Edition 2 | May 2016 | PROCESSES

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I AM
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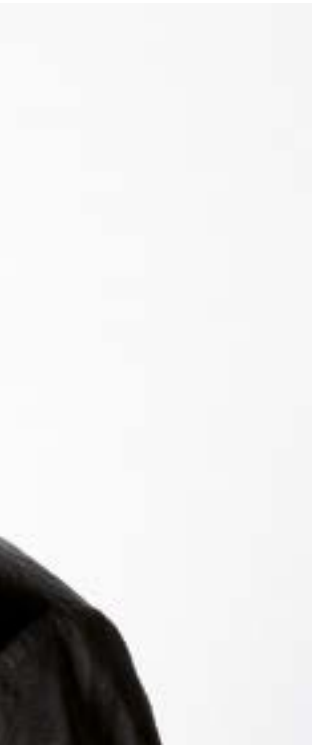
metalligent®; we are – (engl. Adj.), [meˈtælɪdʒənt]

Uwe Arnold, Chairman of the Board, Arnold AG | Photo: Wolfgang Günzel



Human
AS THE FOCUS

"Industry 4.0" can be heard from all directions! A new hype or truly something new? I am please about this initiative of the Federal Government. It improves the competitiveness of the German industry, in particular, the small and mid-size business.

This is why we decided to actively help shaping this process. To link processes with each other in order to work more efficient with it, this increases the competitiveness. But please do not for its own sake, because I am firmly convinced that the understanding of a product and for the request of the customer is solely in humans. The human being is the center. Since the beginning of the year, we have been actively working on the BMBF [Federal Ministry of Education and Research] research project "Intro 4.0" to introduce Industry 4.0 to medium-sized companies. We still do not know what to expect. Our expectation of the new technology is to free us from routine, non-value added or straining activities. The time gained we would rather invest in personal communication with our business partners.

Component of Industry 4.0 is the analysis of large amounts of data. Here, I also advise for moderation. Despite a growing acquisitiveness, it becomes rare to achieve viable predictions especially in the social environment. The question of data collection and analysis is also a question of relevance. It is good that it supports us with decisions, however, it should never take these from us.

For me, the central point in Industry 4.0 are the interfaces, or rather their elimination. These are the important potentials. However, not only should the machines should get along, the companies and business partners should dare to show more openness and transparency. If instead of isolation, openness is what relieves from unproductive routine work, not only do groups profit, but also medium-sized companies.

Humans should remain the focus of relevant decisions regarding automation and networking. I am convinced that it can do that too. Processing data by machines and the interpretation and decision, combined with feelings and sensations, that is where I see in the future.

Therefore, we dedicate this task to the people in processes - and not only in the production halls. Be prepared for a surprise!

What do you think about Industry 4.0? How would we want to handle it? This is what I would like to discuss with you. Send me an email: uwe.arnold@arnold.de.

Best regards,

Uwe Arnold

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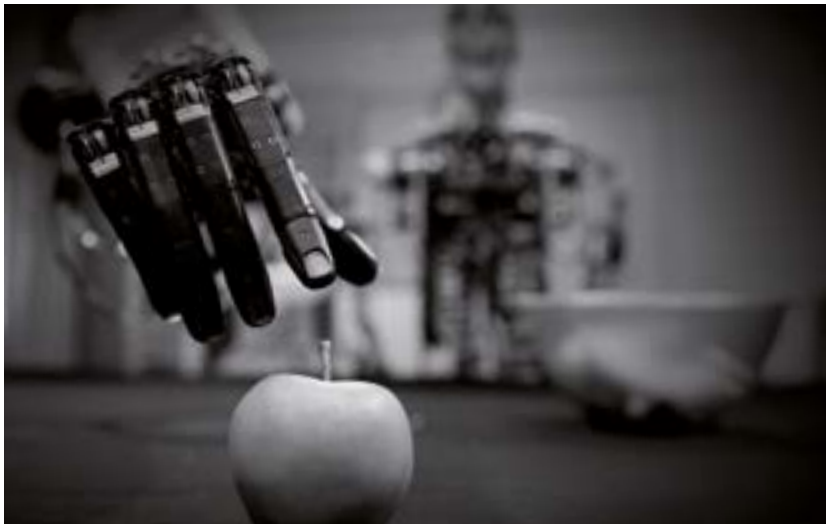

8-13 BEHIND THE HYPE: WHAT IS IMPORTANT FOR INDUSTRY 4.0?

INNOVATION

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PUBLICATION DETAILS

metalligent®

PUBLISHER:
Arnold AG, Industriestraße 6–10, 61381 Friedrichsdorf, Germany

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augenfällig, www.augenfaellig.de

PRINTING AND DISTRIBUTION:
WAISSRAUM, www.waissraum.de

DOWNLOAD:
www.arnold.de

SUBSCRIPTION:
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Photo: University of Bielefeld CITEC

Processes 1/14:
Future become clear

BEHIND THE **HYPE:** WHAT IS IMPORTANT WITH INDUSTRY **4.0**?

Photo: Lenze

The older generation still remembers: Wasn't there something about 20 or 25 years ago? It was called "Computer Integrated Manufacturing". No congress was able to do it without. Suddenly, all machines were "CIM" - supported by the computer.

And today? It is called Industry 4.0, started in 2011 by the Federal Government. The innovation needed a name. However, nobody past the Atlantic knows about it because there it is called "Internet of Things", abbreviated IoT. The American: "Yeah, this is how we find out what people want to purchase and we can produce it quickly in order to make a lot of money." The European: "The digitalization opens new opportunities for us to link our production processes."

That's just the way the Americans and Europeans are. For the one, it is a means to an end--for the other, great new technology. And the Asians? Who knows, maybe at the end they are going to take the lead. In any case, most of the patents in the Industry 4.0 field are submitted by the Chinese, as the Fraunhofer Institute of Labor Economics and Organization (IAO) determined in its "China Tech Watch".

Computing power suffices

Enough of gossiping, because something fundamental has changed, which is the reason why the hype is destined to last long this time. The computing capacity has exploded and continues to increase. While the computers collapsed under the load of the data in the past, today's computers absorb almost any quantity and depending on the algorithms, they

cough up more or less meaningful results. It is called "Big Data Analytics".

Second point: The communication has improved. That is to say, the communication between the machines and systems and between production and the commercial department. Even missing interfaces made CIM disappear relatively without further ado. Today, there are open interface standards and--where manufacturers are still refusing--additional "connectors", so to speak, the interpretors in the world of things.

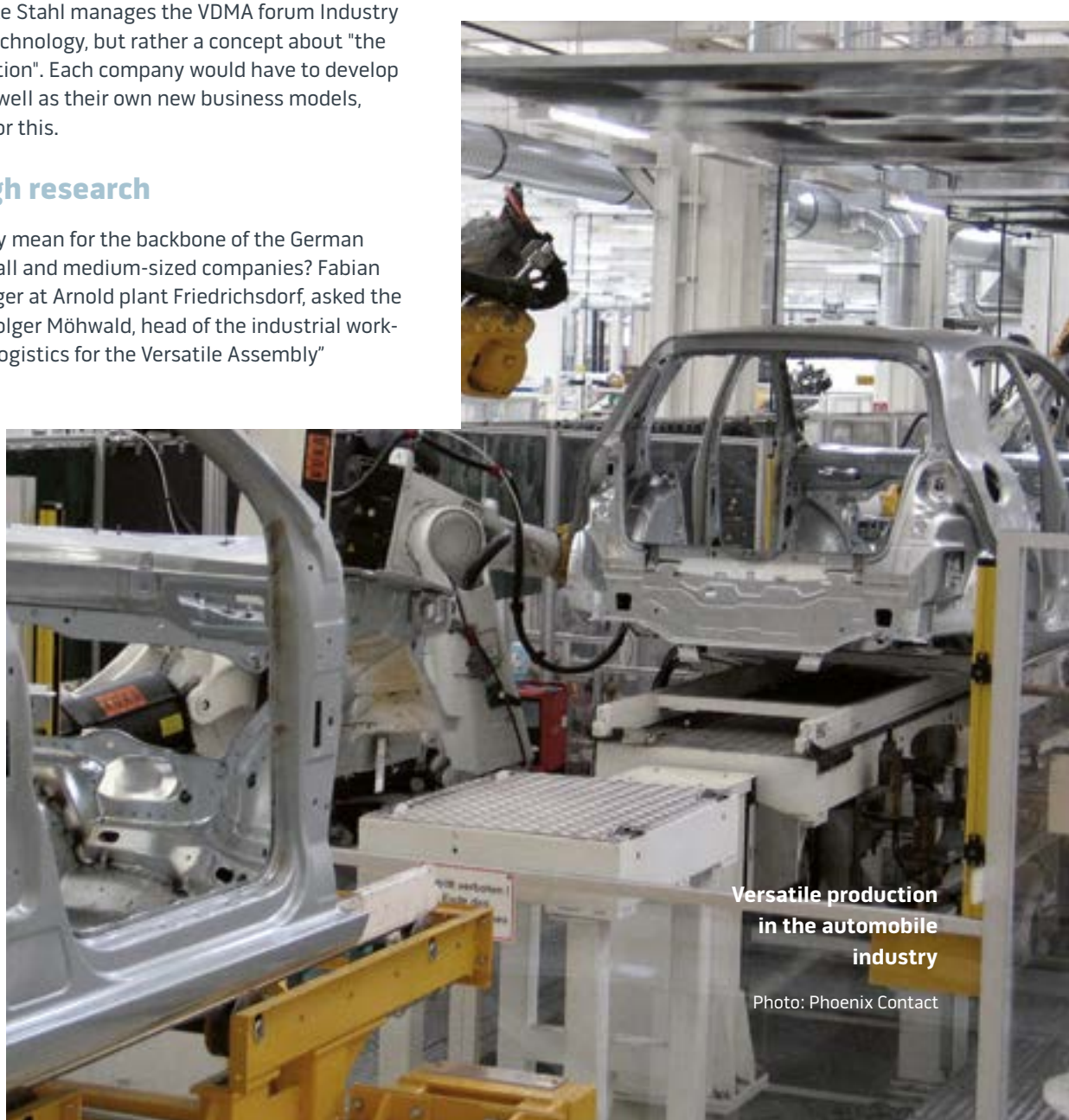
What is it about?

But what is it anyway? Industry 4.0, Internet of Things, Cyber Physical Systems, Smart Factory...those who are lost have nothing to be ashamed of. Even the experts still don't see eye to eye. The journal "Produktion" (www.produktion.de) recently interviewed twelve industry representatives. The result: A variety of options. There was widespread agreement that Industry 4.0, "ensures productivity and competitiveness - even in the face of an aging workforce" as Hans-Joachim Molka, CEO of clamping elements manufacturer Römheld, sums up.

But at VDMA, the German Engineering Federation, they should know it exactly. Dr. Beate Stahl manages the VDMA forum Industry 4.0. For her it is not a technology, but rather a concept about "the digitalization of production". Each company would have to develop its own 4.0 strategy as well as their own new business models, products and services for this.

Learning through research

But that does that really mean for the backbone of the German economy, the many small and medium-sized companies? Fabian Casu, production manager at Arnold plant Friedrichsdorf, asked the same question. Then Holger Möhwald, head of the industrial working group “Production Logistics for the Versatile Assembly”



Versatile production in the automobile industry

Photo: Phoenix Contact

inquiry came, it works well if Arnold would like to be part of a joint research project of the Federal Ministry of Research (BMBF) and the project sponsor Karlsruhe (PTCA) for the introduction of Industry 4.0 to the medium-sized business.

The title is: "Intro 4.0 - Qualifications and Implementation Strategies for Industry 4.0". The goal of the three-year project: an action guideline that is based on maturity with a generalized approach, a generic toolbox, as stated in the most beautiful German officialese. Translation: Companies receive support for the introduction of individually tailored Industry 4.0 solutions. (For that, read the interview with the project coordinator, Prof. Gisela Lanza, on page 14-15)

Flexibility through digitalization

Fabian Casu describes the Arnold part: "Our subproject deals with the 'digital logistics management of modular production structures and the interaction of human-robot IMR'." He is supported by the doctoral student, Tim Hellwig: "We are building a flexible production here to arrange small machines in L or U cell-like form around larger systems to lead to a processing line."

The machines and a handling robot are already retrofitted, they can be moved on rolls or with a forklift or lift truck. Casu: "We want to preserve our craftsmanship quality for many, customized individual pieces. But we also would like to continue to develop in the industrial production toward assembly line."

"In the future, we will work more digitally, not only internally, but also with suppliers and customers."

Fabian Casu – Arnold, Production Manager

Tim Hellwig describes the idea behind that: He will always retain the workshop construction, but be able to add machines to larger systems at any time. The workers have to walk around less, depots are eliminated and are parts completed immediately without changing the production area.

Transparency always and everywhere

At the same time, all this should depicted digitally in real time. Data is generally available, even an enterprise resource planning (ERP) system has been around for years, but all that is "not in real time". Now it will be digital and fast. And because this is not necessarily part of the core business of a medium-sized company, there are also "IT enablers" among the project partners.

Arnold relies on RFID technology, which should make production completely transparent soon. It was primarily thought to be a support for the workers in order to be always informed what has to happen with an order, what to do with it next and what comes after that. Realistic and current information, i.e., when and where they are needed.

Thanks to the participation, Hellwig and Casu also hope to receive many suggestions from the partners of the joint project. We are planning an exchange on a regular basis with them.

What do the other two SMEs recommend? Approaching the issue wisely and structured, not rushing anything, but also not burying our heads in the sand. And carry out an honest cost-benefit analysis for everything. On thing they know for sure: "In the future, we will work more digitally, not only internally, but also with suppliers and customers."

Text/image: Michael Pyper

Fabian Casu (left) and Tim Hellwig (right) show their project: digital logistics management to link modular production structures.

Processes 2/14:
Science goes production hall

OFF WE GO!
THE PROJECT INTRO 4.0

Everyone is talking about Industry 4.0 and Internet of Things. But where is it located and how does one get there? Answers--particularly, for small and medium-sized enterprises (SME)-- is what the joint research project "Intro 4.0" of the German Federal Ministry of Education and Research (BMBF) should be finding. metalligent® talked to the project coordinator, Prof. Gisela Lanza, from the Karlsruhe Institute of Technology KIT.

Prof. Lanza, where are the German small and medium-sized businesses currently in terms of Industry 4.0?

In principle, the subject Industry 4.0 has now reached small and medium-sized businesses. According to the "Tapping Into the Potentials of Using Industry 4.0 in Small and Medium-Sized Businesses" study (BMWi [Federal Ministry of Economics and Technology], 2015), as many as 70% of medium-sized companies are dealing with it. Furthermore, the current spread of IT-based PDC/MDC systems is at 68% and 67% have integrated their Manufacturing Execution System (MES) into commercial systems. However, what most companies are lacking is a specific implementation strategy.

The project Intro 4.0 is a part of the BMBF [Federal Ministry of Education and Research] initiative "Industry 4.0 - Research on the Shop Floor". What is it about?

This initiative is a contribution to the new Industry-4.0 platform of the Federal Government. The BMBF supports nine application-related projects with a total of around 25 million euros. Common question is how Industry 4.0 solutions are implemented, i.e., can be brought "to the shop floor". One of theses funded projects is Intro 4.0.

And what exactly is the goal of this subproject?

Intro 4.0 deals specifically with the implementation of ideas on the real industrial shop floor. The ideas shall be implemented in practice. Intro 4.0 provides as a key result an action guideline, which offers companies a tool for the introduction of Industry 4.0. The methods include (further) development of new methods of production and logistics optimization that are supported by IT technologies, which contribute to a measurable productivity increase.

How are the participating SMEs involved, what type of support is there?

In case studies, we test the qualification and implementation strategies of Industry 4.0 in real-world production environments for SMEs; we review these methods and further develop them in specific ways. This is done in individual areas and production lines of the user companies, we explore the methods to be developed in SME typical structures. The user companies present their results and experiences from the company-specific use cases regularly at working group meetings to a wide audience of SME representatives. If possible, we would like to organize these work meetings at the user companies as hosts, so that they can present their own Industry 4.0 demonstrator environments.

Photo: KIT

PROF. DR.-ING.
GISELA LANZA

coordinates the research projection Intro 4.0. She holds the Professorship Production Systems and Quality Management at the Karlsruhe Institute of Technology (KIT) and is Head of the Institute of Production Science (wbk). Since 2003, she has been managing the production systems area at wbk.

What should the result of the project actually look like?

The developed solutions, such as the development of methods for robust logistics planning and management at Arnold AG, are included in a action guideline, which is be published as a book. The implementation of the action guideline with integrated Intro 4.0 toolbox should show productivity-enhancing and not yet developed potentials in companies. The toolbox contains all the generic Industry 4.0 methods developed as part of the research projection and describes them extensively. Examples include information on the application, guidelines for the introduction or information on the required conditions and potential methods expansions. The skills required as well as risks and potentials are demonstrated. The toolbox can be expanded and after the end of the project it should be possible to fill it with additional methods.

The project runs for three years. What suggestions in advance do you have for companies in order to not miss the connection?

It is important that companies do not shut down the chances and challenges of Industry 4.0. For example, through the VDMA [German Engineering Federation] "Guideline Industry 4.0", SMEs can be qualified to identify and implement concrete approaches regarding the Industry 4.0 within their own company.

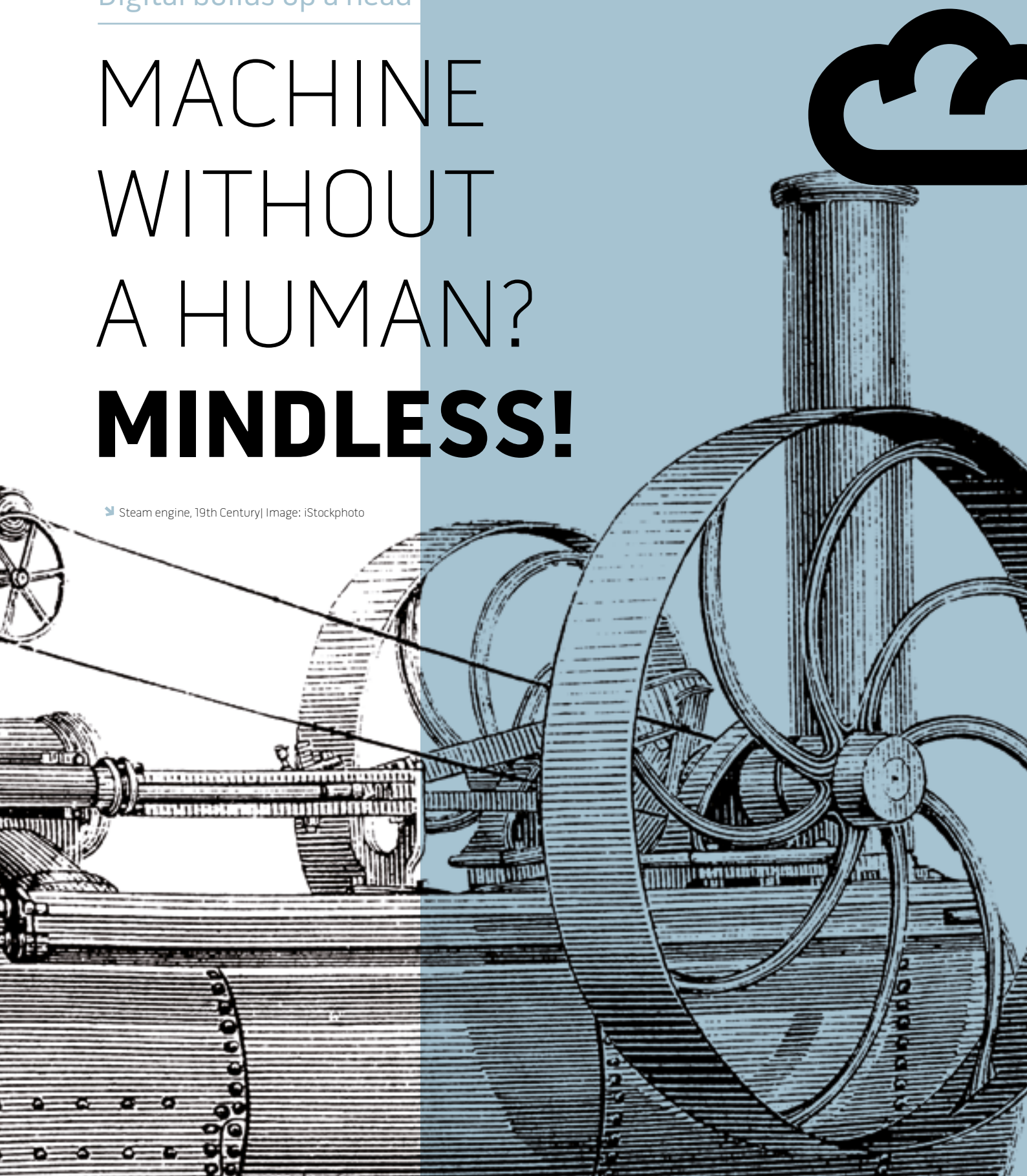
Through various events, we would like to announce the results that were developed during the "Intro 4.0" project, already during the project period. The results should be presented to interested parties through showcase events as the open house in the context of a real production. These showcase companies serve as showcase for the implementation of Industry 4.0 in practice and as a demonstrator of the established results.

Interview: Michael Pyper

www.intro40.de

Processes 3/14:
Digital builds up a head

MACHINE WITHOUT A HUMAN? **MINDLESS!**



Steam engine, 19th Century| Image: iStockphoto

The next industrial revolution... Industry 4.0 will make "more than seven million jobs superfluous", the FAZ hawked on 11/02/2016 the prognosis of top managers of the 350 largest corporations in the world. Critics counter: A massive loss of jobs was always predicted when technical possibilities drastically changed. However, these fears have never came true.

LOOKING BACK AT HISTORY

With the unstoppable development process of the industrial production, many traditional handicraft home trade have disappeared since the first Industrial Revolution and traditional knowledge, old associations as extended families, guilds and trade association dissolve. Large parts of the rural population, craftsmen, small business operators find work at work and receive wages from the new factories. The agricultural society turns into an industrialized society.

From 1850, German relies entirely on the connection of science and technology, the engine of industrial progress. This leads to an education offensive: Elementary school students must attend a "Fortbildungsschule" [vocational school] in Prussia until they are join the military service. For the scientific and technical education, polytechnics are established as a forerunner of the University of Applied Sciences. Coupled with "Prussian" virtues, Germany supersedes England as the "workshop of the world", "Made in Germany" becomes a trademark.

Knowledge is power, new knowledge is more powerful
Even during the second Industrial Revolution, Germany drives the expansion of scientific and technical and vocational education. Company's workshops and trade and vocation school institutions ensure that professional qualifications and technological progress go hand in hand: the dual education.

In the 60s of the 20th century the successful model falters. First, the German industry missed the triumph of new technologies IT and microelectronics, the pillars of the third Industrial Revolution, which are promoted rapidly in the US and the Far East. During the transition from an industrial to a knowledge society, entire production branches and professions in industrial Germany cease or often can only be maintained through government aid programs.

THE PHASES OF THE INDUSTRIAL REVOLUTION

1. **INDUSTRIAL** (THE END OF THE 18TH CENTURY)

2. **ELECTRICAL** (THE BEGINNING OF THE 20TH CENTURY)

Knowing the right thing, doing the right thing - but what is the right thing?
In 2011, the German Federal Government, the Federation of German Industry (BDI), the Mechanical Engineering Federation VDMA and other industry representatives announce the solution: "Industry 4.0"! Whatever that is. In terms of technology (machine-machine communication), the circumstance are being clarified: "Broadly speaking, it is about the "marriage" of Internet and production technologies", explains Privatdozent [University lecturer], Dr. Gerhard Auer Rinke, from the Leibniz Research Center for Working Environment and Human Factors in Dortmund.

Regarding the human-oriented perspective (human-machine organization), many answers remain vague. If the German industry was generally late in terms of the digitization, as assessed by Eberhard Veit, Head of Festo AG until 2015, then it is that even more when it comes to the question regarding the employees' future.

One thing is clear: "The digitization cannot be stopped." Why should it? "It offers enormous opportunities for the future." (Brigitte Zypries, Secretary of State at BMWi)

And: "Human work remains despite all the possibilities of automation still an important part of production!" (Recent study by the Fraunhofer Institute IAO)

INDUSTRY 4.0 AND THE CONSEQUENCES

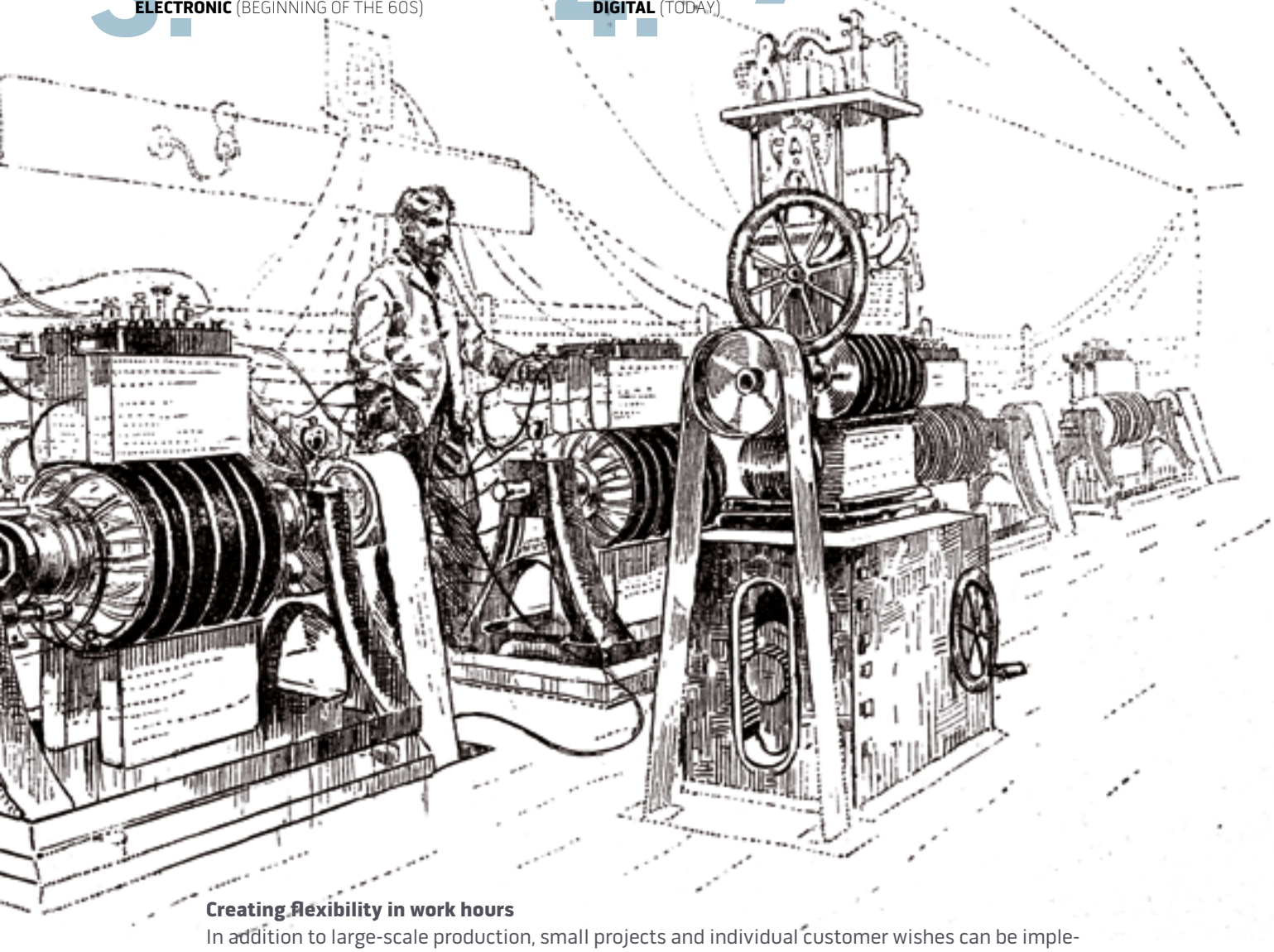
More of everything
Since 1960, productivity has quintupled, since the beginning of the Industrial Revolution, the income of the Central European has increased by 50 times the life expectancy has tripled, on average, the German worker must only spend 175 days on paid work a year: not a bad result (brand eins, Issue 7/15). The digitalization of the working world offers tremendous future opportunities, but the achievements of social partnership and participation must be transferred to the digitized working world.

Adding flexibility in the workplace
Rigid job descriptions do not fit into a production environment that can respond flexibly through fast data transfer - and has to. The machine operator becomes increasingly a machine monitor, who has to also program his machines and, if necessary, should be able to also repair or request specific assistance. A worker who acquires in addition to his individual valuable experience through continuous training and "learning-on-the-job" so much digital literacy that he is able to respond and be used flexibly. Adaptive Interfaces in a human-machine system is the requirement and have been already successfully developed.

3. **ELECTRONIC** (BEGINNING OF THE 60S)

4. **DIGITAL** (TODAY)

Image: iStockphoto



Creating flexibility in work hours

In addition to large-scale production, small projects and individual customer wishes can be implemented more quickly and cost-effectively. Therefore, work hours and compensation models must be made flexible. In terms of projects, employees can flexibly manage their work time account, coordinate quotas and times while being linked with other members of the project group and autonomously take on parts for which they have acquired valuable experience and qualifications throughout their career. The necessary digital literacy for that can be taught, according to the Internet portal "Statista", more than 60 percent of the population in Germany own a smartphone, more than 33 million use a tablet. So, smartphone instead of a time clock.

Creativity as a new corn competence

In the "smart factory", the engineer's task area will also change into a technically adept experts between research, development and production. The boundaries between IT, mechanical and electrical engineering are shifting; he works at the interface between IT and hardware. The increasing networking of machines and systems is a new challenge for the engineer who needs to develop, project and put such complex systems into operation. In addition to flexibility and interdisciplinary networking, he requires indispensable knowledge of software, programming and electronics (VDI Blog from 10/27/2015). And creativity. Just as Wolf Lotter (brand eins, 7/15) says: The human being is the "Ghost in the Machine".

Text: Klaus Altevogt

Processes 4/14:
Difficult is made easy

AMAZO OF STEEL

THE STEEL DISTRIBUTOR KLÖCKNER DEVELOPS AN ONLINE PLATFORM. DIGITALIZATION OF THE SERVICE AND PERFORMANCE CHAIN IS DRIVEN BY THE OWN START-UP IN BERLIN. EVEN MACHINES WILL BE ORDERING THEIR OWN STEEL SOON.

Digitization is not a nice-to-have thing, not a hype that one let's pass by. Digitization creates new revenue models and destroys old ones. For the trade, digital networking of the supply chains is critical for continued existence. It also affects the conservative steel trade.

With complicated ordering and delivery processes, high inventories and expensive redistribution has been a nuisance for quite some time. Today, steel is still predominantly ordered by phone, fax or email. Gisbert Rühl, CEO of Klöckner & Co SE, one of the world's largest producer-independent steel and metal distributors, puts it as follows: "Digitization offers enormous opportunities. Based on digital solutions, we want to make all processes with our suppliers and particularly with our customers easier and more efficient." It is clear that in a few years, each part at a construction site has its own IP address and an RFID chip. This allows virtual construction site organization and precise production, but requires efficient procurement and supply structures. Rühl's answer: He makes Klöckner the Amazon of steel.

The CEO does not drive this change only from the Duisburg headquarters. The change happens in Berlin - in the specifically founded start-up. Innovation methods such as Design Thinking, agile product development or the rapid testing of prototypes are no foreign words here. They are lived. Contract customers can already access steel online and see contracts and remaining open quantity. There are online shops and an email service for remaining stock. Orders, invoices and shipping notices are exchanged with numerous customers via Electronic Data Interchange (EDI) and there is an EDI link to steel manufacturers like Tata Steel Ltd. and Nucor. This speeds up the flow of information and reduces the error rate. However, the 1:1 data exchange is only an intermediate step, digital collaboration through modern customer and supplier portals is already in the planning. The continuous flow of information shall continue to shorten storage and delivery times and reduce process costs.

This is with the customer in mind. Example factory certificates: Customers are still frequently archiving these documents on composition, characteristics and origin of the material. Soon they will be available through a platform.

Example Industry 4.0: Trumpf, manufacturer of machine tools and laser technology, integrated for a project the Klöckner & Co contract portal into the user interfaces of its products. This enables machines to soon order steel independently.

Example small quantities: Private customers and craftsmen order steel products online through the trade platform Contorion.

In Duisburg, steel has been traded, lived and breathed for more than 100 years. The digital thinking came to the Group from Berlin. In 2019, Klöckner is planning to achieve more than half of its sales online. Smaller providers will also be integrated in this offer. Buying steel will become transparent and simple. The customers should not be held up by anything longer than necessary.

Text: Annette Mühlberger

"WE DRIVE THIS DIGITAL TRANSFORMATION WITH A LOT OF ENTHUSIASM."

Klöckner CEO, Gisbert Rühl

Into the cart: Europe's largest producer of independent steel distribution has contract portals and online shops online.

Images: Klöckner

Processes 5/14:
Downtime creates backlog

INNOVATION REQUIRES
COURAGE TO TAKE RISKS

Continue as before, maybe a bit faster, a bit better and a bit more technically updated - that doesn't work. A hungry market, the rapidly processing technological development and the increasing networkof production and Internet require sustainability, specifically: Innovative capability.

Innovation means...

...to develop an idea for a new product, process or service, which is... 1. new and unique 2. brings its user relevant benefits and 3. establishes successfully on the market.

...to have the ability and willingness to be open to new ideas, to be enthusiastic and to implement it into the company culture as the always driving forces.

... Participation! Not participating means losing.

Image: istockphoto | Michal Saganowski

Mice in the grain storage at Nestlé! Alert level 1! Chemical toxins impossible! So the mousetrap has to come in. At one storage facility that would make 1000 traps. They must be checked on a daily basis, which is very time-consuming. Daniel Schröer, International Sales Manager at FuturA GmbH in Borchen, explains the innovate leap: "We equipped the latest snap traps with a transmitter, which report the catch of a rodent to a central controller via mail/ push notification and allow immediate selective site control." A top seller worldwide!

The Dortmund Wilo Group, one of the world's leading manufacturers of pumps, "did not only automate the production to a flexible on-demand system just like from the Industry 4.0 textbook" according to Michael ten Hompel, Professor of Transportation and Warehousing at the Technical University of Dortmund and Director of the Fraunhofer Institute IML, in addition to that, a standard heating pump of the company is now delivered with eight digital processors. Among other things, the pump also reports maintenance requirements to the manufacturer. "Predictive maintenance" as a new service - a highly profitable follow-up business.

A once leading mobile phone manufacturers missed the entry into the world of smartphones and touchscreens. Complacent? Satisfied? Brand and balance took a hit. A world leader in the segment of absolute top cameras ignored the entrance of the game changer autofocus. Was it due to the motto: "We are who we are"? Economically it was a nasty shock.

HOW DOES INNOVATION WORK?

Need for innovation arises when either the market demands new products, processes or services ("market pull"). Or if new technologies open entirely new possibilities ("technology push"). A successful innovation process comes in, if the technology problem solutions are developed, meet the demand of the market, are understood and dynamically implemented together all the way to the market launch: Innovation is a front-end process.

Process means that one divides the entire front-end flow into steps and represents it, for example, as a "road-map". This allows to describe, review and repeat, or if necessary, correct the individual "stages".

Martin Poggenclaas, innovator and owner of "Makery" in Hamburg, describes the process: "In the first step, the market and the customer request and the specific technological possibilities are analyzed in detail. Ideas are generated and qualified or discarded in an ongoing exchange, depending on whether they are in accordance with desires and goals, whether the targeted strategies fit the company's competences innovation capacity."

The results of this analysis lead to the design and construction of a prototype. It is presented to the customer and checked and tested together through several stages. Martin Poggenclaas calls this the "iterative fine-tuning": This process is open to constant creative input and the elimination of undesirable effects. At the end "is" the final design: The product (hardware, software, whatever) can be manufactured and put on the market.

↗ Martin Poggenclaas - innovator at Makery in Hamburg | Image: Poggenclaas

Interview with Martin Poggenclaas:

Does innovation mean risk?

A willingness to take chances is definitely a part of innovativeness. The brilliant idea is placed in on the top, and on the bottom the market hit comes out – unfortunately, this is not how it works. The "Shanghai metal sheet" example on the right, shows that innovative capacity involves also the courage to take chances and to fail.

Can innovativeness be implemented?

For us, it is not only a superbly fitting product, but it is also important to establish something like an innovation culture, enthusiasm and openness to innovation with the client on a long-term basis. This is only possible with a joint development and with constant open communication. Successful processes that include all involved parties at all stages, release individual responsibility, creative potential and thus enthusiasm for innovative progress

Architect, Marcel Glapski, tracks down challenging projects for Arnold. metalligent® asked him for a typical innovation.

We received a request from a renowned London architectural office for metal cladding made of metal tubes in Shanghai (about 10,000 square meters of material). The surface structure resemble a coarsely woven bamboo mat. Not available. But is it possible? We put together a team that devoted their entire know-how and--in constant contact with the customer--developed an innovative process, through which the stainless steel sheet resembled the desired characteristics - the "Shanghai metal sheet'. Unique. There has never been anything like this before. London and Shanghai were thrilled about the offer. The product would could have been put on the market immediately." But Shanghai is far, so far no answer...

Text/interviews: Klaus Altevogt

↗ Finest embossed innovative implementation in metal - Result: the special look of a woven bamboo mat | Images: Arnold

Photo: Imagine Structure

Processes 6/14:
Beautiful becomes portable

STRUCTURAL ENGINEERS
THE SOULMATES OF ARCHITECTS

Structural engineers must understand the architectural language, demands the architect Prof. Juan Pablo Molestina. But what does that actually mean? Do arrchitects and structural engineers speak foreign languages? Prof. Dr.-Ing. Holger Techen teaches aspiring architects Structural Design and Construction at the Frankfurt University of Applied Sciences. And he is the head of Imagine Structure, an office for structural engineering. His motto: It is important to understand the architect, to adapt his philosophy and not bring one's own.

"Successful structural engineers understand the architectural language of today."

Prof. Juan Pablo Molestina | Image: Molestina architects

BEAMS ENDING IN NOTHINGNESS

A structure may be solid or light, it can appear as if it is floating, depending on what the architect wants to convey with his design. Techen, graduate civil engineer, demonstrates that on two examples that illustrate the interplay between architect and structural engineer. In the first case, it was able to implement the architectural idea through skillful planning at a very tight budget, the second by unusual varying of design.

In a competition for the construction of a voice and movement center, Imagine Structure was supposed to support the development of the structural frame as an integral part of the design. The structural frame not only shapes the design, but adds certain properties. The exterior classic clinker construction should surprise inside - with cool surfaces, unusual accesses and structures, everything should be somewhat off key and yet it had to be put together with finished parts.

Example two: A parish center, a relatively secular community building was supposed to impress through its ground plan and the unusual ceiling geometry. "We developed a new ceiling structure, which requires only a few beams that are running from wall to wall. Most beams end freely in the room and characterize the shape of the hall." In this case, it was the structural engineer's idea, but it was exactly corresponded to the intention of the architect. But this was not the end of the structural engineer's task. The idea was incorporated into another process, and ranged from the geometry development and calculation, verification and costs to the execution.

TO THE MATERIAL'S LIMITS

Incidentally, it is not that long ago that it was very common for architects to leave the calculation of their draft to a structural engineer. The architects, who created cathedrals or pyramids, did that quite naturally. Yes, it was an important part of their art, much resulted from experience or simply "on a gut level", as Prof. Molestina explains. Sometimes it just so happened that an arch would collapse.

However, most of these buildings survive centuries without any problems. And in many countries it is still the case that architects subcontract the structural analysis under subcontract, but are solely responsible. So what else constitutes the modern structural engineer? Professor Techen knows: In the past, buildings were often completely oversized, because the actual material properties of construction materials were still unknown. Today, however, one can fortunately go much closer to the limits without compromising the required safety.

This doesn't only lead to leaner buildings and unusual forms, but also to new efficiency. "We can always get down to the bottom of building concepts in terms of the structure, the structural analysis accompanies and shapes the entire design process. This allows us to really exploit the form potential of a design, and at the same time also the efficiency, because the components are calculated accurately based on the actual requirements," explains Molestina.

This is also urgently needed because construction is becoming increasingly expensive. Only luxury apartments and houses are built, whereas standard residential property is becoming increasingly scarce and therefore also more expensive. Based on Molestinas conviction constantly intensified, increased provisions and rigid standards that reflected not the current possibilities of calculation partially to the point of absurdity.

FUNDAMENTAL COOPERATION

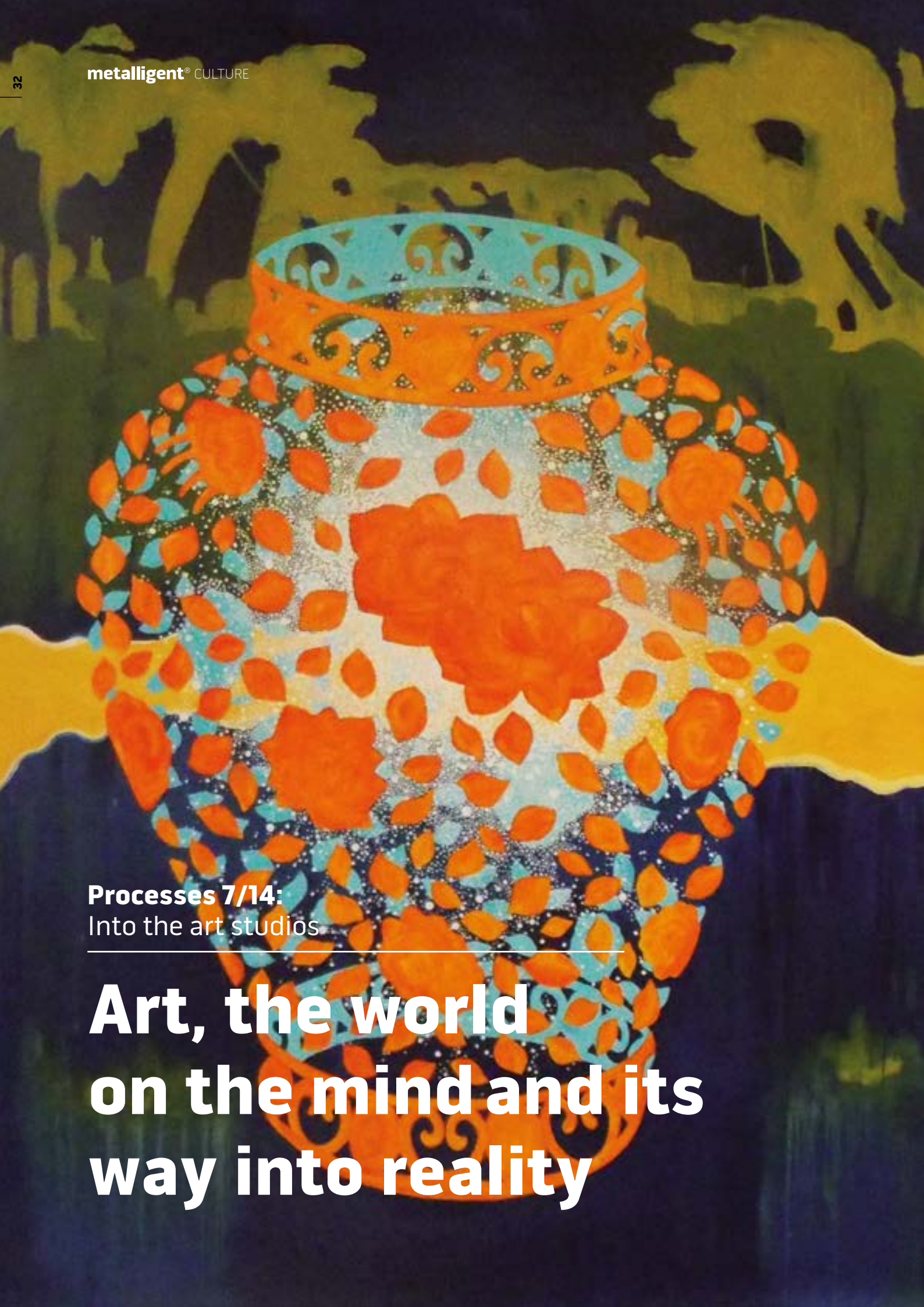
Structural engineers are also indispensable advisors for experts. Contracting companies consult structural engineers if, for example, if a product potentially poses a hazard; in the past, substitute cross sections were used, today, cross sections can be optimized much better through the high computing performance available.

Gone are also the days of serial work. Previously, the structural engineer was presented a design or a construction to demonstrate its stability, but today it is generally a cooperation. This is the reason why the structural engineer is consulted at the beginning of the product development process to determine the first dimensions. He accompanies the process until the overview planning is completed.

Text: Michael Pyper

Prof. Dr.-Ing. Holger Techen | Image: Michael Pyper

It is important to understand the architect, to adapt his philosophy and not bring one's own.



Processes 7/14:
Into the art studios

Art, the world on the mind and its way into reality

Andrew Ward, Artist| Image: Michael Pyper

When Andrew Ward paints a painting, Sebastian Herkner creates a piece of furniture and Karin Wittstock designs an exhibit, the artist, designer and cultural manager visualize ideas. The viewer is not directly involved in the creative process. However, at the end the viewer becomes a part of it. For what is visualized, becomes perceivable - and wants to be perceived.

Andrew Ward's art studio, his "School of Seeing", is open to anyone. For the painter who "understands art as a process of continuous experience", communication is part of creative work. A principle that the in Scotland socialized artist (born in 1954) represents today. At the end of the 70s, the graduates of the "College of Art" (Dundee) traveled to several African countries. These trips have shown him the difference "between viewing and experiencing". After international film productions and performances as part of process art of the 60s, Ward became a guest lecturer at the University of Zurich, and had exhibits in the US, Taiwan and South Korea. Since 2013 he has lived with his family in the Taunus. The Gallery Andres Thalmann in Zurich represents his work worldwide.

FROM CONTRAST TO THE COLOR

Andrew Ward has worked exclusively in black and white for more than ten years. With coal, graphite, pencil on paper, with bitumen paint on canvas. "Carbon - represented for me a primordial material," says the 61-year-old. A material with which he captured the mountain ranges of the Alps in their fascination and menacing appearance. But even simple containers such as bowls, he represented in its consistency, which seems to emerge from the two-dimensionality. It looks so realistic that one has to first comprehend that they cannot be touched. "At the time, I was probably afraid of color," says Ward. Only an intense confrontation with this feeling enabled him to turn to red, blue, and yellow. "At the beginning when I started my work with colors, I squeezed them out of the tube onto the canvas. They were so direct. Why wouldn't I mix them?"

...

THE LIGHT ON THE BOTTOM, THE HEAVY ON THE TOP

Sebastian Herkner infuses everyday objects with an indicative meaning beyond their use through peculiar shapes and unusual materials. The Offenbach designer creates tables and chairs, lamps and baskets. For his “Bell table”, the graduate of the Hochschule für Gestaltung [college for design] (HfG) in Offenbach received the German Designer Award in the category “Young Talent” from the German Design Council in 2011. Sebastian Herkner was 30 years old then.

With his "Bell table", Herkner turns the perception of an everyday object upside down: The foot of side table is made of hand-blown glass, the top part is made of a heavy brass plate. "I wanted to create an irritation of the table," says Herkner, "with the lightweight material on the bottom, the heavy on the top." Yet the designer is "fascinated by craft, which always has its own quality and value", whether he experiments with glass, metal, reed or paper. And he also needs partners in the craft to be able to reify his imaginations. Therefore, before starting a new project, Herkner finds factories, "to find out the relevant parameters of production to then ultimately create something new." One approach, which brought him international success. His designs are sold by renowned labels of the furniture industry.

Bell Table for Classicon, Sebastian Herkner | Image: Classicon

Sebastian Herkner, Designer | Image: Lutz Sternstein

THE DYNAMIC RELATIONSHIP BETWEEN NATURE AND ART

Karin Wittstock, Cultural Manager | Image: private

While still a student, Herkner has created an installation of thousands of circulating balloons a green glowing "primordial soup" in the Frankfurt Palm Garden for the "Luminale" in 2006. Karin Wittstock has been has been responsible for the local art presentations, from conception to the organization since 1999. For the 63-year-old cultural

manger, age, gender, origin or reputation of an artist are not the decisive factors. "It must be art that is worth to be exhibited," said Wittstock. "I decide that very individually."

However: Whether photographs, sculptures or paintings, "the connection with these subjects of our profession, with plants, nature and the environment must be apparent to the viewer." A requirement that does not in any way imply "pleasingness," highlights Wittstock. "The connection can also be manifested in a dynamic relationship." The difference between the "Galerie im Palmengarten" and traditional galleries that Wittstock sees is that she offers an opportunity to people who don't particularly have an affinity for art to explore different subjects and that "as much and as long as they like.

Premises and open spaces at the "Frankfurt grüner Lunge" have already provided a forum to a dozens of nationally and internationally working artists. Among the works of the Documenta artist, E. R. Nele, (metal), the objects of Peter Hromek (wood) and the installations of Lars Seeger (light) - the latter, incidentally, in cooperation with the Arnold.

An advantage, in addition to the large number of visitors in the "Galerie im Palmengarten": The temporary exhibitions are not binding artists to even stricter requirements as in conventional galleries. "I have already noticed a change in me after I had signed a contract with my gallery," recalls Andrew Ward. "It wasn't purposefully, but the thought was there that I am now working for a particular audience." For the artist it was also a process to free himself from this thought again.

Text: Corinna Willführ

"All in all, the creative act is not only performed by the artist himself; the viewer brings the work in contact with the outside world. "

Marcel Duchamp, surrealist and co-founder of Conceptual Art "The Creative Act", 1957

Processes 8/14:
Coal was yesterday

EUROPEAN CENTER FOR CREATIVE ECONOMY

At home in the "Ruhr", networking on a Europe-wide basis ecce promotes integrative processes between culture, economy and administration.

Light art | Art work and image: Adolf Winkelmann

With the third Industrial Revolution traditional industrial regions as the Ruhr region experienced a dramatic existential crisis and had to initiate revolutionary processes of structural change. The new participation factor is called cultural and creative industry, which helps to promote an innovative upswing for the creative artists as well as towns and regional areas.

"The cultural and creative industry is becoming increasingly attractive to artists and other creative people. This also shows the growth of freelancers. With fresh, creative ideas, artists do not only ensure growth and prosperity, but they also contribute with their high-quality cultural goods to the modernization and sustainability of our society," says Professor Monika Grütters, Federal Government Commissioner for Culture and Media.

ecce, the "European Center for Creative Economy", was founded as an institute and regional agency in the course of the European Capital of Culture the RUHR.2010. It should modernize integrative decision-making processes of the participants with municipal administrations, city planners, economy and cultural institutions, move toward mutual strategies, in order to shape the future of the metropolis of the Ruhr region economically and in a lively way.

ecce is has been a GmbH [limited liability company] since 2011, based in Dortmund, shareholders are the cities of Bochum, Dortmund, Essen, Gelsenkirchen, the Folkwang University of the Arts, the Economic Development Ruhr GmbH and the Business Development Oberhausen. A special focus is placed on the exchange of information between the Ruhr region and the European partners. ecce represents in that way regional interests of the new economic sector in Brussels and advises regional organizations in the development of European funding measures.

CULTURE INS

Image: © Vladimir Wegener/ecce

The institute organizes workshops and conferences in order to promote the dialog between local creative companies and European markets. The foundation of N.I.C.E. represented a milestone. This "Network for Innovation in Culture and Creativity in Europe" was launched in 2013 by 15 European cities, universities, funding agencies and personalities under the leadership of ecce. Associated with that was the foundation of the N.I.C.E. Award, the first and only European award for innovation in this field. More than 200 submissions from 29 countries were recorded for the N.I.C.E.Award 2015. The 2015 winners are from Brazil, the Netherlands, England, Spain and Sweden.

Innovation requires cooperation: ecce is active in different networks like the European Creative Business Network (ECBN). In a German-French partnership, it has initiated the Conference Forum d'Avignon Ruhr in Essen, an interactive think tank, which includes also politics and science. This forum has now become a leading research and dialog platform in Europe.

Meanwhile, eleven branches have formed: from art and music, literature, film, media, design, architecture to the game development. ecce strengthens new formats such as contemporary forms of culture of the younger generation, while it focuses on the participants of the cultural and creative industry, who would like to or must refinance their offers, services, performances and products on the market. Cultural workers, economy and cities as well as regions incite at each other - and they all profit.

Text: Klaus Altevogt

STEAD COAL

GO F

↗ Facade cladding at the winery "Château La Dominique", France| Image: Arnold

Processes 9/14:
Bonding holds securely

FOR IT

The word "daring" is heard often, when traditional joining processes such as the screw, rivet or welding and soldering should be replaced through adhesive bonding.

"Those who do not trust adhesive bonding, should never travel by car, bus, train, ship or plane." Matthias Weiss is the market field manager industry at Sika Germany GmbH, one of the leading manufacturers of adhesives and sealants for industry and trade. Sure, the guy wants to sell his products. But the facts prove him right. Today, all this transportation would simply be unthinkable without adhesives. The driving force is usually the lightweight construction. For components made of glass fiber reinforced plastics, carbon fibers with modern plastics or in combination with aluminum, adhesive bonding is often the best solution.

GLUED MOBILITY

This becomes particularly evident with aircrafts of the latest generation aircraft, such as the Dreamliner from Boeing or Airbus A350. More frequently they consist largely of fiber composites. The can still be riveted, but welding does definitely not work. However, the rivets always pose a weak point, they are heavy and must be additionally sealed. This is the reason why adhesion is preferred.

The trend for adhesive bonding has been around in the automotive industry for some time now - and no longer for windowpanes only. Reason: The proportion of plastics in the automobiles has been growing for many years. On average, it is now at approximately 25 percent, the BMW i3 with its high carbon content, even at 40 percent. In order to securely connect the plastic with the metal, is adhered. Incidentally, metals are also increasingly adhered. And that without any problems. Or has anyone ever heard of workshop visits or even recalls due to defective adhesive joints?

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TEST METHOD AVAILABLE

We simply have to risk more in the industry! Dr. Oliver Drawer, Bonding Engineer at Arnold, advocates for that. I often get to hear: It may hold now, but what about in ten years? Or even in 30, as is it required in rail technology?

"We are testing that with accelerated aging through temperature changes and immersion in water, i.e., with test methods as specified by certain standards," explains Sika employee and Adhesive Specialist, Matthias Weiss. It shows fast whether and how adhesive and join partners can change. "We also have three decades of experience, that's enough to make reliable conclusions."

However, the manufacturer can of course only guarantee the characteristics of his products, the responsibility for quality and durability of a bonded joint is always

> "Those who do not trust adhesive bonding, should never travel by car, bus, train, ship or plane."

with the one who prepares them. That is a hurdle, because adhesive bonding has completely different requirements than quickly drilling a hole and affixing a screw or rivet - if required, even in the middle of a dirty construction site.

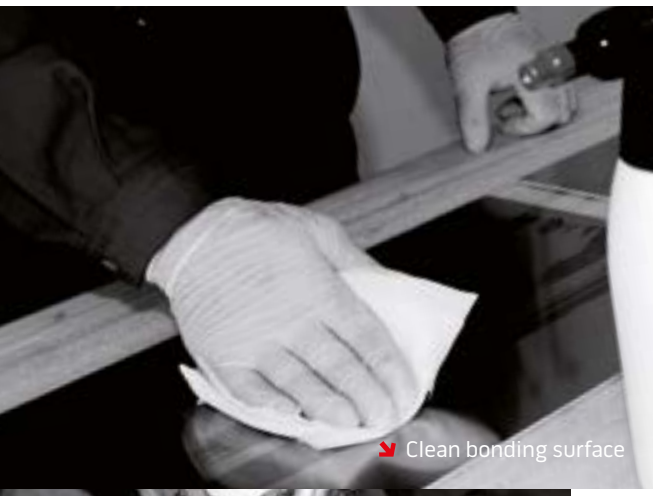
With a rivet and screw on can generally tell if they still hold or are damaged. However, an adhesive seam is mostly invisible. The proof of their quality and durability is indirect. Perfect, proper bonding conditions lead to a secure bond

PROPERLY BONDING

Everything correct, that means: special adhesive cabins with temperature control, extraction system and a meticulous preparation of the surfaces to be bonded. This all is regulated in relevant standards and certifications, it is applied through trained adhesive bonders, adhesives specialists, and adhesive engineers. And they have the accreditation according to DIN 6701 A1-A3, so to speak, the "license for bonding" in railway technology.
Assistance during the introduction of the necessary processes provides the technology center

TC bonding in Übach-Palenberg. There, they are researching, in addition to other things, bonded joints and verifying its durability. The experts share their expertise in the form of further training, and they certify adhesive enterprises in the field of rail vehicle construction.

Matthias Weiss | Image: Sika


Clean bonding surface


Load glue gun


Apply adhesive


Adhere material

ONE PROCESS LESS

Their supervisor is Julian Band, and he definitely understands that there are still reservations about the long-term stability of bonded joints. Yet, he is confident about the long-term durability. The experience from countless empirical reviews, give him the security to accurately assess whether bonds will meet the requirements, or whether they need to be better protected against environmental influences.

For the required processes of adhesives, the TC adhesive experts are looking for pragmatic solutions that even withstand an economic assessment by the controller. However, the stipulation is still comply with the necessary criteria of quality, that are resulting from standard works or in-house regulations.

Sounds somewhat expensive. However, structural engineer, Gerardo Arcuri, customer team leader at Arnold, relativizes and compares bonding with welding. The advantage of the visible and thus always controllable weld seam is facing serious disadvantages such as the heat transfer into the material, grade changes and warpage. This is the reason why there was a switch to rivet constructions with containers for rail vehicles, which required to be sealed in addition. And this requires up to 400 rivets and with that 400 holes for a housing bottom or cover, which none of them can be leaky at the end. A complex process, which can hardly be automated. "Through adhesion we can connect and seal simultaneously in one single process," said Arcuri. If the quantity is right, it is even worth using an adhesive robot.

The manufacturer is not the only one who has to rethink, the same applies to the designer too. Holes and openings should be avoided as much as possible, the adhesive seams require a defined distance of the surfaces to be bonded. Matthias Weiss knows the basic principles behind it: "The shear forces acting on the adhesive bond shall be minimized, it is best to avoid them completely, and sufficiently large adhesive surfaces must be provided." He is still convinced despite the conversion effort: "Adhesive bonding is the joining technology of the future, because no other joining technology connects different materials friction-fitted."

Text/images: Michael Pyper

Processes 10/14:
Together holds better

WE ARE
metalligent®

Austere metal workers, emotionless, rational, results-oriented - no, especially not this evening! The Arnold family met for two days in Hohenroda for a brand event.
It became a start into the future.

The Arnoldians reacted first somewhat confused, but curious, to the workshop offers, from mixing cocktails, graffiti art, to the dance performance. And as they are used to it from their daily work, the working groups still started the work with enthusiasm.

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A chapter of the "Brand Arnold" inspection is called "Arnold's weaknesses" by the branding experts of "brandamazing". It read: Too modest! Arnold has no reason for that - the Arnoldians agreed at the brand event.

What does it mean to be sensual, crazy and metallic? In six creativeworkshops, the Arnold employees approached the three Arnold brand values with a lot of fun.

Graffiti

Cocktails

Sound

The mutual work was obviously so much fun that the presentation of the results from the workshops was a real blast. On stage brave metal workers turned into true stage hogs, the audience wasn't withholding their cheers, applause and teasing. Great!

You have to be a bit crazy to be able to just say: "It can't be done", does not exist. And then to actually do that. But it is true! Here, "can't be done" does not really exist. Ever since there has been Arnold, we define the boundaries of what is possible again and again!

Dance

Perfumes

Storytelling

And now "metalligent" - metallic intelligent. Actually exactly what Arnold always represented. But now it is clearly shown. That's how easy it is. The caterpillar turns into a butterfly.

THIS MEANS FOR US

metalligent®

TO BE:

Image: Wolfgang Günzel

"I will continue to work as committed, as prior to our event, because I have been metalligent before that."

Ingo Klee – Arnoldian for 4 years

"On the way to the 100th anniversary, I will give my best, and actively support the company."

Sascha Ruß – Arnoldian for 9 years

"RESPONSIBILITY, DIVERSITY, HANDICRAFT, GOOSEBUMPS, ENTHUSIASM, CURIOSITY, PASSION, ART, FUTURE, PRIDE, INNOVATION, RELIABILITY, AND WILL."

Marion Heinze, Arnoldian for 6 years

"To convince the customer that with us, he/she is in good hands."

Sabine Wurm – Arnoldian for 15 years

"To proudly represent our company externally and have fun and passion at work on a daily basis. I gladly share my knowledge and skills with my colleagues."

Karsten Hasenheyer – Arnoldian for 14 years

"To be the brand ambassadors. To remain modest about past achievements and to be proud of future achievements."

Michael Brückner – Arnoldian for 22 years

"GIVING MY BEST,
ISN'T SOMETHING I MAKE DEPENDENT
ON OUR NEW SLOGAN.
I HAVE BEEN AN ARNOLDIAN WITH ALL
MY HEART FOR MORE THAN 10 YEARS

Katja Selke – Arnoldian for 11 years

"BREAK DOWN OLD STRUCTURES AND BELIEFS, TO UNDERTAKE INNOVATIVE AND NEW WAYS."

Rico Weiß – Arnoldian for 8 years

"... to explain to our customers that metal can become an experience. Here it is called ...metalligent."

Marcel Glapski – Arnoldian for 9 years

"I work at Arnold with a passion and I hope that with my help even more metallic-intelligent results can be achieved and the customers are fully satisfied."

Yvonne Reichert - Arnoldian for 8 years

Repro: Volker Hielscher

Processes 11/14:
Brats-Sausage-Roasted

Minced or **cut?** It is **all the same!**

Not really! This is a serious matter: the Thuringian Rostbratwurst [grilled sausage]! Mentioned in an invoice of the Arnstadt Jungfrauenkloster [nun monastery] in writing for the first time in 1404: "1 g vor darme czu brotwurstin" (1 groschen [German coin] for Bratwurst casing) – and today everyone still talks about it.

...

"The taste **of** Thuringia"

...

As long as anyone can remember, meat has been minced, seasoned, stuffed into casings, smoked, cooked, fried, dried - et voilà: "Sausage!" A proven way to keep meat stocks durable and storable. This has been done already in 5000 BCE in Egypt, Syria and China, Homer (700 BCE) talks about it just as the Roman writer Apicius and Petronius Arbiter (approx. 25 BCE).

In the "Teutonic" country, reports about the Bratwurst surface in the late 14th century. Now the Nuremberger ("Bratwurstglöcklein" at the Moritz Chapel) and the Thuringian (said provost invoice) are fighting for the honor, who first... The dispute lasted for years. But more fair and winking, as Uwe Keith, CEO of the "Origin Association Thuringian and Eichsfelder Sausage and Meat e. V.", assures

Nevertheless, the Thuringian are able to provide written evidence. Precisely, the invoice from 1404 and a type of purity law of 1432: the Butcher Regulation of the Weimar Butcher for Bratwurst, Liverwurst, and other Sausages.

Franken, Hesse ("Ebbelwoi" [apple wine as pronounced in Hesse] - home of Arnold AG) and Thuringia (since 1991 also home of the "Bratwurst") are, so to speak, the sausage Mecca Germany. This has to do, among other things, with the natural conditions of these areas and the active exchange of goods and recipes that took place already in the Middle Ages. Has Thuringia's career been possibly particularly favored as an exporting meat and sausage country through a historic defeat? In the battle of Burgscheidungen on the Unstrut in 531, the end of the Kingdom of Thuringia was sealed and the remaining administrative district was charged with the so-called "swine interest" is, which obliged the Thuringian to annually deliver 500 pigs to the Franconian Königshof [royal court].

Today, Thuringia leads before all other German federal states, the Brussels directory "Protected Geographical Indication" (PGI.) with five sausage types: Greußner Salami, Thuringian Rotwurst [blood sausage], Thuringian Liverwurst, Eichsfelder Feldgieker [salami] and of course the Thuringian Bratwurst.

Criteria for their recognition is production exclusively in the region according to specified characteristics: (max. 20% fat content, no offal, natural casing, 15 - 20 cm long, weighing 100 - 180 g).

Recipe variations are allowed: Eastern Thuringia swears by cumin, the north by marjoram, the south by garlic, the Thuringian Basin on a subtle mixture of all - and in the southwest adds shot of brandy and some lemon zest into the emulsion.

Since 1993, the "Origin Association Thuringian and Eichsfelder Sausage and Meat e. V." ensures the compliance with the brand and EU regulations, encompassing almost 90%, i.e., about 300 butcher businesses. In addition to formal affairs, the association provides the guarding of property rights and the marketing. For example, at the end of March the "Rostkultur" [roasting culture] has been taken place at the Cathedral Square in Erfurt for the past eleven years. On the largest grill in the world, says Thomas Mäuer, head of the Bratwurst Museum in Holzhausen/Amt Wachsenburg - all variants of bratwurst compete for the attention of visitors.

In 2006, in sponsorship of the "Friends of Thuringian Bratwurst e. V.", the first and only!) Bratwurst Museum in the world was founded; it has up to 50,000 visitors a year. Anything and everything that provides topics about Bratwurst is dedicated to the sausage.

Inside the museum building itself, historical equipment and machinery tells the history of the art of sausage-making and technical development (chopping, mincing, cutting). Numerous documents and exhibits demonstrate how lively this cultural asset is entrenched in the region and far beyond that.

At the Bratwursttheater [theater] each year, a "home-made" play performed at 20 sold-out events, including bratwurst and beer. A colorful ensemble invites to activities for young and old on the spacious outdoor area. A special hit: Make your own Bratwurst! Associations, birthday parties, manager teams, and once a year,

„1 g vor darme
czu **brotwurstin**“

1 Groschen for Bratwurst casing

even a travel group from Texas joins this event! And of course "Thuringian incense" can be smelled from the grill: This is where the sausage is grilled!

In a bread roll? **Sure.** With mustard? **Maybe.** With ketchup? **Hmm.** As a curryw...? **Excuse me?**

The museum finances itself with the revenue from sold tickets, theater, own store and membership fees. After all, the club has approximately 350 members in notably 22 countries.

A small, 20 cm long, 600 year old regional delicacy that made it from Australia to Vietnam to Canada and the United States - and even as an export good into the English language - in addition to "angst", "kindergarten", "rucksack" to world fame. Plus, "Last Thuringians before America" are available at the outermost southwestern tip of Europe in Portugal, at Cabo São Vicente.

Notes for consumption: The Thuringian Rost-bratwurst is an outdoor sausage! You could also order it in the pub, but it taste really good if it is eaten outside: in the garden, next to the gas station, on the market, in all weather, sunshine and rain, frost and heat. Where there are gatherings of large, small, rich, poor, overweight or skinny people, regardless of skin color and origin around a promising cloud of smoke in Thuringia : This is where eating is done properly!

That would be a reason to recognize it as a World Heritage, right? Submitting an application has been already contemplated.

Text: Klaus Altevogt

Images: Volker Hielscher

Image: istockphoto | www.istockphoto.com

Processes 12/14:
Mindfulness brings energy

Cordula Nussbaum | Image: Jan Röder

Always keeping in balance

Germany is task and process-oriented. Not only at work, but increasingly also in personal life, we get things done "timely" and "process-oriented". That makes us successful, but not always happy. Those who find time for themselves, family, friends, hobbies outside of work, are more satisfied - even with their jobs. Work-life-balance--reconciliation of private and professional life--is therefore an important long-term career goal for young specialists and managers. A time management expert and two successful professional rich, balanced people examine the topic.

Mindful use of energy. Cordula Nussbaum is considered Germany's leading time management expert. Her method "Are you still organizing or are you already living?" was chosen, among other things, by the Stiftung Warentest [German consumer organization and foundation] as the test winner. The author of 14 books knows why some things in our life are sometimes out of whack.

Ms. Nussbaum, statistically, the Germans work do not necessarily work more than before. However, we still feel stressed. Why is that?

For one, the workload is increasing, i.e., the amount of work that everyone has to manage. For fear of losing their job, many employees also take on more than would be healthy for them. In addition to that, the aspect of being permanently available and working on projects that never call it a day. In personal life, it has become very common to experience as much as possible, and those who have children, have to manage everyday family life in addition to that.

How do we return back to balance?

By attentively manage our energy. We can go very well for a few days, if necessary even weeks, full of action, time pressure, many tasks, but then we should slow things down again, and we take time for recreation, healthy food, friends, family. Those who succeed are well-balanced. This means, to deal carefully with us and our tasks and shape our everyday life that way too. Do not always march to the beat of others, but march to your own.

Do the traditional time management methods still apply?

Our world is faster, more complex and less projectable. Therefore, the traditional techniques--to-do list, assign priorities, work through them--work less and less. Even Seneca (Roman philosopher, editor's note) lamented the shortage of time. So, the topic isn't really something new... We have always pondered about time. And rightly so. It is the only good, I can't store nor save. Each moment is precious. Too bad that we get angry about pointless things or waste time with people or tasks that are not important to us.

And what if I am not even aware of it?

Then do an Eagle's Flight. It is an exercise where we look at our daily lives from a distance and what happens there. From above we can see the big picture, see our personal time wasters and time thieves, and can clean up the sites.

Flexible work hours, areas to retreat at the office, breaks at the table football...does that help?

Such offers are a valuable framework - but what use is the best working model, if you want to leave at 4 PM to see your daughter's ballet performance and the line manager slams you with as a "super important" project - even though he knows about your leisure plans? It is about the vital corporate culture. If it fits, then we do not need table football.

Does good time management work for everyone the same?

The best time management is what fits your talent type. Creative slobs do not like to plan too tightly, they want to preserve their flexibility or have sufficient time for other people. Systematic people love plans, but get stressed if their plan turns out to be not feasible because all tasks and priorities have changed.

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Clearing the head again

Katja Hobler manages a stonemasonry firm with her husband in Saarland Neunkirch-en-Hangard (Natursteine Markus Glöckner). Demanding restorations are the strengths of the highly successful company. After a burnout a few years ago, Katja Hobler is now managing her resources very consciously. She makes sure to plan free time for herself, for example, she goes to the gym in the morning. "At that time my office is staffed and then I work in the evening a bit longer. That does not bother me," she says. It is very important to the businesswoman to give her head a break during sports or drawing (her second new passion). "I have learned a lot," she admits, "for example, that 100 percent are enough, and that I accept my limits." At the office, she delegates those tasks, which pose a drag for her, to a colleague. "We have different talents, which works just fine," she recognized. She tries separating work and personal life as best as she can: "I support my husband," she says, "however, the responsibility for his own work-life-balance I will leave up to him. Besides, at home we talk about work as little as possible." Today she think: "I don't have a problem that my work takes up a majority of my life. What is important for me is the balance of energy consumption and regaining energy." As a creative, performance-oriented spirit, this is where the true challenge is: "I have to work on that on a daily basis," which she knows.

Balance in midst of hustle and bustle

Joachim von Lüninck is the CEO of a.m.consult GmbH in Niederkassel near Bonn. The management consultant, who shows Groups and SMEs how to efficiently and profitably make purchases, does not only fulfill the high demands of his customers. Von Lüninck has also five children and is a committed volunteer. He draws his strength from his values: "I am thankful, happy and content with what God has given us. There are many people are much worse off, "he says. For him the important factor is: act in a sustainable way and do not always strive for "more" and "faster". He feels stress if he does not sufficiently delegate topics. "My commitment to quality and reliability stands often in my way. But, fortunately, then my environment serves as a reminder and manages the topics very well." But he has some difficulties with the term work-life balance: "I define my career as the total of being a Christian, being a family, being a father and househusband, being an adviser, and being a volunteer. The also necessary stages of recovery are not life and the rest is work. This falls too short for me." He doesn't find his balance in peace, but also in midst in hustle and bustle, when interaction with customers, colleagues, friends, while cooking with family or during a walk in the woods with his wife. For him the following is very important: "That one also recognizes that other people have and enjoy similar little moments of happiness."

Text: Annette Mühlberger

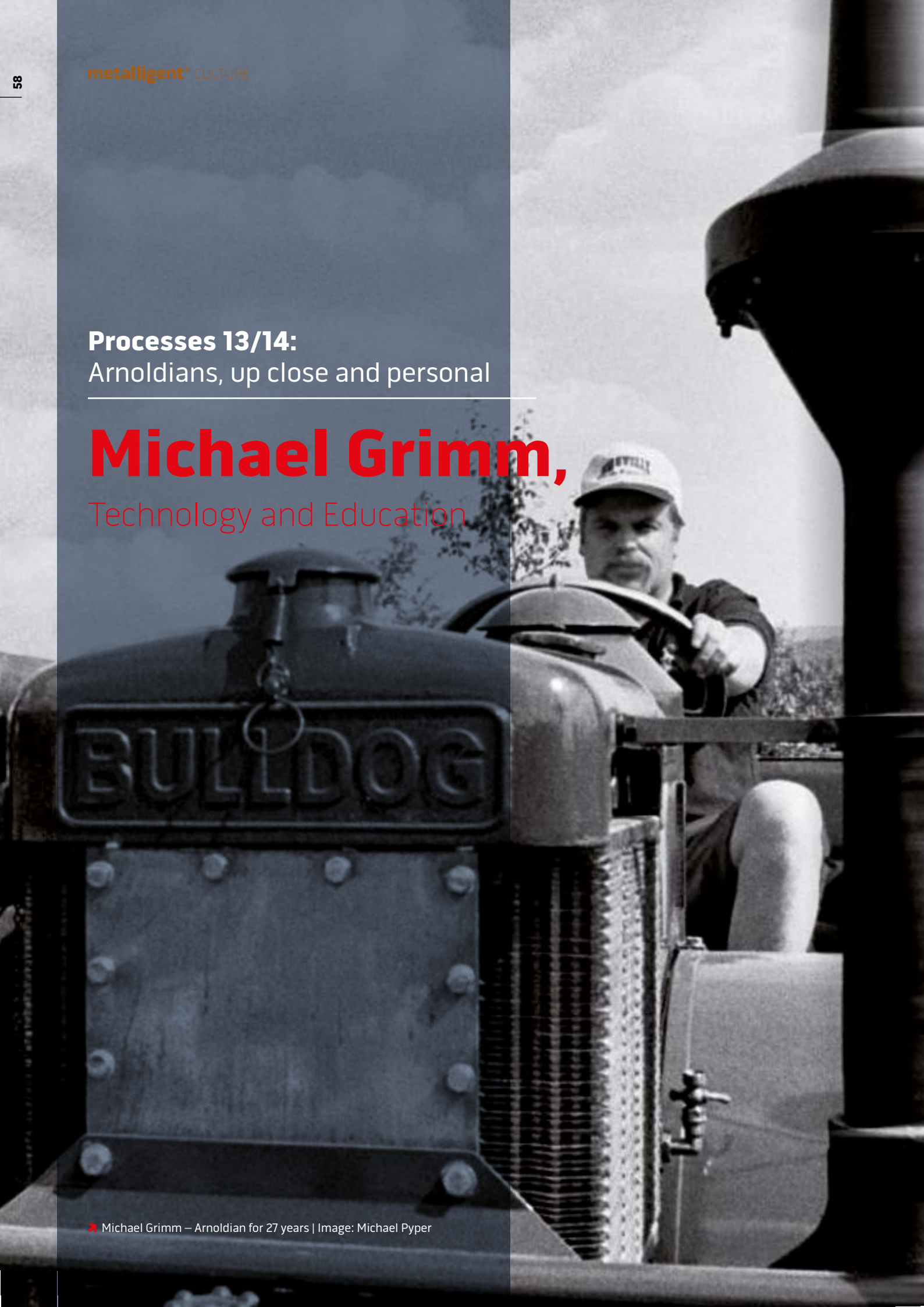
Photo: DeathtoStock

Katja Hobler | Image: Barbara Schreiner

Joachim von Lüninck | Image: a.m.consult

Processes 13/14:
Arnoldians, up close and personal

Michael Grimm,
Technology and Education



Michael Grimm – Arnoldian for 27 years | Image: Michael Pyper

On weekends as Michel from Lönneberga: A rascal from the country and certainly edgy. His main job is a modern old-school missionary, no preacher, yet a structural engineer, an engineer with heart and soul and an extended family history.

This man has not picked an easy fate. He has a hard life due to female trinity, also known as two adolescent daughters at home and a resolute wife, who also works at the same company, it almost verges on a small miracle that Michael Grimm has not yet forgotten how to laugh. After two decades in the field of construction and development at Arnold,

he has to deal with everything that has to do with new technologies, technical support and training there. The ever-increasing, so-called "processes" of his daily work are particularly difficult for him. A newfangled term, which a creative problem solver and experienced practical person as Grimm cannot take a lot of pleasure in.

The processes that Grimm has an interest in, have very little to do with the 329b form from DIN XYZ, but rather with reality. And this is happening at the workshop and not on paper.

There, he is an unbeatable process optimizer with an eye for the essentials. Generally, almost every phone ringing means there are technical problems that must be solved. "Grimm speaking." This is generally how he starts a phone conversation and prefers to end it with the following words: "Well, I'll be over anyway, so I'll stop by."

During the next step, the CAD drawings are analyzed in a professional way. "What did you do there?" Did the customer want it that way or could we do it differently?", for example, a constructive suggestion can be initiated before it gets down to business.

For Grimm, a process is not a theory, but rather practical work with love, understanding and passion for metal. Where others bend their brain, he simply bends the sheet without wasting any time. But where does this man get his energy from? Could it be the apple slices he has in this Tupperware box, which he nibbles on while driving at 180 km/h to Thuringia? Or the rattling vintage tractors, with which he spends hours and hours locked up in his shed over the weekend just as Michael from Lönneberga? Or is it the certainty that a tidy house, a tidy mind at a maximum and ideally someone else's house.

FOR HIM, A WELL-DESIGNED CAD DRAWING REPRESENTS A REMBRANDT, THE CALIPERS A SCEPTER AND THE "WAVE" A CATHEDRAL MADE OF ALUMINUM.

Once he guides curious visitors through the holy company halls, he will realize one thing immediately: This man lives for metal. For him, a well-made CAD drawing represents a Rembrandt, the calipers a scepter and the Frankfurter Sculpture "Wave" (metalligent® 1, p.26) is a cathedral made of aluminum. And last but not least, any employee is a potential candidate for the metal basics boot camp he started at the training workshop.

He would even prefer to chase the cleaning crew through there, so even the last person would understand what an Arnoldian is made of. Michael Grimm is a modern old-school missionary, no a preacher, yet a structural engineer, an engineer with heart and soul and an extended family history, an Eschbach edgy rascal. In short, a true original!

Text: Stephanie Werner

Processes 14/14:
Shaken and then stirred

metalligent®
COCKTAILS

The cocktail mix professionals from Flair Force created three unusual variations at the Arnold Brand event in December. The Arnoldians were excited and surprised by the Gaga Libre. Trying it yourself highly recommended!

GAGA LIBRE

4 cl Ramazotti
1 tablespoon Nutella,
2 cl lemon juice
6 cl orange juice

Mix well in shaker
oder blend in
blender.

SENSE´N PASSION

4 cl vodka
2 cl passion fruit syrup
2 cl lemon juice

Top with cranberry
juice.

STEELY WONDER

4 cl vodka
2 cl lemon juice
2 cl Blue Curaçao syrup
1/2 espresso spoon
gold powder -
food coloring

Top with
Sprite and Ginger Ale.

Images: Flair Force, www.flairforce.com

The next issues will be published in

FALL 2016.

CONTACT:

What does metalligent® mean for you? We would like to know. Write, fax or call us. We are also looking forward to receive any feedback, whether it is positive or negative. So that we can do even better next time.

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Image: istockphoto

ARNOLD

ISSN 2367-2099

www.arnold.de