41 32 344 03 43, ingo.mayer@bfh.ch

Projects of the Institute for Materials and Wood Technology IWH

- 8 Equipped with the latest knowledge and practical experience, we are able to offer you application-oriented solutions. The following sample projects provide insights into our expertise.



Upcycling wood into high-performance building elements

Business is booming in timber construction. Although Swiss forests provide sufficient quantities of wood for this boom, there is a strong demand for the high-quality types of timber such as are particularly needed for load-bearing structures. Based on innovative machining technology, a new building product is under development. This will enable the entire wood volume of a tree to be used long term and give used wood a new life cycle.

Funding agency: Innosuisse
In collaboration with Timber Structures 3.0 AG
Contact: Dr. Heiko Thoemen, heiko.thoemen@bfh.ch
bfh.ch/scrimber



Feasibility study for low-current conductive wood-based panels

The addition of small amounts of carbon fibres to a furniture board can achieve good electrical conductivity. This has already been demonstrated in a concept study by BFH. A new feasibility study is seeking to lay the foundations for the development of low-current conductive wood-based panels. With no need for electrical wiring, such functionalised materials promise extreme flexibility in the integration of electronic components such as LED lights in furniture and structural components.

Funding agency: Innosuisse
Contact: Dr. Heiko Thoemen, heiko.thoemen@bfh.ch
bfh.ch/low-current-conductive-wbp



Bio-based composites for lightweight construction of vehicles

There is strong demand for fire-resistant materials in public transport. A flame-retardant material made of bio-based resins and flax fibres has been developed by researchers at BFH. The results are extremely promising: the novel composite material has low flammability properties and is no less rigid than equivalent petroleum-based products. The CO₂ footprint is also reduced, as the raw materials come from biomass produced in agriculture and forestry.

Funding agency: Innosuisse
In collaboration with Gremolith AG, Bcomp Ltd, Faserplast Composites AG and Rapperswil University of Applied Sciences
Contact: Dr. Ingo Mayer, ingo.mayer@bfh.ch
bfh.ch/naturecomp



Bio-based isocyanate-free polyurethanes (BioNIPU)

Conventional polyurethane resins perform very well but are ecologically unsustainable and also contain problematic ingredients. An alternative, bio-based formulation path has been developed in a feasibility study. Here, polyurethanes are produced in solvent-free processes from sugar components and other bio-based materials. The formulations are free of problematic isocyanates and open the way for novel polyurethane systems for adhesives, resins and coatings.

Funding agency: Innosuisse
Contact: Dr. Ingo Mayer, ingo.mayer@bfh.ch
bfh.ch/bionipu



One of the first applications developed is a table where the height of the work surface can be controlled via interactive surfaces.

Enhanced functionality of high-pressure laminates

In collaboration with Argolite AG, researchers at BFH have developed a process that makes it possible to integrate small electronic components and the necessary circuits into a panel of HPL (High-Pressure Laminate). This means that materials can be furnished with new functions beyond purely decorative applications, such as push buttons, proximity sensors or displays. The interactive surfaces open up a wide range of potential uses both indoors and outdoors.

Funding agency: Innosuisse
In collaboration with Argolite AG
Contact: Dr. Thomas Volkmer, +41 32 344 03 46
bfh.ch/argolite

“BFH has been performing material tests on our behalf for many years. The interdisciplinary research project was implemented efficiently and effectively by motivated staff from materials and surface engineering.”

Dr. René Nussbaumer, Head of Application Technology
Argolite AG



Institute for Timber Construction, Structures and Architecture IHTA

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Buildings – from design and planning to the actual construction of new builds and building in existing contexts: we are your partner for innovative, real-world solutions.

Head of Institute: Martin Geiser, +41 32 344 03 63, martin.geiser@bfh.ch
bfh.ch/ihta

With an emphasis on the innovation and optimisation of products, we cover the areas of timber construction, windows and façades, fire protection, building physics, load-bearing structures and earthquake safety. We foster a holistic perspective on all phases of the life cycle of buildings.

For our clients and research partners, we combine scientifically sound and practice-oriented expertise in individual and interdisciplinary teams. We combine our strengths in timber construction with expertise in engineering and architecture. These combinations are unique in Switzerland.

Areas of expertise

With our activities we contribute to innovative, high-quality, sustainable and energy-efficient construction methods. We work with you to develop solutions for optimisation and further development in the areas of load-bearing structures, building envelopes and construction elements.

Load-bearing structures

In the environment of structural engineering, we develop solutions for the design, the development, the analytical and numerical analysis and the experimental investigation of load-bearing structures.

Contact: Dr. Cornelius Oesterlee
Professor of Structural Engineering and Concrete Construction
+41 32 344 03 60, cornelius.oesterlee@bfh.ch

Earthquake engineering

Within the field of structural engineering, we develop solutions for earthquake-proof design, analysis and dimensioning of timber and hybrid structures.

Contact: Martin Geiser, Professor of Earthquake Engineering
+41 32 344 03 63, martin.geiser@bfh.ch

Fire Safety

We are your partner for questions concerning the fire safety of building materials and components, fire protection solutions for buildings, and the interpretation of fire protection regulations.

Contact: Christoph Renfer, Professor of Fire Safety
+41 32 344 17 69, christoph.renfer@bfh.ch

Building physics

With our scientific expertise in heat and moisture proofing as well as architectural and room acoustics, we develop solutions for our built environment, thus contributing to the transition to green energy.

Contact: Dr. Christoph Geyer, Professor of Building Physics
+41 32 344 03 48, christoph.geyer@bfh.ch

Windows, doors and façades

We work with you to develop and optimise products and systems in the areas of curtain walls, windows and doors.

Contact: Urs Uehlinger, Professor of Window and Door Technology
+41 32 344 03 94, urs.uehlinger@bfh.ch

Timber Construction

Our research activities contribute to the further development of energy-efficient, multi-storey timber construction, high-performance timber structures and durable engineering structures.

Contact: Martin Geiser, Professor of Earthquake Engineering
+41 32 344 03 63, martin.geiser@bfh.ch

Built Environment and Historic Preservation

We are your go-to experts for existing timber constructions and historically valuable buildings, from appraising their condition to assessing and upgrading them.

Contact: Martin Geiser, Professor of Earthquake Engineering
+41 32 344 03 63, martin.geiser@bfh.ch

Projects of the Institute for Timber Construction, Structures and Architecture IHTA

- 12 Equipped with the latest knowledge and practical experience, we are able to offer you application-oriented solutions. The following sample projects provide insights into our expertise.



Automated window for use in the bedroom

The aim of the M-Window project is to develop a new automated window fitting and a matching window system to production-readiness. The researchers are pursuing a solution that is also suitable for use in bedrooms, which is not true of existing automated windows: during the quiet night hours, the window stays open; it closes again in the morning before the level of noise rises outdoors, without the residents being woken by the sound of the drive.

Funding agency: Innosuisse
In collaboration with 1a hunkeler fenster AG and Mayer & Co Beschläge GmbH
Contact: Wolfgang Rädle, wolfgang.raedle@bfh.ch
bfh.ch/m-window



Highly ductile anchors with adaptive stiffness for timber construction

Timber construction is evolving towards ever larger and taller buildings. However, in modern architecture there is usually little room for bracing elements and the standard anchoring elements currently on the market are often inadequate. This is where the patented DuktipleX anchoring element developed by BFH and Ancotech AG will come in. It exhibits highly ductile behaviour and adaptive stiffness and permits the efficient implementation of earthquake protection measures on timber structures.

Funding agency: Innosuisse
In collaboration with Ancotech AG
Contact: Martin Geiser, martin.geiser@bfh.ch
bfh.ch/ductile-anchors



Platform for Swiss timber construction culture

Online encyclopaedia, knowledge transfer and participation: a new database has set itself the goal of becoming the go-to research tool on Swiss timber construction. By the end of 2024, around 400 wooden buildings – 200 historical and 200 current examples – will have been documented in an accessible and attractive way with photographs, plans and publications, as well as audiovisual contributions. This enables the project, which is funded by the FOEN in the context of the Wood Action Plan, to make a valuable contribution to Swiss building culture.

Funding agency: Federal Office for the Environment FOEN
In collaboration with specialist departments for heritage conservation
Contact: Dr. Marion Sauter, marion.sauter@bfh.ch
bfh.ch/timber-construction-culture



Fire protection regulations 2026

The Swiss fire protection regulations (BSV) are undergoing revision until 2026. Based on a risk-oriented approach, the revision will make a significant contribution to the goals of deregulation, simplification and uniform enforcement in fire protection. The principle of proportionality demands that regulations are only enacted if they are deemed reasonable after weighing all relevant interests. BFH was awarded the contract for the project management as well as the risk- and fire-protection expertise.

On behalf of the Association of Cantonal Fire Insurers (VKF)
Contact: Isabel Engels, isabel.engels@bfh.ch
bfh.ch/bsv2026



Eischoll village barn after renovation (Photo: Atelier Summermatter Ritz, Brig)

Building renovation in Upper Valais – VETA/NOVA

This project seeks to prevent the typical historic timber-framed buildings in the villages of Upper Valais from being left to decay for lack of use. The improved planning processes and coordinated technical solutions drawn up by BFH – in conjunction with regional and national partners – reduce renovation costs and increase planning reliability for owners and the companies carrying out the work. Bringing the buildings up to modern living standards not only make it possible for people to live in the valuable village centres, they also preserve the historic buildings and help expand the conversion and renovation lines of business of the project partners.

Funding agency: Innosuisse

In collaboration with ARGE Gebäudeerneuerung Oberwallis, Fisolan AG, GUTEX Switzerland AG, James Hardie Europe GmbH, Siga Cover AG and Jomos Brandschutz AG

Contact: Thomas Näher, thomas.naehler@bfh.ch
bfh.ch/veta-nova



“The cooperation of the project partners from Upper Valais with the national industry partners and Bern University of Applied Sciences as a research partner has made it possible to review the solutions previously applied in the field of building renovation and to jointly develop improved, practice-oriented alternatives.”

Pascal Abgottspon, Abgottspon Werlen Architekten GmbH



Institute for Urban Development and Infrastructure ISI

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We research quality of life, housing developments that are pleasant to live in and efficient infrastructural structures, and support you in creating resource-friendly, integrated spatial developments.

Head of Institute: Dr. Jolanda Jenzer, +41 34 426 41 72, jolanda.jenzer@bfh.ch
bfh.ch/isi

Challenges arising from societal, ecological and economic developments demand new, interdisciplinary solutions. These include e.g. changing mobility, progressive urban sprawl, the consequences of climate change and the resulting energy-related consequences.

We are committed to creating a liveable environment, above, on and under the ground. We integrate societal needs with buildings, infrastructural structures and transport infrastructure to create sustainable systems.

At the Institute for Urban Development and Infrastructure ISI, with our partners we focus on the optimal interaction of ecological, economic, social and scientific aspects in the built environment.

For our customers and research partners, we combine the practice-oriented expertise of our employees in interdisciplinary teams individually tailored to your projects. This is why specialists from the fields of spatial planning, architecture and engineering, geotechnics and geology work closely together at our institute.

Areas of expertise

By combining engineering concepts with architecture, the social sciences, and regulatory requirements, we are able to generate solutions for future spatial developments and long-lasting infrastructures. Our research contributes to sustainability, safety and quality of life in both rural and urban areas.

Geotechnics and Natural Phenomena

Driven by a spirit of innovation, we develop new solutions in geotechnics and special civil engineering. We support river and lake conservation and increase protection from natural hazards.

Contact: Dr. Jean-Baptiste Payeur
Professor of Geo-technical Engineering
+41 34 426 41 75, jean-baptiste.payeur@bfh.ch

Transport Infrastructure

With the aim of ensuring a safe and sustainable transport infrastructure, we develop technical solutions for road systems, airport facilities and rail infrastructure.

Contact: Dr. Nicolas Bueche, Professor of Traffic Route Engineering
+41 34 426 41 57, nicolas.bueche@bfh.ch

Density

We work actively to create an environment that is pleasant to live in, developing sustainable solutions for future-proof spatial development in the context of inner densification and quality of life.

Contact: William Fuhrer
Professor of Urban Development and Mobility
+41 34 426 41 13, william.fuhrer@bfh.ch

Projects of the Institute for Urban Development and Infrastructure ISI

- 16 Equipped with the latest knowledge and practical experience, we are able to offer you application-oriented solutions. The following sample projects provide insights into our expertise.



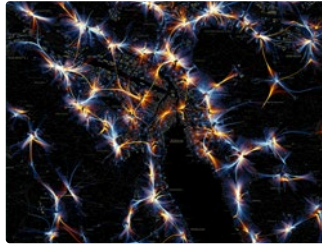
Digitalisation in road construction

Digitalisation is making a significant contribution to increasing productivity and quality in many sectors of the economy. With the digiMABS project, digitalisation has now arrived in road construction. The aim is to develop a digital methodology for the efficient analysis and evaluation of road infrastructure projects. The data model should ultimately be able to integrate data from different sources (database/GIS/CAD) and perform automated checks for conformity to standards.

Funding agency: Innosuisse

In collaboration with Haute École du paysage, d'ingénierie et d'architecture de Genève (HEPIA) and the Swiss Association of Road and Transport Experts (VSS)

Contact: Dr. Nicolas Bueche, nicolas.bueche@bfh.ch
bfh.ch/digimabs



Empirical approach to densification for urban development

The growth of Switzerland's population is creating various challenges, not least in the field of mobility planning. This is because the greater the density of residential areas, the higher the volume of traffic to be managed. The tool developed in the research project seeks to support this planning process: using machine learning, it links location-specific, generally valid and multivariate parameters and reveals interdependencies between urban development and mobility management measures.

Funding agency: Innosuisse

In collaboration with Graubünden University of Applied Sciences and Kontextplan AG

Contact: Jürg Bühler, juerg.buehrer@bfh.ch
bfh.ch/eva



Structural measures for healthy watercourses

The revitalisation of streams and rivers increases their resilience and ability to adapt to stresses such as heat or drought which accompany climate change. Depending on the watercourse concerned, the chances of success of a revitalisation are significantly boosted by structural measures and planting. The current state of knowledge on these measures is summarised in the "Green Hydraulic Engineering" project. This will result in the creation of a manual for future revitalisation projects.

Funding agency: Hydraulic Engineering Canton Baselstadt, Swiss Fishing Federation SFV

In collaboration with WFN – Wasser Fisch Natur AG, IUB Engineering AG, Emch + Berger AG, Aquabios Sàrl, Holinger AG, Kästli AG and Swiss Competence Centre for Fisheries
Contact: Dr. Jolanda Jenzer Althaus, jolanda.jenzer@bfh.ch
bfh.ch/green-hydraulic-engineering



More sustainable road surfaces thanks to reinforcement of the asphalt

Asphalt reinforcements, a type of grid between layers of asphalt or between asphalt and unbound granular materials, are a repair method for existing road pavements. They allow savings to be made on raw materials such as bitumen or granulate. Various types of asphalt reinforcements were installed on a test section in Sierre in mid-October and are now being tested. The aim of the project is to promote the use of asphalt reinforcement thanks to the provision of methodological and normative foundational principles.

Funding agency: Federal Roads Office FEDRO

In collaboration with Empa and IMC

Contact: Dr. Nicolas Bueche, nicolas.bueche@bfh.ch
bfh.ch/asphalt-reinforcement



Given the topography of the landscape, the Swiss rail network has a large number of bridges that are in constant need of maintenance.

UREM – implementation of risk-based conservation management

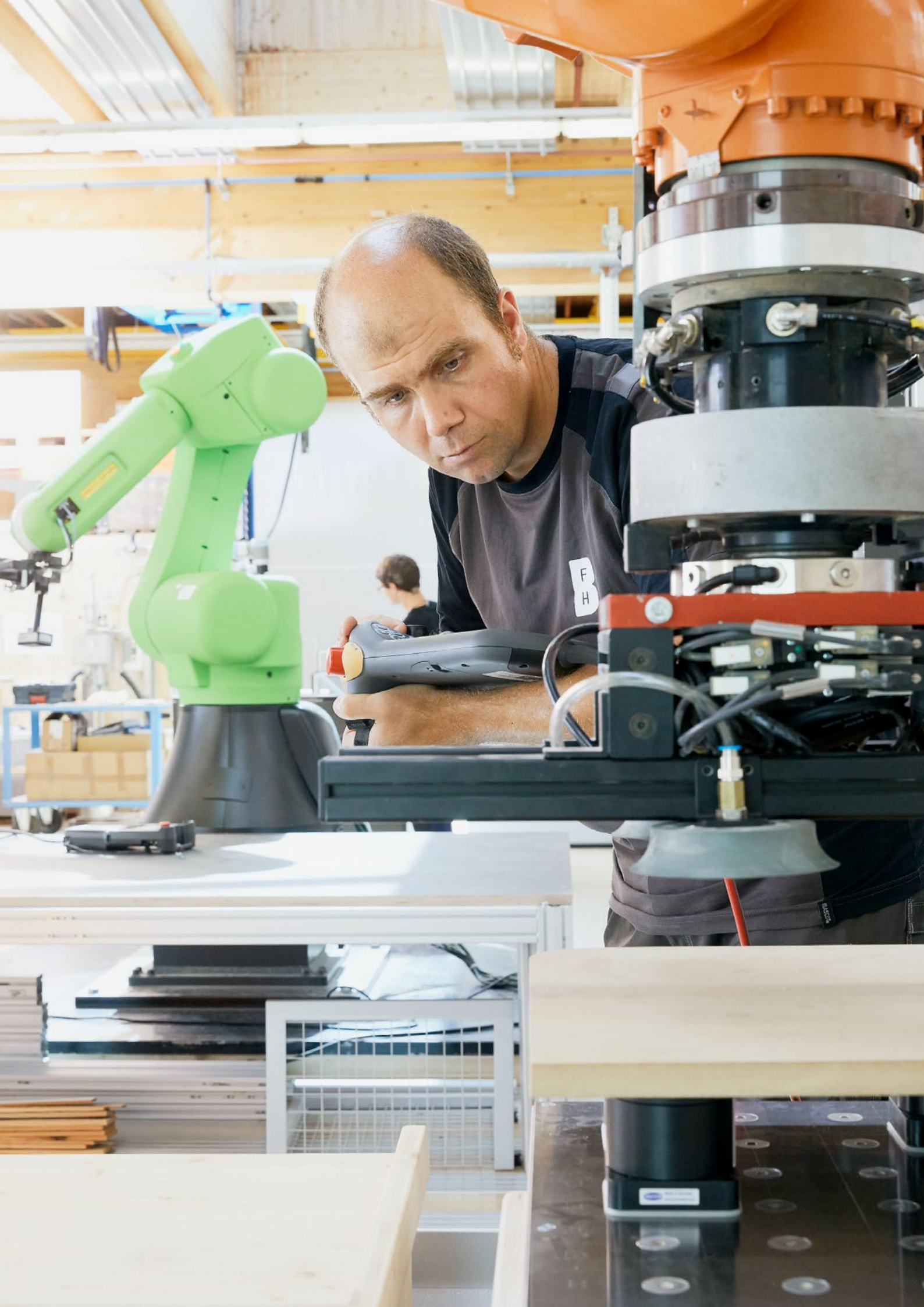
Switzerland has one of the densest and busiest rail networks in the world. Due to the topography of the country, it has a large number of bridges. In the past, the maintenance management of the bridges was always based on their condition. In this project, a risk-based maintenance concept was developed and implemented technically in the form of programming. The concept not only considers individual bridges, but also the effects of a bridge failure on the entire SBB network. This approach allows for a better prioritisation of the bridges and the maintenance measures and structural inspections for each bridge.

In collaboration with Swiss Federal Railways SBB
Contact: Dirk Proske, dirk.proske@bfh.ch
bfh.ch/urem



“On behalf of SBB, BFH developed an innovative method for risk-based decision-making in the asset management of engineering structures. The collaboration enabled us to successfully navigate the path from research to development to implementation.”

Herbert Friedl, Head of Asset Management in Civil Engineering
SBB AG



Institute for Digital Economy in the Construction and Wood Industry IdBH

We analyse markets, methods and technologies and develop new, technical and economical solutions for the construction and timber industries of tomorrow.

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Head of Institute: Norbert Winterberg, +41 32 344 17 74, norbert.winterberg@bfh.ch
bfh.ch/idbh

The digital transformation is changing business models, working methods, production and construction processes. It is also having an impact on automation-friendly constructions and materials. Therefore, it plays an important role in the Institute for Digital Construction and Timber Industry IdBH.

In research and development, to achieve outstanding results requires a highly motivated, interdisciplinary team, a superior-quality infrastructure and good connections with visionary partners. Our institute is a model of close cooperation between specialists in digital transformation, wood engineers, civil engineers and economists.

Areas of expertise

We research and develop the use of digital technologies in the construction and timber industries, concentrating on economical and resource-friendly solutions. We support and guide companies, associations and public institutions individually and comprehensively from the first market study to the finished product.

Management and market research

We analyse the construction and timber industry using comprehensive market studies, conduct customer and employee surveys and support the development of business models and products.

Contact: Norbert Winterberg
Professor of Management and Market Research
+41 32 344 17 74, norbert.winterberg@bfh.ch

Digital Manufacturing

In our technology park, we develop manufacturing solutions for wood processing, woodworking and the construction industry. We place particular emphasis on the digital interconnectivity of processes.

Contact: Eduard Bachmann, Professor of Automation and Robotics
+41 32 344 03 88, eduard.bachmann@bfh.ch

Digital Building

With an emphasis on Building Information Modelling BIM, we work on products and processes for more economical and better-quality construction.

Contact: Norbert Winterberg
Professor of Management and Market Research
+41 32 344 17 74, norbert.winterberg@bfh.ch

Projects of the Institute for Digital Economy in the Construction and Wood Industry IdBH

- 20 Equipped with the latest knowledge and practical experience, we are able to offer you application-oriented solutions. The following sample projects provide insights into our expertise.



Automation of the production of wooden crates and special pallets

Currently, wooden boxes for packaging and special pallets are mainly produced manually. An automated process is being developed with the aim of speeding up production in batch sizes from one to several hundred. The new concept relies on gluing instead of nailing and has also investigated solutions for automated quality control of the heterogeneous raw material (rough-sawn battens). A follow-up project is now looking into the issue of quality control.

Funding agency: Innosuisse and HTZ Aargau
In collaboration with Kistenfabrik AG, Kaiser Engineering GmbH
Contact: Eduard Bachmann, eduard.bachmann@bfh.ch
bfh.ch/wooden-crates



Use of hard-to-sell assorted raw timber

The demand for wood is greater than ever before, yet there are still raw timber products that are hard to sell for the forest, especially poor qualities such as beetle-infested wood and wood species like beech or pine. To ensure that this wood too can be put to good use, the Wyss Academy for Nature has teamed up with regional partners, industry representatives and BFH to launch a project to identify realistic application options and test their feasibility.

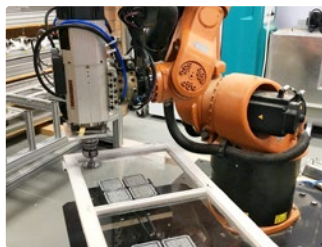
Funding agency: Wyss Academy for Nature
Contact: Norbert Winterberg, norbert.winterberg@bfh.ch
bfh.ch/raw-timber



DEEPWood – Disruptive Evolving, Engineering and Planning in Wood

The DeepWood project concerns the future development of the BIM maturity level 2 up to level 3 and faces the challenge of how to realise the collaboration of multiple users simultaneously in a shared model. DeepWood uses an industry platform and its structures as an example to develop and test new structures for future real-time-based, company-wide and collaborative planning in timber construction in a Living Lab.

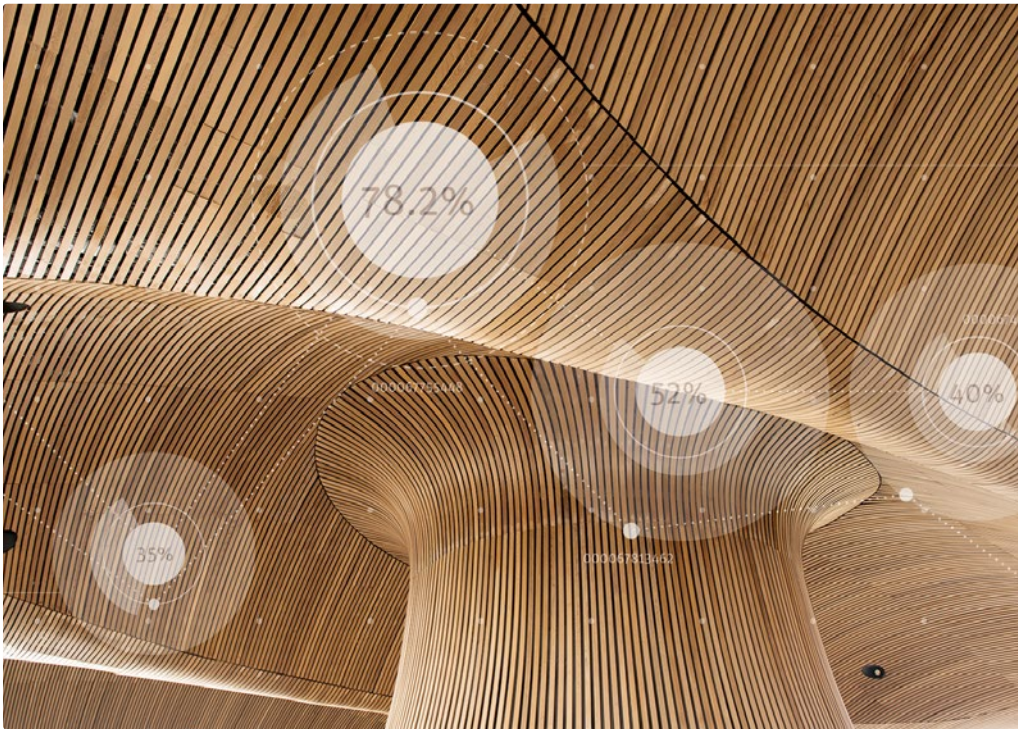
Funding agency: Innosuisse
In collaboration with Lucerne University of Applied Sciences and Arts, Timbatec Holzbauingenieure Schweiz AG, Helbling Technik AG, Dassault Systèmes Suisse SA and Stuber & Cie AG
Contact: Thomas Rohner, thomas.rohner@bfh.ch
bfh.ch/deepwood



Digital chain for window renovation

Quadra Ligna AG has been renovating historic windows for over 40 years, bringing them up to modern building standards without any major visual changes. In the joint project, the logging of the data of old windows is being digitised with the help of a mobile app and data connection. The data then flows into the automated programming of a robot that removes the glass from the window. The time saved by digitising these key amounts to 75 percent.

Funding agency: Innosuisse
In collaboration with Quadra Ligna AG
Contact: Eduard Bachmann, eduard.bachmann@bfh.ch
bfh.ch/window-renovation



The Forest & Wood 4.0 Platform project continues what was started with the Forest & Wood 4.0 Initiative.

Forest & Wood 4.0 Platform: support for the Swiss forestry and timber industry in its digital transformation

The Forest & Wood 4.0 Initiative was launched in 2017. The positive results and the unique network that was established led to the desire for a follow-up project. A platform for exchange and collaboration strengthens the network to enable it to address current issues from an interdisciplinary angle. The companies are supported in their strategy process with information on transformation barriers, future development routes, evaluation tools and recommendations for implementation. In addition, a full-scale development laboratory is used as an interdisciplinary experimentation and learning environment.

Funding agency: Federal Office for the Environment FOEN, Wood Action Plan
In collaboration with industry associations and companies in the forestry and timber sectors
Contact: Norbert Winterberg, norbert.winterberg@bfh.ch
wh40.ch

«The exchanges in the Forest & Wood 4.0 Initiative were very interesting and clearly revealed the need for action in the carpentry and forestry and timber sector. The new project Forest & Wood 4.0 Platform is important in that it enables to foster a more intense exchange and to pursue the ongoing development of the resulting know-how and to make it available to the companies.»

Heinz Fehlmann, Owner and Managing Director
Schreinerei Fehlmann AG

Start-ups and spin-offs: promoting entrepreneurial innovation

- 22 We encourage our students to launch start-up companies and assist them with various measures, such as running courses and providing access to our facilities. We also support the founding and development of spin-off companies for the commercial exploitation of intellectual property from our research.

Start-up Desk Entrepreneurship: Dr. Andreas Eigenheer, +41 32 344 17 77, andreas.eigenheer@bfh.ch
bfh.ch/ahb/entrepreneurship



NaturLoop

NaturLoop engineers biocomposites from agricultural by-products coupled with bio-based adhesives and develops the required technology to produce them on an industrial scale. The start-up aims to develop innovative, commercially viable products which mitigate the continuous depletion of natural resources, while integrating local rural communities in the value chain.

With support from Bridge, VentureKick, SNSF, Switzerland Innovation
In collaboration with Bern University of Applied Sciences
Contact: Michail Kyriazopoulos, michail@naturloop.com
www.naturloop.com



Wood Composite Simulations WoCS


WoCS LLC is an internationally operating company that provides simulation-based solutions for the wood-based panel industry. Its activities centre on the development and marketing of the simulation software Virtual Hot Press (VHP 2.0). The software is a tool for the wood-based materials industry and provides for the technological, ecological and economic optimisation of products and processes. VHP 2.0 is based on a mathematical-physical model and was developed over recent years at the Oregon State University (USA), the University of Hamburg and Bern University of Applied Sciences.

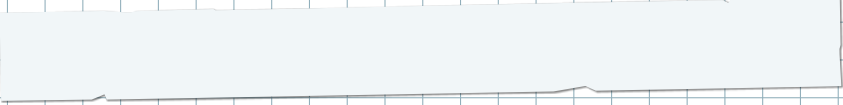
In collaboration with Bern University of Applied Sciences
Contact: Dr. Heiko Thoemen, mail@wood-composites.com
www.wood-composites.com



Video "Entrepreneurship at
Bern University of Applied Sciences"

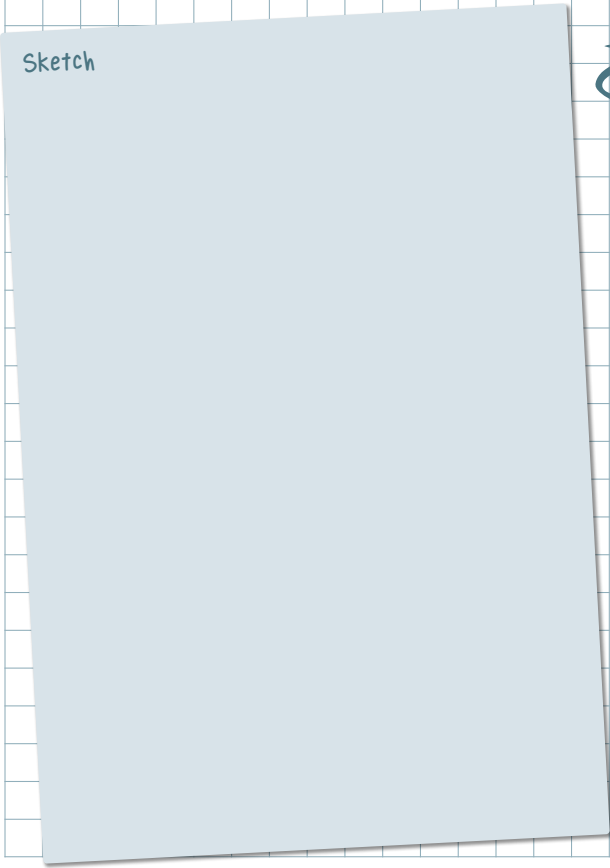
Inspired? Send us your project outline using the card below.

Concept idea 

Name 

Slogan

Problem/need identified

Sketch 

Solution

Benefit

Idea fact sheet based on Lewrick, M., P. Link and L. Leifer: The Design Thinking Playbook, 2017



Or would you like even more inspiration?
Pay us a visit and we'll give you a tour of our technology park.
Write us an e-mail: fe.ahb@bfh.ch.

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4th Edition, 5 / 2022

