



Editorial

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Dear Partners, Dear Colleagues,
Dear Friends of ManuFuture-CH,

What an interesting day in
Aarau!

And not only because of the outstanding presentations and multitude of informative posters on manufacturing technology, but also because of the opportunity to exchange professional experience and knowledge, not to mention the culinary highlights! Marcel Zeindler and his team have placed Aarau in the spotlight as the perfect host, with a flair for every detail.

My thanks, however, also go to those of you who attended the ManuFuture-CH event on September 26, 2008: "Efficient Manufacturing in Switzerland". Your participation in the event is a valuable asset: with your questions you have shed light on the most important issues concerning manufacturing in Switzerland and with your interest you have shown that ManuFuture-CH is on the right track. As a small country we rely on the bundling of knowledge and resources, and events like the one in Aarau contribute

significantly to networking among manufacturing experts in Switzerland.

The primary aim of ManuFuture-CH is to strengthen the Swiss manufacturing industry, with the aid of everyone concerned: technology suppliers, producers, service providers and educators. The consistent focus on efficient processes and products with a high added value is the only chance Switzerland has in intensive locational competition, with employee know-how being the most valuable resource. I was delighted to see how this network functioned in Aarau, how much knowledge exists in Switzerland (at technical colleges, universities, ETH and EPFL, Empa and the industry) and how it is also exchanged and thus increased.

It would serve as both an incentive and a confirmation for us if you were to become a member of ManuFuture-CH and participate in ManuFuture-CH events again in 2009. We are planning four events in Switzerland's three major linguistic regions and will focus on current topics, all of which will be presented as the "Tour de

Suisse" program. It's a safe bet that your current topic in technology or manufacturing is among them. Detailed information on Tour de Suisse 2009 will be available at the beginning of next year on our Website www.manufuture.ch or from our secretariat.

In conclusion, I would like to draw your attention to our R&D Consortium of the CTI. We provide advice and support for Swiss and European research projects and make sure your projects maintain a high level of quality and that you have the best partners available. You can find more information about the consortium on our Website.

I am looking forward to interesting topics, projects and input and hope that we can use our existing network to assist you in taking on your daily challenges. It would be worth a try!

Yours sincerely,

Olivier Carnal, President



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Efficient Manufacturing in Switzerland

Event on 26 September 2008 in Culture & Congress Hall in Aarau

High salaries = high costs?



The primary question posed in this presentation dealt with whether cost-effective production is possible in a high-income country like Switzerland. In the opinion of Gerhard Hänggi (Stryker Osteosynthesis), this question can be answered in the affirmative, provided that the entire enterprise is taken into account. Cost-cutting measures cannot be limited to production processes alone. Operational and organizational structures, as well as all processes, have to be updated on a regular basis and adapted to the ever-changing conditions. The overriding point of view encompasses three different aspects to consider when striving for a positive impact on costs. Firstly, correcting errors or deviations which occur. Particular attention should be paid to sustainability here to prevent recurring errors. Secondly, optimizing existing processes in order to increase efficiency. Finally, prevention, in order to detect and eliminate potential sources of danger. An effective means for this is the failure modes and effects analysis (FMEA), which is normally used in the development of new products and can also be used for production processes (PFMEA). Incentive systems for proposals made by employees serve to make full use of their potential. Defining measurable goals and installing monitoring instruments are essential for attaining desired results. There are numerous concepts and initiatives for rendering a company more efficient (Toyota Production System). It is not imperative to implement the complete concept, however. It is entirely possible to select and implement only several of its components. A decisive factor for successful implementation is that the company management stands behind it and communication is carried out uniformly from "top down".

Presentation by Gerhard Hänggi

New technology for new products



Producing efficiently in the growth market of medical engineering means that the injection molding procedure must be applied for plastic parts, enabling the production of umpteen parts at competitive costs. The micro- / nanostructuring of injection-molded components offers the possibility of integrating additional functionalities into the products, without having to dispense with economic production process. The underlying technologies are familiar due to CDs, DVDs or Blu-ray discs. Various technologies are available for producing the structures, ranging from microcutting and laser technology to well-known procedures in the semiconductor industry (e-beam, UV lithography).

Although nanotechnology is still in its initial phase, its market potential is enormous. More and more companies have recognized its potential and are willing to invest in innovative products with micro-/ nanostructuring.

With a selection of products from medical engineering, it was demonstrated that, for example, it is possible to render a hydrophilic surface hydrophobic by means of directed surface structuring. With this, an improved emptying of synthetic containers can be achieved.

Other examples illustrated how it was possible to produce minute shell molds for analysis or various microneedle structures.

All examples have one thing in common: by utilizing innovative technologies, products can be developed which are cost-effectively manufactured in large quantities and have properties which render them unique. The technology and know-how are available – their translation into new products occurs in collaboration with companies that are interested in further developing their products or introducing new products on the market.

Presentation by Prof. Dr. Clemens Holzer

New technologies for innovative products 3-D laser materials processing



Processing materials with laser technology has already been possible since the 1960s: for cutting, drilling and leveling materials. One of the newest applications is 3-D laser materials processing. It made its initial industrial breakthrough at the end of the 1990s with specially designed facilities at FOBA and DMG Sauer. The technology is also referred to as "laser engraving / laser caving".

By means of 3-D laser materials processing, small geometrically precise mold cavities and structures can be produced – even in the sub-micro area, depending on the laser wavelength used (diameter of the laser tool ~0.1 mm @1064nm to ~0.004mm @ 355nm). The procedure is regarded as a supplement to eroding and microcutting. The economic benefit lies in the omission of CAM process and necessity of producing electrodes for EDM. Technologically, the procedure is not only capable of producing extremely filigree contours, but also processing any material, regardless of hardness degree.

The use of ultrashort laser pulses (in pico- and femtosecond laser) has opened up new possibilities in the area of sub-micro processing. Although there is still a need for further research and development in this field, this technology has been actively researched at the Institute for Product and Production Engineering at the University of Applied Sciences Northwestern Switzerland for several years. The objective is to optimize the existing technology, with a focus on further miniaturization.

Presentation by Markus C. Krack



Medical engineering: Switzerland as an outstanding production location

In his presentation on the challenges that Switzerland faces as a production location in medical technology, Peter Biedermann (managing director, Medical Cluster) discussed the actual state as well as the challenges and top priorities for the next two years.

Switzerland has a long tradition in micro engineering and electronics, mechanical engineering, materials sciences, robotics, pharmaceuticals and bioengineering. All of these disciplines converge in medical technology, which is also the reason why this industry has developed so tremendously well in Switzerland in recent years. Biedermann provided the most recent information on the Swiss medical technology industry from a current joint study which Medical Cluster conducted with Helbling Ltd. and Roland Berger Ltd. In a European comparison, Switzerland has emerged as the third largest production location for medical technology, with approximately 45,000 employees and about 700 companies. A particularly pleasing result of the study revealed that very few of the companies surveyed found production in Switzerland in danger. On the contrary: the rapid growth forced the companies to further expand their production capacities in this country. In order to safeguard and even improve this situation, Medical Cluster and ManuFuture-CH have thus decided to form a strategic partnership. Together, the two partners would like to assist the medical engineering industry in producing more efficiently, better and more profitably, with the aim of maintaining and strengthening Switzerland long-term as a production location. www.medical-cluster.ch.

Presentation by Peter D. Biedermann



Precision manufacturing without waste

"Is the manufacturing industry in Switzerland in danger? On the one hand, this depends on the industry and the company's added-value stage. On the other hand, it depends on how the company confronts the increase of global competitive pressure." This was how Dr. Bruno G. Rüttimann (ALCAN Engineered Products, Singen) introduced his presentation: *Precision manufacturing without waste*. Touching on a number of topics ranging from development to fractal markets and imperative modifications to the production system, he elucidated the necessity of a paradigm shift from the traditional western production system to the "lean" production culture successfully implemented in Japan. This production philosophy, originally developed by Toyota, aims to eliminate waste and non-value-added activity in the value-added chain – from raw material to the end product – and reduce the processing time required for the transformation to a minimum. Moreover, it is of utmost importance to maintain quality, which is illustrated in terms of the variability of the process/product using the Six Sigma problem-solving procedure. In the process, the company-wide introduction of Lean Six Sigma will attain an even greater significance than that of the ISO 9001 certification 20 years ago. The introduction of the Lean Six Sigma production philosophy will be inevitable in upcoming years if an enterprise is to hold its own in global competition. It requires a great deal of leadership from management, meaning a cultural change but primarily a change in communication and course of action.

Presentation by Dr. Bruno G. Rüttimann



Attaining more with less – new business areas for manufacturing firms

Attaining more with less. Accomplishing this alone already generates new business areas. But the shortage of resources everywhere – with the decline in prices and customer base included in the equation – demands a fundamentally different approach. Swiss manufacturing is therefore not particularly endangered because it is inextricably linked with Swiss technology, the fall of which is hardly acceptable.

Inspire offers joint research and development, enabling SMBs to develop state-of-the-art technology with marginal use of their own resources. The heightened significance of dealing efficiently with resources in high-income countries creates new business areas in future growth areas. Moreover, globalization will be determined less in the future by the gaps in labor costs than by the optimization of transport expenditures. Efficiency is essential for production in high-income countries, with the mastering of business processes and use of state-of-the-art product technologies indispensable for survival. Distinct features of modern production facilities are an uncompromising implementation of mechatronical concepts, reliable automation technology featuring self-diagnosis and self-repair. Innovating the processes lends the company a more sustainable competitive edge than product innovations. The trend towards individualization leads to new production processes and organization. Generative procedures open up the possibility of producing individualized implants in large quantities for medical engineering. The advantage of generative procedures is that an increase in complexity of parts does not lead to higher production costs.

Presentation by Prof. Dr. Konrad Wegener



Upcoming events

November 6, 2008	aiti Industria & Società Ma l'innovazione cos'è?, Lugano
November 13, 2008	PLM SWISS FORUM IPEK Forum, Rapperswil-Jona
November 26, 2008	ticinotransfer provocAZIONE 1 SUPSI, Galleria 2, Manno
December 2, 2008	EURESEARCH , Workshop for NMP Proposers, Bern
December 8 – 9, 2008	MANUFUTURE Europa International Conference, St. Etienne, France

technica

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Saving money with ecodesign

Are there products and processes that have a lower impact on the environment and are still marketable? The answer is a most definite 'yes', according to Dr. Rainer Züst, former professor at the ETH Zurich. Decreasing resource management can result in increased customer value and lend the company an additional competitive edge. An interesting note here is the fact that ecological deficiencies can simultaneously give rise to high costs, i.e. due to a high degree of material consumption, elaborate production processes, inefficient operating processes or costly disposal processes. Products optimized with ecodesign are thus better – for the manufacturer, user and especially for the environment. Ecodesign is therefore no luxury but rather *the* chance to create products with a higher degree of functionality, greater customer value and a lower environmental impact.

Implementing ecodesign is, however, no trivial matter. A company has to learn to view its products in their entirety, meaning also their environmental impact, assess them systematically and implement promising improvements in the early stage of product development. This requires the specialization of knowledge. It's not enough to effect standard requirements, such as "long life cycle" and "recyclable". Improving and optimizing the life cycle of a product in its entirety must take ecological aspects into account as well. Therefore, a systematic way of thinking and targeted application of viable methods and tools is needed for ecodesign. This approach, together with 8 examples taken from Swiss industry, has been examined by Rainer Züst, commissioned by the Swiss Federal Office for the Environment (FOEN), and published in a brochure. The brochure can be obtained directly from ManuFuture-CH Secretariat or from the author of the study free of charge.

Presentation by Dr. Rainer Züst



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