

Technical college of higher education Mittelland

Annual Report

2020





**BETTER TO STUMBLE
ON NEW PATHS,
THAN STAY ON
OLD PATHS AND
GO NOWHERE.**



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A word from the President



Successful with a lot of perseverance despite the corona crisis

The corona crisis - suddenly we were affected and had to switch to distance learning from one day to the next. The hftm mastered this change excellently and subsequently reacted very flexibly to the changing requirements. In addition, the employees also seized upon the push to digitalisation as an opportunity and supported each other. As a result, hftm emerged from this first pandemic year stronger than before. In addition, the school succeeded in continuing to develop the important location projects in a targeted manner and in positioning itself well with attractive training and continuing education programmes despite the difficult environment. I am aware that this was made possible thanks to the tireless efforts of all employees. I would like to express my special thanks to the staff, the lecturers and the management under the leadership of Director Michael Benker. The hftm spirit can be felt at all times and is the basis for further successful cooperation. Many thanks to the shareholders, the sponsors, the Board of Directors, the experts and the cantons of Solothurn and Bern for their benevolent support.

The hftm as an education and implementation partner in the Switzerland Innovation Park Biel/Bienne SIPBBB

The attractive new building at the Biel train station is ready, and interior work was started on schedule at the end of 2020. In July 2021, the hftm will move from Quellgasse into the new building of the SIPBBB directly at the Biel/Bienne railway station. The hftm will thus become an important partner in the community of the new building. Thanks to the state-of-the-art facilities, laboratories and services, students and lecturers will have unique opportunities for practical in-depth study.

RoboCup - on to new technologies

I was particularly pleased that the students of the hftm.team.solidus did not hang their heads despite the cancellation of the planned RoboCup in Bordeaux, but rather took the opportunity to improve their technology. The hftm students from the full-time systems engineering programme did not let themselves be deterred and displayed a high level of motivation. The team developed new algorithms and improved the Robotinos' navigation capabilities.

The new developments were presented to the industry and invited guests at the RoboCup show at Gewinde Ziegler AG in Horriwil at the beginning of September. We were very pleased that the sponsors supported us despite the cancellation of the competition and want to continue the sponsorship in 2021. The company Gewinde Ziegler AG made a hall available to the students for several weeks for practical purposes. Many thanks for this valuable support. We are convinced that the hftm.team.solidus will show a strong performance at the next RoboCup event.

Strengthen higher technical colleges (HF) - HF positioning project launched

The State Secretariat for Education and Research SERI was commissioned by Parliament to conduct an analysis under the title «Strengthening the Colleges of Higher Education» and then to present measures to strengthen the colleges of higher education. The final report was published in summer 2020. The optimisation potential includes 19 possible measures. As a result, SERI has launched the project

«Positioning HF» project. In four sub-projects, effective improvements are to be developed in the short and medium term on the basis of guideline questions. We are eagerly following the implementation of the project and very much hope that measures can be implemented quickly. There is a need for degree titles that are also easy to understand internationally, for institutional recognition of education providers and, in particular, for much better public funding. We are committed to this and are actively involved in working groups and committees.

The motivated and committed students drive us to further expand and strengthen the study programmes on offer. I wish everyone continued good health, sufficient energy and happiness.


FELIX KUNZ
Board President

A glance to the past and eyes on the future



Creative in the crisis: eLearning Sprint Days - milestone to success

The hftm team adapted to the corona year and behaved in an exemplary manner during the crisis. On behalf of myself personally, a big thank you to all employees for their professional and energetic commitment! The key to skillful adaptation to the new circumstances was the shared attitude of wanting to share one's own skills and knowledge with colleagues. Learning from and with each other helped us during the crisis. On the occasion of the eLearning Sprint Days in spring 2020, a bolt of lightning surged through the team, together we took a big step forward and strengthened our digital competencies. The students thanked us with positive feedback on the organisation, information and teaching in the virtual classroom during the various phases of the pandemic.

126 graduate technicians HF - diploma theses with economic benefits

In a festive atmosphere, we were able to award 126 diplomas to proud HF technicians. The diploma thesis is the final part of the studies. It is a practical piece of work for our full-time students in the company where the students are employed or a task from industry. In terms of content, there is a wide variety of diploma theses, but they can often be thematically categorised as process and product optimisation, which can usually be directly implemented for the client. On average, this results in a benefit of a good 20,000 Swiss francs per thesis, which in the case of over 100 theses results in considerable monetary added value for companies and industrial partners. The cost of tuition fees and the partial time off for students are thus compensated for in a remarkable way.

Campus technology

Higher technical colleges must be clearly positioned and have an attractive address. We are convinced that they have to present and profile themselves, cultivating an independent image as educational institutions in adult education. In addition, it is imperative to enter into meaningful cooperations with industry partners and educational institutions in order to make optimal use of the (much too) scarce resources for attractive educational offers. In addition to the need for additional laboratories and premises, the above-mentioned reasons led to the search for a suitable

future school location for the in-house training courses, which we found directly at the Grenchen South train station. Thanks to a private investor and the cooperation with swissmech Solothurn, the unique Campus Technik is being created, an eye-catcher and a project with landmark character. We are anticipating occupancy in summer 2023.

The classroom of the future

Around 80 percent of the students said that they could imagine a partially location-independent classroom even after the corona crisis. In particular, students in part-time courses perceive positive benefits for their studies in terms of flexibility and a reduction in the workload. The multiple burdens of study, job and other obligations could be reduced in this way. We are working intensively on its implementation. The Classroom of the Future project is designed to enable attractive, location-independent teaching. The goal is to enable a flexible changeover from face-to-face to contact studies in a hybrid classroom.

Premium Wave

What does it mean to be a premium educational institution? What makes us, our offers and our graduates stand out? We explored these questions and found answers that help us to continuously improve our processes and educational offers. Is there a fitting symbol for premium? We find the surfer and the wave to be fitting. We associate the metaphor with sticking with something, learning with perseverance, learning from each other, trying again and again, being aware that every wave is different and that this adaptability must be a strength for students, graduates and the hftm. As a premium educational institution, we continue to make a remarkable contribution to reducing the shortage of skilled workers in STEM professions. We are focused and successfully develop ourselves and our students.

MICHAEL BENKER
Director

swiss premium education

Premium is when inspiration drives you forward



Investments

Web-based industry training remote

Smart grid laboratory

Electronics technology laboratory

Augmented reality assistance system

Vision technology

Robotino

Team center digital twins

Share point structure

Client Management

Redesign web presence

School management system

Study programmes

Adv. Fed. Diploma of Higher Education in Electrical Engineering

- Automation
- Electrical Engineering
- Energy Technology
- Building Automation

Adv. Fed. Diploma of Higher Education in Information Technology

- Software Development
- Business Information Technology

Adv. Fed. Dipl. of Higher Edu. in Business Process Management

- Facility Management
- Business Logistics

Adv. Fed. Diploma of Higher Edu. in Mechanical Engineering

- Construction Technology
- Production Technology

Adv. Fed. Diploma of Higher Edu. in Systems Engineering

- Automation/ICT
- Mechatronics

Adv. Fed. Diploma of Higher Edu. Industrial Manager NDS

	Grenchen	Biel ¹	NDS ²
	Part time	Full time	
Automation	✓	✗	✓
Electrical Engineering	✓	✗	✗
Energy Technology	✓	✗	✗
Building Automation	✓	✗	✗
Software Development	✓	✗	✓
Business Information Technology	✓	✗	✓
Facility Management	✓	✗	✗
Business Logistics	✓	✗	✗
Construction Technology	✓	✓	✗
Production Technology	✓	✓	✗
Automation/ICT	✗	✓	✗
Mechatronics	✗	✓	✗
Industrial Manager NDS	✗	✗	✓

¹ German and French speaking ² Postgraduate studies
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Students at the hftm

The positive trend in student numbers continued in 2020. In spring, we welcomed 120 new students to their part-time studies. The regularly good enrollment figures for the fulltime courses starting in the fall were sustained with 50 new students, including 12 francophone students. The courses in electrical engineering and mechanical engineering were in very high demand, with 48 and 62 students respectively. Just under a quarter of all students chose full-time studies at the Biel/Bienne school site, while the remaining three quarters opted for part-time studies at the Grenchen site.

The origins of the full-time students was mainly in the school location cantons of Bern and Solothurn. A total of 193 students (46.3%) resided in the canton of Bern, 172 students (41.2%) in the canton of Solothurn and a further 52 students (12.5%) in various cantons such as Aargau, Jura, Fribourg, Lucerne, Thurgau, Zug, Neuchatel, Vaud and Valais. Most of the students had completed a 4-year

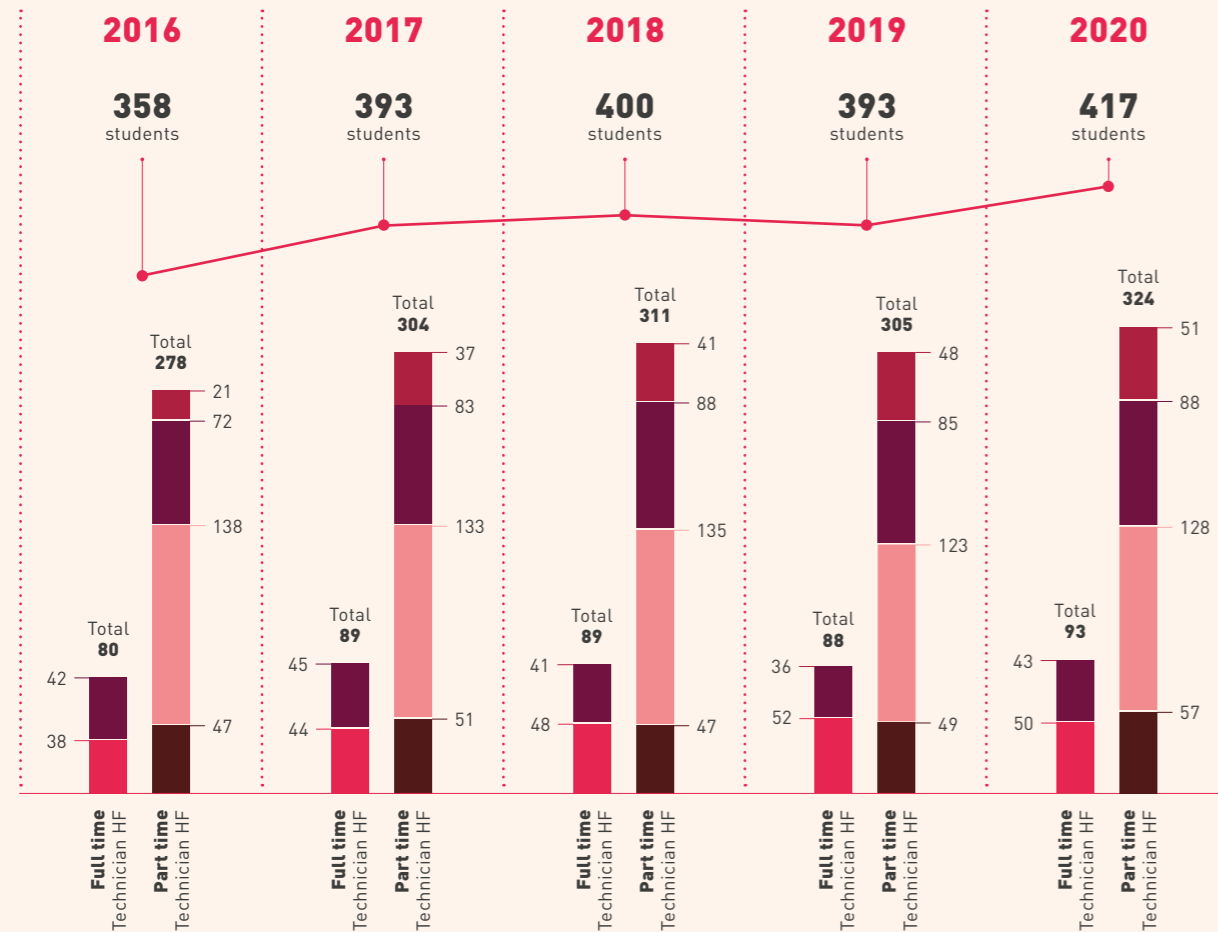
apprenticeship. The largest occupational groups by far were polymechanics, electricians and automation technicians. The median age at the start of the in-service studies was 23 years. They began their training at the hftm between the ages of 20 and 46 years of age. The full-time students were somewhat younger upon entry, with a median age of 22. They started their studies between the ages of 19 and 31. Class sizes for undergraduate and professional studies averaged just over 21 students per class in the part-time programmes and 23 students per class in the full-time programmes. In the major studies, additional groupings were necessary for practice transfer and laboratory instruction. The proportion of women among all students at the start of the programme was 5.3%.



Student statistics

The student statistics show an increase in the number of students by faculties and campuses of the hftm. The registration figures continue to signal a positive trend, such that the number of students is expected to reach 450 in 2021.

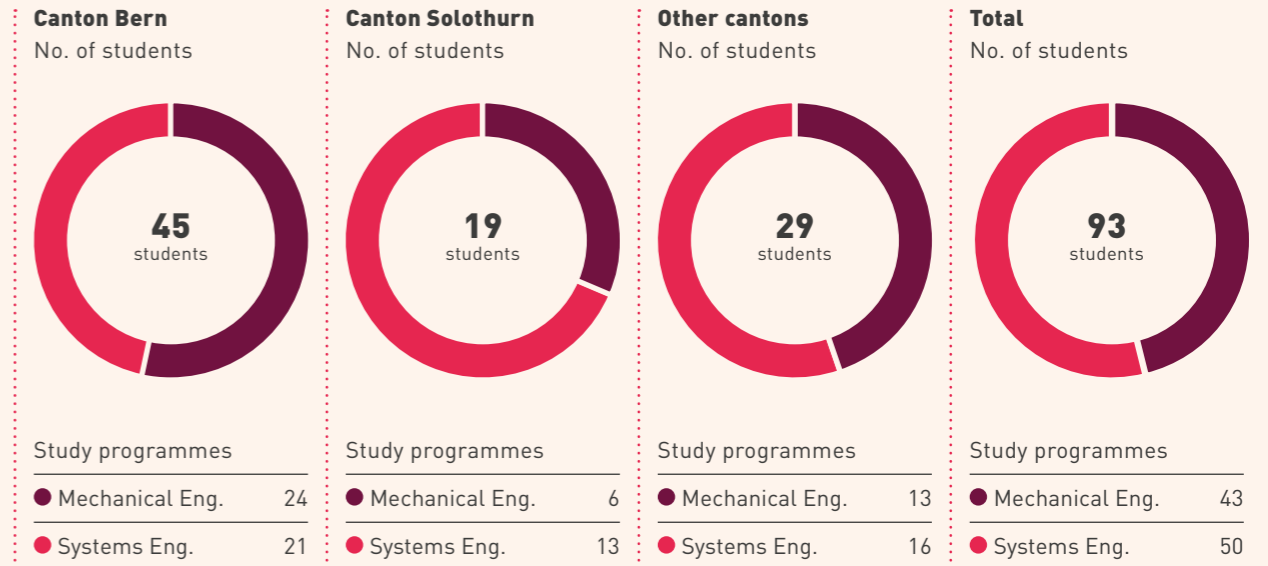
Student statistics for previous years



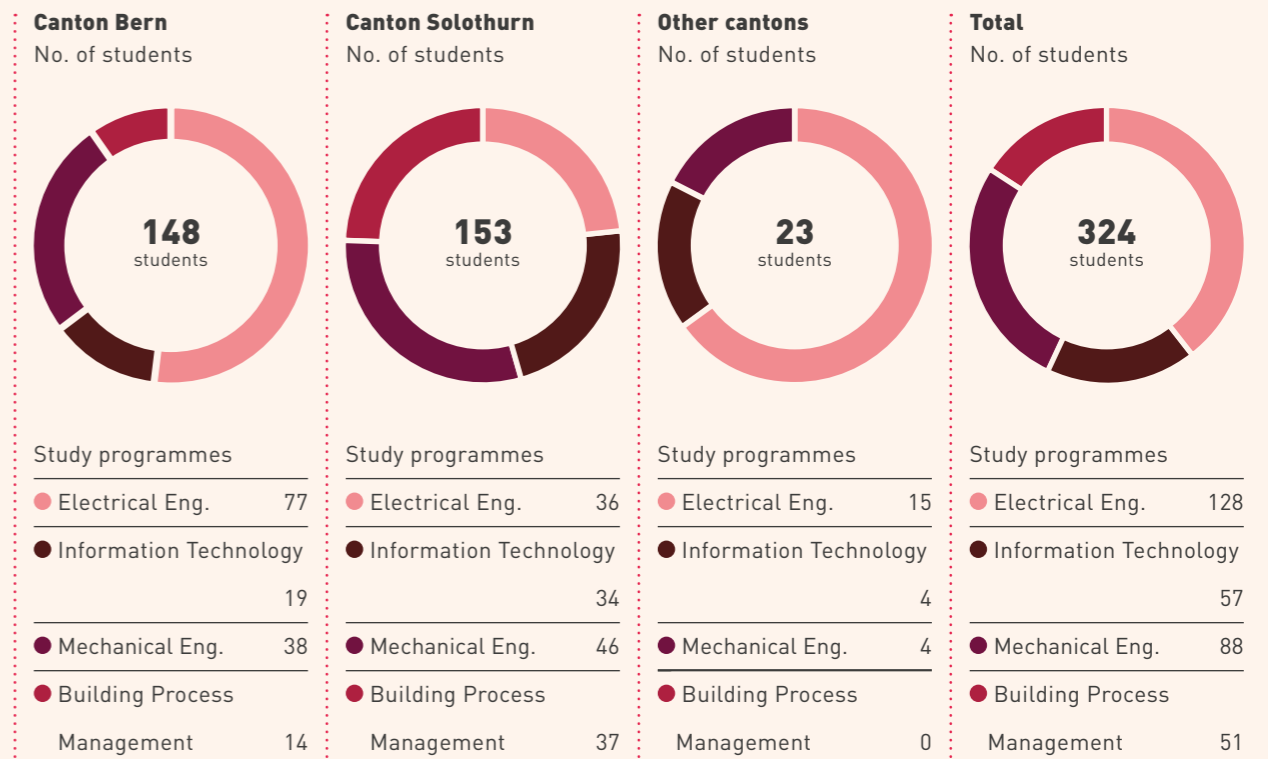
450
Prognosis for 2021

- Full time**
 - Mechanical Engineering
 - Systems Engineering
- Part time**
 - Business Process Management
 - Mechanical Engineering
 - Electrical Engineering
 - Information Technology

Fulltime study



Part time study



Start of study programme

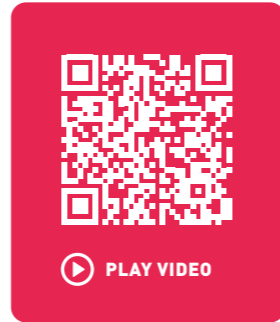
The beginning of the journey

Start of study programme outdoors

Michael Benker, Director of the hftm, and René Feldmann, Head of Full-time Studies, welcomed 48 students and two female students to the start of the full-time study programme for technicians (HF) in Biel/Bienne.

It is a tradition at the hftm to experience something unique during the first week of studies. Under the motto «Ready for take-off», the new students of mechanical engineering and systems engineering had a memorable day - in two respects. Despite low temperatures and light rain, they gained interesting insights into the topic of sustainability at Wildwechsel Möösl. Along the way, the students also got to know each other better across the disciplines.

With delicious pizzas and new friendships, the first day of the study programme was concluded in a relaxed atmosphere and the study programmes were officially declared underway.



PLAY VIDEO

RoboCup Show



Back row from left to right: Stefan Brandenberger (Head of Systems Engineering), Lukas Loup, David Stegmüller, Sven Imhof, Lars Hostettler, Luca Hollenstein, Remo Schneider.
Front row from left to right: Matthias Studer (lecturer), Alain Rohr (lecturer), Pascal Michel, Damian Stempfeler, Sven Blaser (Assistent).

On to new technologies

Like so many things in the past months, the planned RoboCup in Bordeaux had to be cancelled due to COVID-19. Our hftm.team.solidus was therefore denied the opportunity to take part in the Robotics World Championship in the "Logistic League" and compete with the best, as we usually do every year. The team used the time profitably to develop on a technological level and to go in new directions.

The results were presented to the industry at the beginning of September at the RoboCup show at Gewinde Ziegler AG in Horriwil.



WEBSEITE

Digital Day Grenchen

Digitalisation with the focus on Grenchen industry and companies

Premiere – virtual Digital Day Grenchen

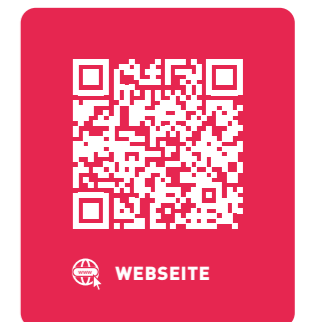
Although the first edition of the Digital Day Grenchen could not be held physically, it was able to inspire the viewers in front of the screens with exciting and entertaining virtual presentations, speeches and a live panel discussion. More than 70 users followed the stream at the same time and with more than 300 live viewers, almost as many people were present on the screen as would have been possible at an event held on site. During the panel discussion, there were even more viewers thanks to the digital version.

Susanne Sahli, the Economic Development Officer of the City of Grenchen, and Michel Rüfenacht, head of part-time study programmes at the hftm, moderated the event live from the hftm. For both of them, this represented a balancing act, which they mastered brilliantly. They constantly switched between the virtually connected speakers and the online audience. Digitalisation topics of regional companies and start-ups were presented in seven entertaining thematic blocks, including a subsequent question and answer session.

François Scheidegger, Mayor of Grenchen, thanked all participants and the organisers for the first Digital Day in Grenchen. In his speech, he emphasised the importance of advancing digitalisation for all companies in the region.

Many questions from the virtually connected audience were answered by our speakers, who explained the topic «5G -opportunities and risks for the industry» from several sides and viewpoints. Sincere thanks go to Patrick Weibel, 5G Program manager at Swisscom AG, and Franco Cerminara, Chief Consulting Officer InfoGuard AG. Urs Thönen, Product Manager Phoenix Contact AG, used an example SBB project to demonstrate the interplay between new technologies and sustainability. In the subsequent panel discussion, technology was once again called upon, as not all of the participants were present.

The hftm was chosen as the first venue for the Digital Days Grenchen. Director Michael Benker expressed his gratitude for this opportunity. He also informed the audience about the progress of digitalisation at the hftm. He also proudly told the audience about the new building project, the new Campus Technik, which will house the hftm and swissmechanic from 2023.



WEBSEITE

Susanne Sahli (left), Economic Development Officer, City of Grenchen, and Michel Rüfenacht (right), Head of Professional Studies at hftm, in the hftm studio.

International

hftm goes worldwide

YEPP – Young Entrepreneur Exchange Project with Hawassa (Ethiopia)

Six hftm students supported ten project teams from the University of Hawassa in Ethiopia with their technical knowhow. The Young Entrepreneur Exchange Project (YEPP) is an initiative that supports students from the University of Hawassa (HU) in Ethiopia in setting up a business. The Ethiopian students work on innovative projects, for example a mobile gym, a Technorama as a practical laboratory with public access and a bike rental platform.

In previous years of carrying out the project, it was found that although a lot of theoretical knowledge is available, practical skills are often lacking. Therefore, in February 2020, six hftm students supported the project teams in Hawassa for the first time. Thanks to the practical, technical orientation of the hftm courses, the students brought the missing knowhow with them and were able to provide valuable input.

During the project week, the African students worked in teams with students from the HSG, BFH, WKS and hftm. In the interdisciplinary teams, the various projects could be optimally developed. The goal was to have completed the business plans by the end of the week to such an extent that the start of self-employment was a sure deal.

All participants were enthusiastic about the project week and the progress made. The contact between the students from Ethiopia and Switzerland will continue. A «Carte Blanche» project awarded by Movetia enables the partner institutions to deepen and expand the established partnership further.

E-Powering South Sudan higher education: practical training in photovoltaics supports sustainable development in South Sudan

The corona crisis massively hampered the project, which is why we were mainly concerned with project reporting to the SDC. Despite the lack of travel opportunities, we developed a plan B and implemented it towards the end of 2020. The first photovoltaic training laboratory was successfully set up and put into operation at the STEM Centre of the University of Juba, and the first technicians and engineers were trained, with the help of a regional partner institution. As part of a diploma thesis, two diploma students are currently working on comprehensive training videos on the identical installation that was set up in Grenchen. These training materials complement the basic training and enable more in-depth training on the new laboratory installation.

A final trip to Juba is planned for May 2021. Well-trained and practice-oriented graduates from the University of Juba will thus be able to make a significant contribution to a sustainable energy supply in South Sudan in the future. The continuation of the cooperation with the university in Juba is quite conceivable after the completion of this project.



Students from the hftm, BFH and Hawassa University



Our Vision

The hftm is the leading technical school of higher education in Switzerland.

01

Our graduates are in high demand as professional and managerial staff..

03

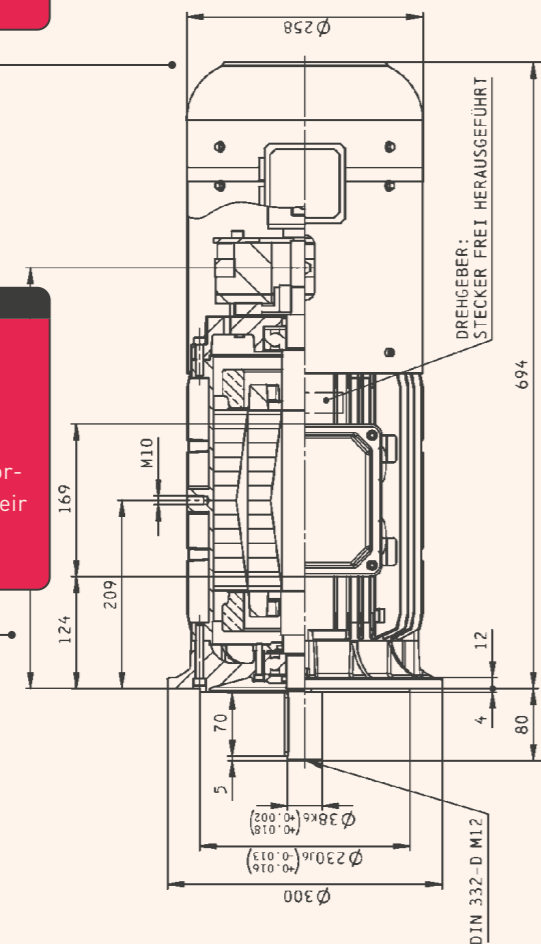
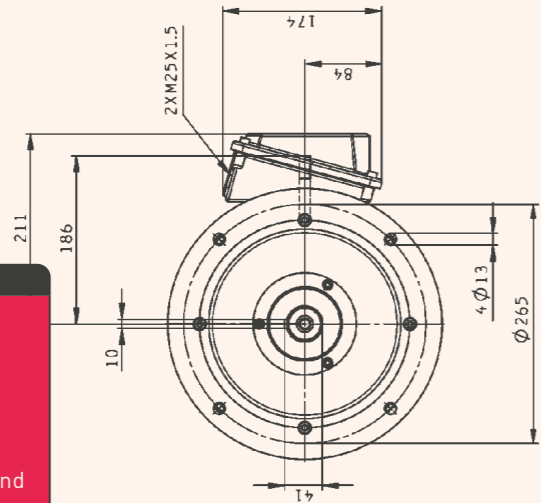
Our employees feel comfortable and are proud of "their school".

02

Our lessons are future-oriented, attractive, cooperative and provide training for practice.

04

We belong to the three largest technical schools of higher education for engineering .



WIR BESCHLEUNIGEN DEINE KARRIERE

We speed up your career

Our Values

competent.clever.agile.

competent.

As a leading educational institution, the hftm imparts in-depth theoretical knowledge as well as providing a unique and comprehensive arenas for practical experience. It is purely the practical application of knowledge that enables the development of those diverse competencies that distinguish our lecturers and students from others.

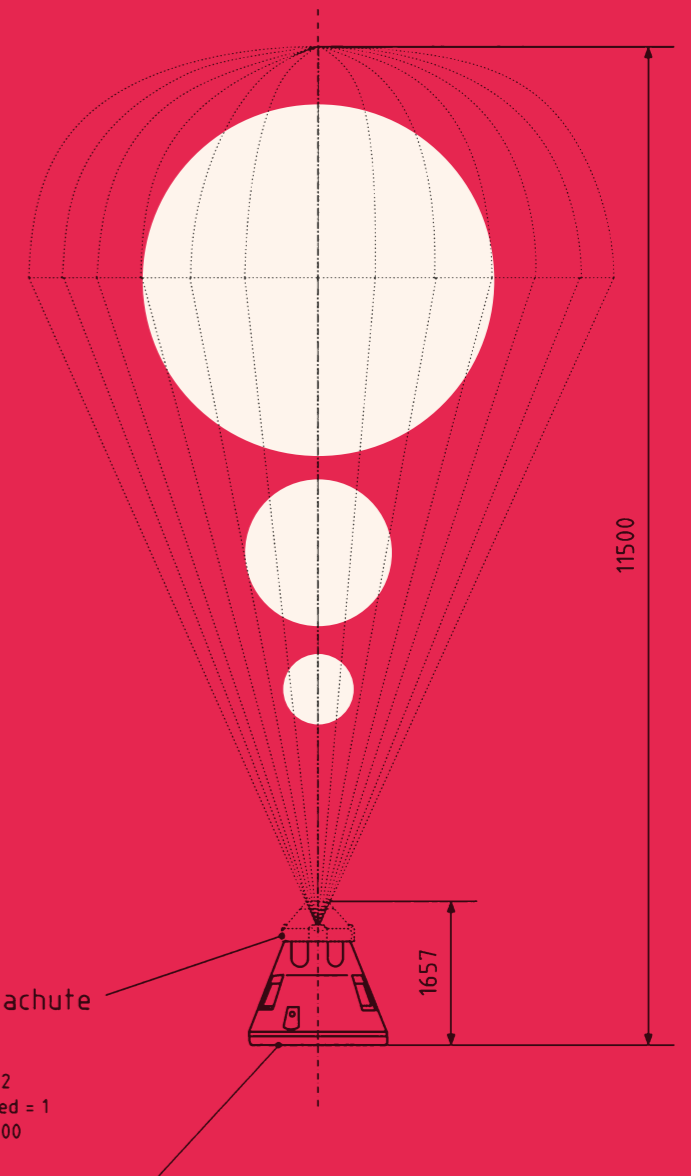
clever.

The hftm builds competence and intelligence, which are two key factors for success in view of accelerated and globalised innovation cycles. Tuned-in and clever, our lecturers and students, are practitioners who are well-equipped with the knowledge and actively engage with all aspects of the digital future.

agile.

Mediocrity is the enemy of better. The hftm is agile and on the move, with commitment and passion on the pulse of rapidly advancing technological development. Lecturers and students live and breathe technological trends in practice and in teaching.

Stage	TWR (K)	Δv (vac)	Time
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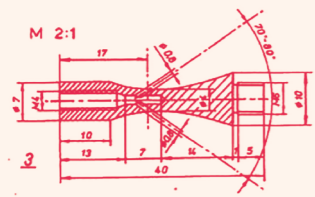


Mk16-XL Parachute
Mass = 300 kg
Drag
- Stowed = 0.22
- Semi-Deployed = 1
- Deployed = 500

Mk1-2 Command Pod
Mass = 4 000 kg
Required Crew = 3

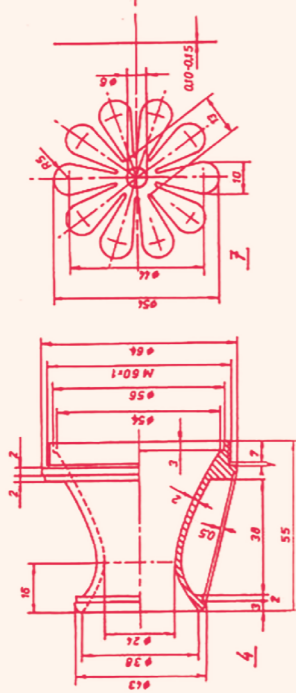
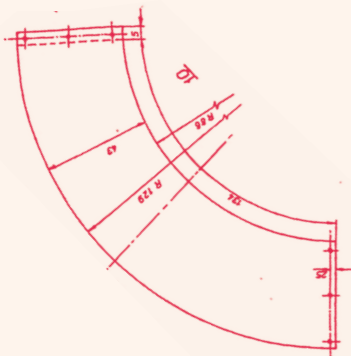
Mission statement

competent. clever. agile.



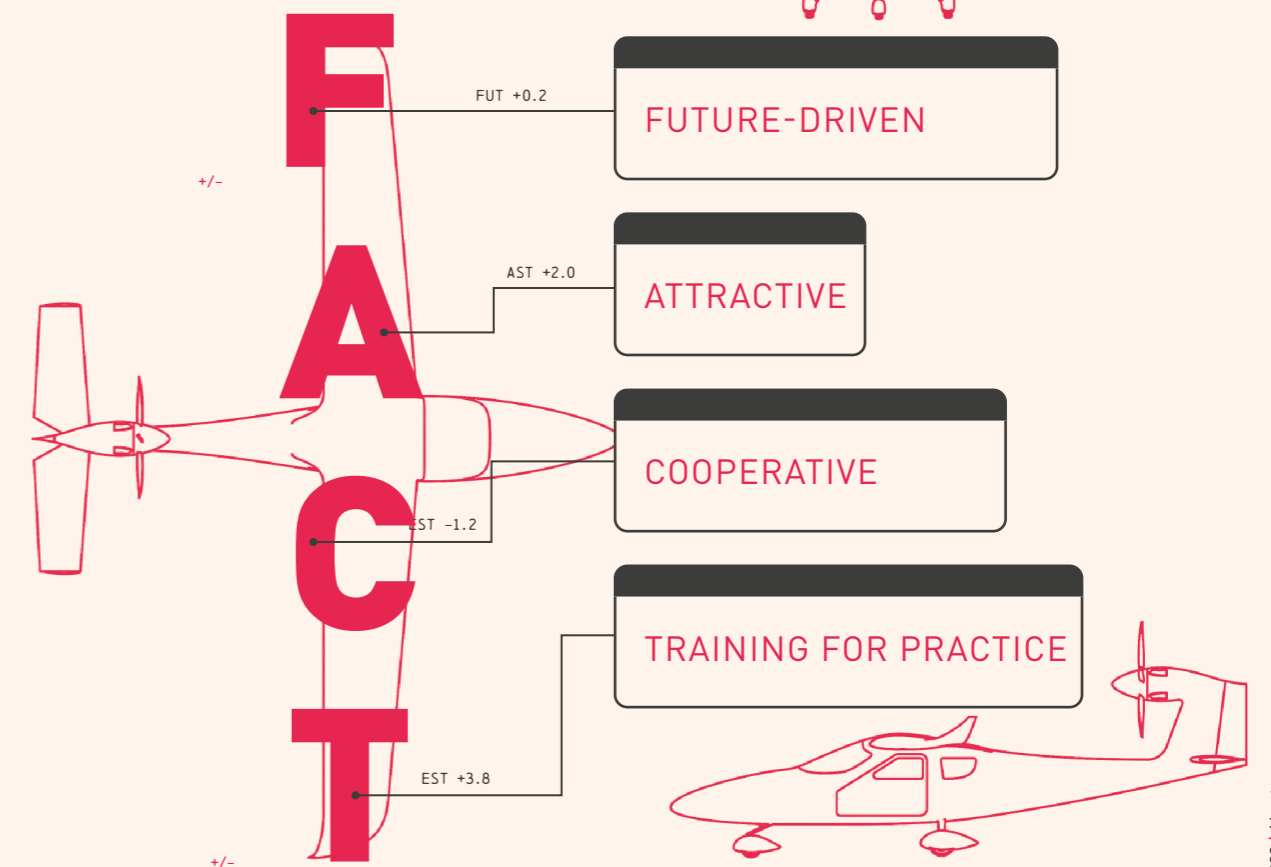
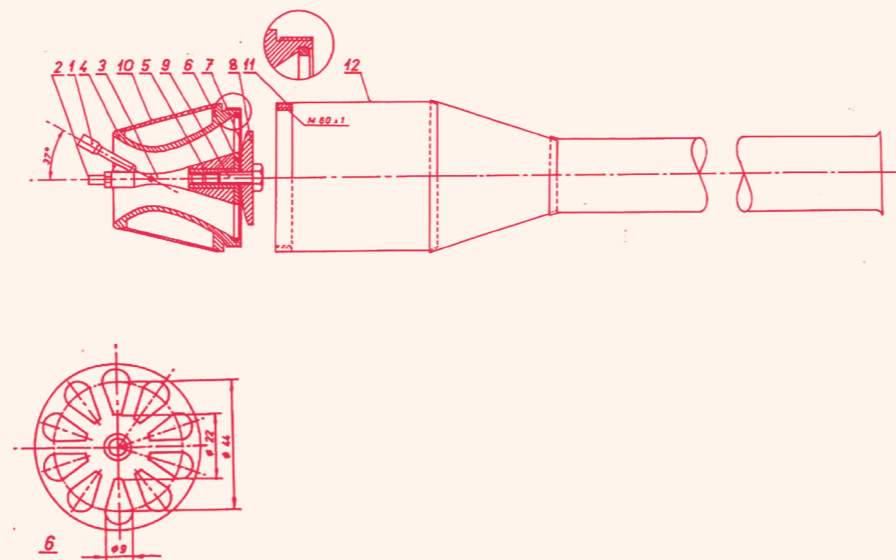
We are the leading technical school of higher education for engineering in Switzerland. We are developing into a financially independent, non-profit, entrepreneurially managed premium educational institution with a broad-based sponsorship in the Mittelland region. We are striving to be an outstanding company and school organisation based on the EFQM Excellence Model, and are committed to the philosophy of continuous improvement and sustainable success.

We make a significant contribution to reducing the shortage of skilled workers - primarily in the Mittelland, in full-time studies throughout Switzerland, by training qualified, hard-working specialists and managers in engineering and providing higher vocational education and training.



Our graduates are highly sought-after specialists and managers. We are networked with the economy and constantly in dialogue. Companies prefer to choose us as their training partner for technical training and further education. We regularly surprise with innovative ideas and are a benchmark in terms of educational concepts, practical relevance and the close connections between students and companies. Our laboratory facilities are unique and enable students to effectively transfer what they have learned into practice. We make consistent use of the opportunities offered by digitalisation and students have open access to our expertise.

Our classes can be summed up with the acronym "FACT" - (F) future-oriented, (A) attractive, (C) cooperative and providing of (T) training for practice. Our lecturers inspire with outstanding technical, social and didactic skills, life-long learning, and they provide training in line with real-life practice requirements. The diverse skills that distinguish our lecturers and students thrive in a dialogue between theory and practice. We provide the business community with competence and cleverness, two key factors for success in the face of accelerated and globalised innovation cycles. Our lecturers and students are alert and smart. As practitioners well-equipped with the knowledge, they actively engage with all aspects of the digital future.



leadership. fact. network. passion.

Our employees feel comfortable and are proud of their school. Our working environment is attractive and encourages friendly cooperation. We actively network in the region, in Switzerland, and also internationally. Our language skills in German, French and English enable us to network beyond language and national borders. The hftm and its employees are agile and flexible in dealing with change. Equipped with personality and passion, we live the duality principle of linking theory with practice. We see ourselves as versatile and flexible. Our lecturers and students focus on the future and we incorporate technological trends into our training concept at an early stage. We see ourselves as trendsetters at the level of higher vocational training. In a relaxed atmosphere, study and work-driven people strive towards mutual progress and success.

Communication is direct, easy-going and respectful - cooperation is key - as well as being open and honest with a good portion of "can-do spirit". At the hftm, everyone is ready to go the extra mile.

Our processes are well thought-out and "lean". Our management practices are exemplary, value-oriented, participative, decisive, inclusive, success-oriented and full of passion. There is open discussion in the team, mistakes are permitted, - failure is a part of learning - and action takes priority over administration. The chosen concepts and approaches are uncomplicated and comprehensible. Thus, we live a professional ethic of integrity, which guides us in our professional activities and teaching.



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SOCIAL MEDIA

