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LIFE
THE IN-HOUSE MAGAZINE
WE ARE PROUD.

Many thoughts come to mind when lying on the balcony on a cloudless summer day with the sun’s rays on your skin.

The South Seas and sandy beaches are certainly among them and you may recall that you still have the flowers to water in the evening. When sunbathing, however, who thinks of new sources of radiation that will bring insights for science, technology and medicine.

PSI’s new large-scale research facility will generate very short pulses of X-ray light with laser properties. Researchers will gain new insights that are not yet possible with currently available methods. The findings will broaden our understanding of nature and lead to practical applications such as, for example, new medicines, more efficient processes in the chemical industry or new materials in the field of electronics.

The Daetwyler Group developed and built essential components for the undulators of the PSI’s new free-electron X-ray laser.

At Daetwyler, we are an important part of cutting-edge research. That fills us with pride.

Dietmar Baeurer
CEO Division Industries
LET’S CELEBRATE WHEN WE CAN.

As previously mentioned by Ralph Daetwyler in the editorial of the last issue of Life, we celebrate 75 years of Daetwyler this year. A whole three quarters of a century! The jubilee logo has already been presented and this will gradually be incorporated everywhere and used in 2018.

What is a jubilee anyway?
A jubilee is understood to mean a commemoration of a recurring, special date. It is originally derived from the Old Testament (in Hebrew «Yovel»). Following the Holy Year introduced in 1300, this jubilee year was transferred to a Christian festival and celebrated every 100, 50, then every 25 years.

What does this jubilee mean for Daetwyler?
It is an opportunity to look back on an origin, on growth and on structural changes. Successful expansion into other continents. Pleasure at the thought of dedicated employees, who still support the company to this day and have experienced a lot of our history. Generational and leadership changes come to mind again. Many anecdotes are recalled, stories that have been told over and over again and will hopefully continue to be told. People remember them – and undoubtedly with pleasure – and realizes how quickly the years go by. The speed at which technology and the world are changing. It is difficult to look into the future – nobody really knows what we can expect.

What can we expect now?
One might wonder: has anybody noticed anything except for the fact that a special logo is being used for 2018? Is anything noticeably different for us employees this year? One thing is for sure: This year has some surprises in store for us!

So, let us look forward to the future and hope that – at the end of 2018 – everyone will enjoy looking back and that the pleasure of continuing to work for Daetwyler will remain.

Jeannette Dietz
Executive Assistant
Hardly anyone who drives up through the Langental valley and takes the turnoff between Madiswil and Kleindietwil towards Sumiswald will suspect that, on entering Ursenbach, they are only a few meters away from a place where high-tech systems are installed that make ground-breaking developments in many research areas possible. The Paul Scherrer Institute aims to install just such a turn-off into the existing PSI-SwissFEL. One small difference: While the speed at the road turn-off is approximately 25 kph, it is almost the speed of light in the SwissFEL turn-off. It is almost equally obvious that Daewyler will be manufacturing and assembling the new and even more sophisticated undulators after the successful cooperation in the construction of the first system.

What is the PSI-SwissFEL?
The PSI-SwissFEL is an extremely powerful, X-ray light source at the Paul Scherrer Institute in Villigen, Canton Aargau. The system consists of four parts: electron gun, linear accelerator, magnet undulator and experimental equipment.

Thanks to the electron gun newly developed by PSI, electron bundles with 1 million volts can be accelerated to almost the speed of light within just a few millimeters.
The linear accelerator increases its speed and thus its mass additionally (up to 6 billion electron volts) and compresses the electrons into a compact bundle.

Ultra-strong magnets in the undulator impose a slalom motion on the electrons on their furious flight. This leads to an avalanche-like outbreak of the X-rays required for research. With a peak output of 10 gigawatts, it is many orders of magnitude brighter than any other X-ray light. These unique X-ray flashes radiate through the X-ray optics to the experimental site where researchers from all over the world use them for their experiments. The electron bundles are no longer required after the radiation of the X-ray light. They are deflected into a collection device.

What is the purpose of the PSI-SwissFEL?
In order to visualize processes in the innermost part of matter, i.e. on a molecular level, extremely strong and extremely short-wave light is required – X-rays. With the naked eye or simply optically magnified, we can only see objects that are larger than the wavelength of our visible light. With a normal optical microscope we can see bacteria, but the form of viruses could only be detected through the development of the electron microscope. As early as 1933, the resolution limit of visible light was already exceeded at 12,000 times magnification using such a device.

In order to visualize such small things as proteins or water molecules and even film their movements, electromagnetic radiation with an extremely short wavelength is required – X-rays.

What is the purpose of the PSI-SwissFEL?
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What is the PSI-SwissFEL extension?

Figure 1 shows a diagram of the PSI-SwissFEL. The 13 ARAMIS undulators (U15) lined up with a weight of 16 tons each are shown in magenta. These were assembled with high precision by Daetwyler Ursenbach and then transported to Villigen in special, air-conditioned containers. The extension with the new ATHOS undulators is marked in red. The shared «injector» electron gun and the «Linac 1-3» linear accelerators can be seen on the left and this continues on the right to the separate «user station» experimental setups. The branch to «Linac 2» alternately diverts the electron bundles to the new «ATHOS» and the existing «ARAMIS undulator series». This means that the system can be used in parallel.

Successful commissioning at the end of 2017

In November and December 2017, initial experiments with ARAMIS undulators were successfully carried out in the facility, which is approximately 720 meters long. Commissioning was carried out with reduced power, which is now being gradually increased.

The international audience attending this premiere responded with consistently positive feedback. The trouble-free process obviously left a lasting impression. After a visit to Daetwyler Ursenbach, X-FEL Hamburg gained great confidence and has already ordered four APPLE-X undulators from the Paul Scherrer Institute. Discussions are underway as to whether these should also be assembled in Ursenbach.
What happens in Ursenbach?

High-precision mechanical fabrication

Daetwyler Ursenbach’s core competence is the high-precision mechanical fabrication of very large parts on milling and grinding tables as big as a living room. These enormous machines stand in a brightly lit hall with a smooth metal floor. Walking over this special floor construction, it is impossible to feel directly that the concrete below, which is several meters thick, protects the precision machines from geological vibrations, but it is reminiscent of the impressive structure of the foundations, which amaze every visitor during a walk through the area below.

This enormous facility and the great competence of Daetwyler’s employees, who can machine parts weighing tons with an accuracy of a thousandth of a millimeter, are the prerequisite and the basis for the success of such delicate and difficult tasks as the precision assembly of the PSI undulators.

Room temperature

A temperature of 24 °C is maintained throughout the entire assembly room. Complex construction up to the assembly of the magnets is always carried out by measurements to thousandths of a millimeter. Small temperature differences would cause measurable deformations in the heavy grey cast iron castings that form the basis of the undulators, which would nullify all the measurements.

For this reason, the ideal installation of the heating and ventilation pipes was worked out before assembly work began and these were finally equipped with a measuring and monitoring system that logs every temperature change and sounds an alarm if there are too many deviations. These measurements are so fine that the body temperature of a person entering the room leads to visible fluctuations in the graphical measurement recording.

Construction of the new undulators

Each undulator basically consists of two identical CI castings that are mounted and measured separately before one is placed upside down on the other. Each of these castings contains two flanks, which run at 45 degrees to each other. A kind of cross-slide is mounted on each of these flanks. Finally, the permanent magnets are attached to the upper plate of the cross-slide. On top of each other, this results in a cross, through the center of which the 6 millimeter-diameter vacuum tube is guided for the passage of the electrons. The lower plate moves on 14 carriages towards the center of the x-shaped assembly. This sets the distance between the north and south poles of the opposing magnets. The electron bundles then fly through this «gap». This gap determines the intensity of the deflection and thus the slalom movement of the electron bundles, so that the wavelength of the X-ray light is changed.
The upper slide moves horizontally. This movement is designated «shift». This adjusts the displacement of the magnets to each other and thus the polarization of the X-ray light (see page 7, bottom right).

Quadrupoles between each undulator ensure that the beam remains focused. For this purpose, there are special «alignment quadrupoles» that adjust the undulator exactly to the electron beam.

**The task and the challenges**

The assembly of each individual section often requires additional tools and equipment so that the maximum tolerable deviations can be measured and maintained. A current example of such a challenge, which Markus Käser has solved: The shift plate is screwed onto 14 carriages. The two-meter-long guide rails required for this are mounted on a specially milled stop on the gap plate. The even and calculated pressure on this stop is achieved by seven clamping wedges. The straight line of the finished rail is measured with an autocollimator (a laser with a mirror mounted on a carriage that moves over the rail).
The next steps
Analogous to the problem solution with the guide rail, each additional part is assembled and measured on the prototype and then the assembly process used is analyzed, considered and adapted until the required results are achieved. The details of the process determined and the measurement results are carefully recorded. These records will later permit the efficient assembly of the entire undulator series.
The next goal is to complete the prototype including the electrical installation and its commissioning as well as the final measurement of the completely assembled undulator.

« The aim is to complete the prototype »

The special transport and thus the delivery of the first undulator to PSI in Villigen is expected to take place at the beginning of summer 2018. Until then, however, some assembly and measurement solutions still have to be worked out both at Daetwyler Ursenbach and at PSI in Villigen. After transport, the magnets are inserted in Villigen and precisely aligned based on measurements of the magnetic field intensity. A positive result will probably trigger off a completely different wave among all those involved - one of relief. It means that the entire series of undulators can be milled, assembled, measured, transported and gradually installed in the PSI-SwissFEL according to the procedure that has been determined and tested.

Author: Hans Zaugg, PSI
Pictures provided by: PSI, Villigen

Markus Zaugg
Project Engineer

Daetwyler

PAUL SCHERRER INSTITUT

PSI
OPTIMISATION OF INK TRANSFER
SALES MEETING AT MDC USA.

This year’s sales meeting focused on optimizing ink transfer by combining doctor blades and anilox rollers.

The annual sales meeting at MDC USA takes place one week after the international sales meeting at Swiss-Tec. All regional sales managers and the management team of the «Press-room» business unit participate. This year, the three-day sales meeting was divided into two parts.

The first one and a half days were dedicated to doctor blades, with the aim of conducting a dialogue between the sales team and the management team. Industry challenges, market trends and strategy development to address the challenges identified were discussed.

The meeting opened with a presentation of the company review and a preview of 2018. Each regional sales manager then presented an update on his sales area. Afterwards, discussion focused on how Narrow Web Sales Manager Ron King would develop the narrow web market in the future. This was followed by the technical part of the sales meeting, during which – among other things – the test results of new products were discussed.

The second day began with an update on current and scheduled marketing activities before Shawn Tiikkala presented an update of Renzmann’s cleaning and distilling systems.

After several internal workshops and a comprehensive market analysis, during which – among other things – the market potential of anilox rollers was determined and a competitor analysis was carried out, MDC USA and Zecher GmbH signed a joint sales contract. Since December 2017, MDC USA has been Zecher’s preferred distribution partner in the USA, the largest flexo market, and Canada. This is an important milestone for MDC USA in the implementation of its strategy to get an «ink transfer expert in flexo». The goal is to solve the question of how doctor blades and anilox rollers work together to take them to a new level. Thomas Reinking, Director of Sales and Marketing, and Armin Hilti, Regional Sales Manager of Zecher, Paderborn, Germany, were invited as guests for the second part of the sales meeting. A workshop was held to jointly work out how the respective sales areas are
to be managed. With this workshop, the sale of anilox rollers was actively launched.

Initial customer visits that met with favorable feedback on the new partnership have successfully taken place. In addition, MDC USA has already received its first order for anilox rollers.

Sales Department
MDC Max Daetwyler USA

«This is an important milestone for MDC USA.»
OOO DAETWYLER SWISSTEC NOW REPRESENTS POLYWEST IN THE RUSSIAN MARKET

OOO DAETWYLER SWISSTEC AND POLYWEST.

POLYWEST GmbH was formed in 1987 and is one of the world’s leading system providers for printing plates, sleeves and adapters today.

With more than 100 employees, POLYWEST also manufactures sleeves for flexo printing in Ahaus, Westphalia.

OOO Daetwyler SwissTec has been selling POLYWEST products on the Russian market since January 2018. These perfectly complement our doctor blades and Zecher’s anilox rollers (represented since 2016). Our aim is for OOO Daetwyler SwissTec to establish a broad base and thus increase our competence for our customers.

Olaf Segbert
Head of Marketing & Sales

PARTNERSHIP WITH TECHNO GLOBAL KOREA

NEW SALES PARTNER IN SOUTH KOREA.

We are delighted to report that we have entered into a new partnership with Techno Global Korea as of January 1, 2018. The owner of our new sales partner, J.S. Jeong, is well known to Daetwyler. Several projects on the machine side (SSCP/Samsung) have already been completed in the past.

With more than 50 million inhabitants, Korea is a growing market. More than 800 printing machines are currently installed here. Thanks to this potential and the good and strong price level in the Korean market, we are convinced that this new partnership will create significant added value for our customers.

Christophe Houdé
Senior Sales Manager
THE PRESS ROOM IS ALWAYS ABOUT PERFECT INTERACTION

COOPERATION WITH ZECHER IN THE USA.

In order to achieve the ideal printing result, it is always a matter of perfect interaction between the various components in the press room. Daetwyler USA and Zecher are therefore the ideal cooperation partners to offer customers a complete printing solution.

Zecher GmbH (Paderborn, Germany) is the leading international manufacturer of chrome and ceramic anilox rollers. With over 70 years’ experience, Zecher produces around 12,000 engraved anilox rollers per year.

Due to its strong market position and presence in the sales region, Daetwyler USA is ideally suited to expanding Zecher’s international market and to offering Zecher anilox rollers to customers in the USA and Canada. Cooperation with the distribution of anilox rollers officially started in January 2018.

Mélanie Enz
Head of Marketing Support
10-CLUB TRAVELS BACK IN TIME.

At the last meeting of the 10-Club on October 20, the club met near the Baseltor in Solothurn.

Every year, there is an event organized by the anniversary members of the 10-Club. Ideas for an event are collected in advance. The best ideas are worked out in detail and are put to a vote in the organization committee. Last year, the Historical City Tour of Solothurn by Marie-Christine Egger, which introduces the various epochs in different costumes, was the winner.

On October 20, the 10-Club met in Solothurn near the Baseltor. Soon we were greeted by a medieval «wench» and experienced an exciting introduction to the development of the city of Solothurn. The tour went back and forth across the old part of town. In the Riedholz Tower, we enjoyed an aperitif based on a 14th-century recipe. There was bacon bread, nut bread, sweet tea and Hyppocras, a spiced wine.

Suitably refreshed, we continued our tour through the city. A little later, we enjoyed a delicious, white wine soup from Solothurn as a starter. After a short time, however, we were picked up by a sutler*, who took us on a fascinating and entertaining 16th-century trip through the city of Solothurn.

In the Red Tower, with a view over the city at night, we were served the main course, braised beef with mashed potatoes and vegetables. Suddenly, the night watchman showed up and shooed us back into the street – if we were not at home at this time, we might just as well accompany him on his nightly tour. Once again, our attention was drawn to many historical facts and anecdotes. At the end of our trip into the past, we enjoyed a leisurely dessert and brought the evening to a convivial conclusion.

* Sutler is the term used to describe someone who accompanies military troops and supplies them with care and provisions. It is a military expression that originated in the Middle Ages.

Gabriela Künzli
ERP System Specialist
WELCOME TO THE DAETWYLER GROUP

NEW EMPLOYEES.

NOVEMBER 2017
- Thomas Winter
  CNC-Grinder
  MDC Max Daetwyler AG Ursenbach

JANUARY 2018
- Grmay Kahsay
  Production Employee
  Daetwyler SwissTec AG
- Jeyamanohary Thevathas
  Production Employee
  Daetwyler SwissTec AG
- Daniel Hügli
  CNC-Miller
  MDC Max Daetwyler AG Ursenbach

MARCH 2018
- Adrian Hirschi
  Programmer/CNC-Miller
  MDC Max Daetwyler AG Ursenbach
- Sascha Tettamanti
  Assembler/Poly mechanic
  MDC Max Daetwyler AG Ursenbach
- Patrick Studer
  Galvanic Employee
  Daetwyler SwissTec AG

SINCERE THANKS FOR THE SERVICES PROVIDED

ANNIVERSARIES.

10 YEARS
- Andreas Lindner
  January 1, 2018
  Production/Programming
  MDC Max Daetwyler AG Ursenbach
- Angelina Gjokaj
  February 4, 2018
  Production | Daetwyler SwissTec AG
- Olga Ambrosen
  February 11, 2018
  Production | Daetwyler SwissTec AG

20 YEARS
- Walter Signer
  January 1, 2018
  Infrastructures | Daetwyler Management AG

25 YEARS
- Markus Käser
  February 1, 2018
  Assembling | MDC Max Daetwyler AG Ursenbach

40 YEARS
- Beat Trösch
  December 1, 2017
  Board | Daetwyler Management AG

ENJOY YOUR RETIREMENT

RETIREMENTS.

- Rudolf Fankhauser
  Doctor Blades R & D
  Daetwyler SwissTec AG
  December 2017

- Esther Zimmermann
  Work Planning & Stock
  Daetwyler Industries AG Zürich
  March 2018

CONGRATULATIONS ON THE NEW ADDITION TO THE FAMILY

BIRTHS.

Parents:
- Nadine and Stefan Bürgi
  Daetwyler SwissTec AG
  Daughter: Emilie Maé, January 13, 2018
PROSPECTS, TRADE FAIRS AND UPCOMING DATES

AGENDA 2018.

May 2018
May 7 - 8, 2018
INOFLEX 2018,
Indianapolis USA
Division SwissTec

May 10 - 12, 2018
LABELEXPO SOUTHEAST ASIA
Bangkok, Thailand
Division SwissTec

May 29 - June 1, 2018
PRINT4ALL
Milan, Italy
Division SwissTec

June 2018
June 13 - 16, 2018
PROPAK ASIA
Bangkok, Thailand
Division SwissTec

July 2018
July 6, 2018
Summer Party
in the Parking House