WITTENSTEIN

move

The magazine for customers and partners of WITTENSTEIN AG

PRODUCTION CONCEPT FOR THE FUTURE

What lies in store at the WITTENSTEIN Innovation Factory from May 2014

ENTREPRENEUR 4.0 AWARD 2014

The artists‘ view of the 4th Industrial Revolution

April 2014
12

move

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Masthead

Publisher:
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Circulation:
900 copies
Production: IMMAGIS
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97204 Höchberg / Germany

Dear readers,

Entrepreneurs and artists have a lot in common. They both need a heightened awareness of what's going on around them and of what people are thinking and feeling. They both wonder what the future will hold and respond with their "works". These "works" sometimes influence what goes on around them as well as what people think and feel, so that they ultimately play a part in shaping the future.

Our own "work of art" – the WITTENSTEIN Innovation Factory – will officially open at our headquarters at the end of May. First and foremost, it is a new, innovative factory building integrating future production methods under the umbrella of Industry 4.0. It will allow us to lay the foundation for our company's future. And reflecting our position as a global mechatronics corporation, it also represents yet another sign of our commitment – clearly visible and vehemently asserted – to Germany as a high-tech manufacturing location.

Yet the new building simultaneously symbolizes our creative entrepreneurial and artistic drive. Entrepreneurial responsibility is far more than keeping a sharp focus on our own sales development. In addition to the languages and technologies used by people to communicate with one another there is also a universal language that is understood by everyone – art. Art builds a bridge between individuals and the wishes and will of previous generations, and it gives us the ability to see the big picture. The "ENTREPRENEUR 4.0 AWARD 2014" photography competition initiated by WITTENSTEIN and IMMAGIS, the Würzburg photo agency, examines possibilities for shaping the future in the context of the 4th Industrial Revolution with precisely this aim in mind. The award winning works of art will be the subject of an exhibition at the new WITTENSTEIN Innovation Factory – and thanks to the article in this magazine you can now have a sneak preview.

Speaking of shaping the future: WITTENSTEIN will continue to be a world class partner for its customers, driven by a passion for innovation and unconditional excellence. There is no doubt at all in my mind: not least because we have succeeded in persuading such a prominent figure as Professor Dieter Spath to succeed me as President of WITTENSTEIN AG. In the light of his knowledge, his experience and his inimitable human approach, I am convinced that the traditional family firm of WITTENSTEIN is in the best possible hands. As for myself, I will carry on making an active contribution to the well-being of "my" company. You can rest assured that I will remain as dedicated to the WITTENSTEIN cause as ever – in my future role as Chairman of the Supervisory Board of WITTENSTEIN AG.

Let us look to the future with confidence – none of us can predict what it holds, yet all of us can actively help to shape it. After all, we are all in the same boat on a journey into no more and no less than – the future itself.

Dr. Manfred Wittenstein

move talks to:

Professor Dieter Spath

Professor Dieter Spath, President of WITTENSTEIN AG

Professor Dieter Spath

Born in north-west Bavaria, he is a highly reputed technology manager and occupational scientist and the candidate expressly favoured by his predecessor: Professor Dieter Spath, aged 61, new President of WITTENSTEIN AG. For many years Head of the Fraunhofer Institute for Industrial Engineering (Fraunhofer IAO) in Stuttgart, he took over from Dr. Manfred Wittenstein last October. He describes his move back from academia to industry as an “attractive and interesting challenge“.

move: Could you tell us what persuaded you to accept the offer from WITTENSTEIN?

Professor Dieter Spath: I‘ve known Manfred Wittenstein for a very long time now from a series of joint projects and personal encounters. This acquaintance has gradually evolved into a profound and very personal relationship of trust which was a fundamental aspect for both of us – and I‘m sure Mr. Wittenstein will agree with me. This much I can tell you: I made up my mind to say “yes“ quickly and emphatically.

What is your assessment after the first few months?

The stocktaking phase is coming to an end. I’ve already visited our two main international production sites in the US and Romania and I’ve also taken the time to form my own personal impression of the situation in Switzerland and Italy. What impressed me most was that everywhere I’ve travelled so far, both at home and abroad, I’ve come across staff who are highly motivated. I don’t think I’ve ever experienced such widespread openness and enthusiasm at any company before.

What will be your first and most important priorities?

WITTENSTEIN is in great demand in Germany as a recognized driver of Industry 4.0 – even though as a family owned firm with 1800 or so staff we can hardly be classed as a large corporation. I intend to utilize my longstanding experience and network ties in applied, industry-relevant research to thrust ahead with the technology shift from mechanical engineering to mechatronics. Software and electronics are two key aspects of the envisaged advances in drive technology. We’re staunch advocates of “tomorrow’s smart production“ and this vision is now a reality at our Future Urban Production facility, which opened a while ago in Fellbach. The new manufacturing plant for gearing solutions is closely aligned to tomorrow’s challenges as identified within the Industry 4.0 project. It’s a trend that will open up new product worlds and business models for us.

What is an occupational scientist doing at WITTENSTEIN?

It’s an excellent company with excellent staff – and please don’t take that as a meaningless compliment. It’s no accident that the company has turned out that way and it’s an achievement we must never take for granted. We can only succeed in fostering talent and getting the best out of our staff if we adapt our programme of training and continuing professional development to the changing requirements of globalization, new technological challenges, novel business and production processes and demographic trends. That’s why strengthening and – wherever it makes sense to do so – realigning our in-house vocational and further training at the WITTENSTEIN academy is a matter especially close to my heart.

The WITTENSTEIN Group’s new fiscal year 2014/15 began on April 1 – would you care to give us your forecast?

For one thing, we will continue to grow owing to our innovative vitality! We see particular potential for global growth in the ongoing expansion of the Asian and American markets – and we’re determined to intensify the Group’s strategy of systematic specialization in mechatronic solutions.

The new WITTENSTEIN Innovation Factory – the single biggest investment in the history of the company – is a visible symbol and an important milestone on this ambitious path. This 35 million euro new building will be officially opened just under two months from now. We’re all looking forward to a fantastic opening ceremony!

The WITTENSTEIN Innovation Factory

"Industry 4.0 in the provinces" was the headline of an article in Frankfurter Allgemeine Zeitung earlier this year on WITTENSTEIN's new, ultra-modern Mechatronics Centre.

The title was altogether apt: the Innovation Factory at the company headquarters in Igersheim-Harthausen, south-west Germany, in which the production of mechatronic drive systems got under way a few days ago, plays a key role in terms of "tomorrow's products and production processes".

Fruitful proximity: The office areas in the Innovation Factory encourage close networking – both in specific projects and across different functions. Optimized interfaces and shorter lead times are the outcome.

Open and transparent

Designed by HENN Architekten, the internationally renowned firm of architects, the new building makes a stunning impression with its seven metre high glass façade and huge shade sails. Glass – symbolizing transparency – also dominates on the inside of the new complex with its extremely ambitious architecture, three storeys, overall height of 14 metres and footprint measuring 133 x 97 metres. With around 18,000 square metres of usable floor space, the Innovation Factory is roughly the same size as the six existing production shops at the WITTENSTEIN headquarters and offers room for 500 staff. A gallery provides visitors with a panoramic view of the facility: spacious, light production areas create optimal opportunities for innovative production processes in terms of resource efficiency, environmental awareness and work conditions. Short lines of communication are guaranteed to the office workplaces with their insulated acoustic ceilings and glass fronts looking out onto several inner courtyards – there is never any shortage of daylight here. The triple glazing familiar from so-called passive houses, our own combined heat and power plant for energy production and the photovoltaic system on the roof are only a few instances of the consistent ecological and economic concept applied throughout, which has already been awarded a pre-certificate in gold by the DGNB (German Sustainable Building Council). Innovative products inevitably go hand in hand with innovative production strategies. The WITTENSTEIN Innovation Factory sets an outstanding example here: the Development, Sales and Production functions of our three mechatronic subsidiaries WITTENSTEIN motion control, WITTENSTEIN cyber motor and WITTENSTEIN electronics will in future be united under one roof. The “articles of manufacture“ are mechatronic components and systems comprised of mechanics, controls, sensors and software for customer applications in a variety of industries such as semiconductors, power generation or automotive. The fusion of innovation and manufacturing represents a conscious decision to promote networking across traditional function boundaries. Whereas in the past work groups went about their respective tasks more or less in (physical) isolation, tightly interconnected units are now emerging. All activities linked to a particular project take place within a thirty metre radius – a fruitful proximity that allows interfaces to be optimized and lead times shortened.

> The aim is the smart factory, which will sustainably enhance productivity and flexibility.

Ground-breaking dig on April 30, 2012 – topping-out ceremony in time for Christmas the same year

Following a construction phase lasting just under two years, the first 350 staff moved into the Innovation Factory from the main plant next door in spring 2014. The timespan was very short compared to the history of the rock foundation on which the Innovation Factory stands: shell limestone was formed by marine sediments deposited on this very spot between 205 and 215 million years ago. Stone blocks discovered among the enormous quantity of material excavated at the site are now piled up in one of the courtyards like an abandoned quarry, where they remind staff and visitors of the rugged subgrade and provide a fascinating lesson in geology. Shell limestone, which varies in colour, texture and hardness, has traditionally shaped the local Franconian landscape and made it what it is today.

The future production space offers ample room for business growth.

Industry 4.0 is a vision

Experts estimate that this process will take around thirty or forty years. The aim is no longer simply to facilitate the continuous optimization of industrial processes; we are also engaged in a quest for completely new methods of production involving intelligent interaction in value added networks. In addition to technological advances and innovative products, it is particularly new processes and services and in some cases complete business segments and social innovations that are important focal areas. “Computerized production“ provides answers for the future. The goal is the smart factory, which will sustainably enhance productivity and flexibility. The WITTENSTEIN Innovation Factory will be inaugurated at the end of May 2014 – in the presence of numerous illustrious guests from the worlds of industry, science and culture. The award ceremony for the winners in the ENTREPRENEUR 4.0 AWARD photography competition – initiated jointly by WITTENSTEIN and IMMAGIS, the Würzburg photo agency, as an international artistic event to examine the role of entrepreneurial activity against the background of the 4th Industrial Revolution – will undoubtedly be one of the main highlights of the official opening under the motto “GROWING TOGETHER“. The exhibition will remain open to visitors for several months, shedding new light on the dialogue between industry and art.

How photographers see INDUSTRY 4.0

4.0

ENTREPRENEUR 4.0 AWARD 2014

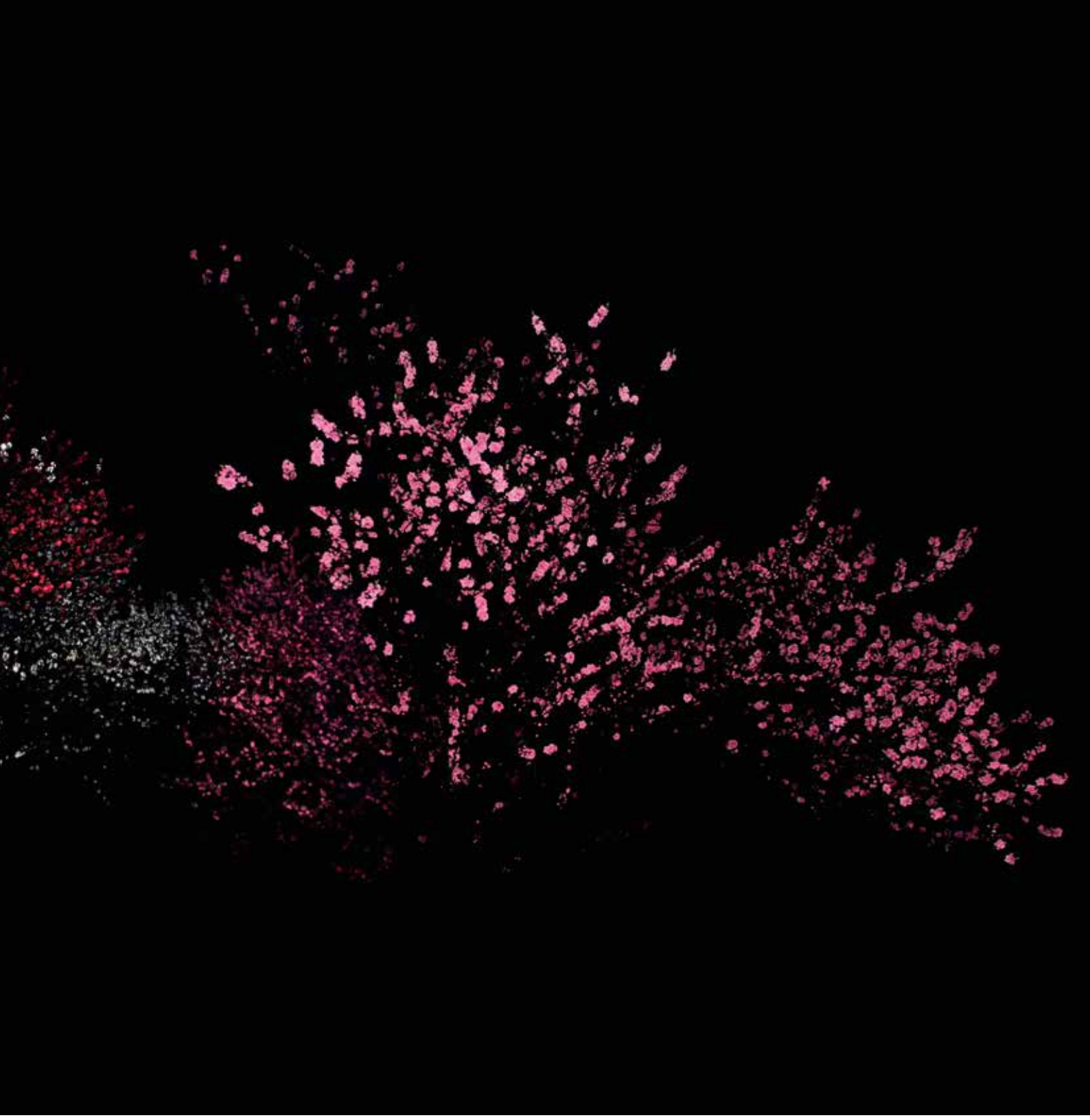
»Symbiosis II« from the »Hanami 4.0« cycle ©Sascha Weidner

Sascha Weidner wins the "ENTREPRENEUR 4.0 AWARD 2014" art prize

It's a topic on everyone's lips. Google returns more than five million hits if you search for "smart manufacturing" or "Industry 4.0". Yet how many people really know what is meant by the term? Which future are we talking about? What actually happens when machines communicate with one another? And how will we have to prepare ourselves if we want to stay successful in the future?

Dr. Manfred Wittenstein, the leading entrepreneur and initiator of the "ENTREPRENEUR 4.0 AWARD" photographic competition, appealed to contemporary artists to address the issues linked to responsible entrepreneurship in the next few decades. A small cross section of the winning works, which will be on show at the WITTENSTEIN Innovation Factory from the end of May, is reproduced in this issue of *move*. The thematic focus of the ENTREPRENEUR 4.0 AWARD is the changing conditions for entrepreneurial activity in the context of the 4th Industrial Revolution. A total of thirty international photographers and twelve talented newcomers from the renowned Ostkreuz School of Photography in Berlin were invited to present their view on the fusion of the physical and digital worlds associated with what has become known as Industry 4.0 through the medium of artistic photography. The works selected under the theme "Portraying Visions" use art as a means to highlight possibilities for, and shifting perspectives on, a future that has yet be designed while simultaneously providing us with motivation. The award will be conferred for the first time in 2014.

"Sascha Weidner's images bear witness to working without a safety net and demonstrate a great willingness to take risks in his personal quest for pictures – and in such a competition it is artistic autonomy that should be rewarded. To continually permit oneself a fresh view of the reality that one encounters, therein lies the extraordinary quality of the oeuvre and a testament to its unique poetological power". (From the jury's report)



Sascha Weidner

His “Hanami 4.0“ cycle of pictures (literally “flower viewing“) follows the Japanese traditional custom of enjoying – once a year in springtime – the transient beauty of flowers, “flower“ in this case almost always meaning cherry blossoms. Born in 1976 not far from Osnabrück (Germany), the artist sums up his cycle as follows: “And the way nature constantly reconstructs and renews itself, adapting to the most various situations, can also be exemplary of industry; recreating itself in groupings and connections, blossoming in all its glory and withering away, paying tribute to new conditions, the cycle of natural evolution thus going hand in hand with the industrial revolution“. Weidner graduated in Photography, Fine Arts and Communication Design at Braunschweig University of Art, where he was a master-class student under Professor Dörte Eißfeldt. He has already received several awards for his oeuvre, including the Alison & Peter Klein Foundation advancement award “Stiftungspreis für Fotokunst“ in 2011 and the Berlin Art Prize in 2010.

»Industry 4.0 affects us all – the whole of society. That's why it's important to be aware of how artists perceive us entrepreneurs. Tunnel vision would be fatal.«

DR. MANFRED WITTENSTEIN, WITTENSTEIN AG

»How we love, reproduce ourselves,
feed ourselves and die
reveals who we are, where we are
and when we are.«

BASTIAN GEHBAUER
WINNER OF THE ENTREPRENEUR 4.0 AWARD 2014
IN THE STUDENTS CATEGORY

Art produces knowledge

How will our society change as a result of the 4th Industrial Revolution? This is a question that no-one can answer precisely at present, not even a highly reputed expert like Professor Heiko Röhl, managing partner of "Die Denkfabrik", a think tank that has been studying organizations and the transformations they experience for the past twenty years: "We all sense that we have reached a threshold, however, because innovations with their origin in industry have invariably led to profound – and above all irreversible – changes." From his point of view as a future researcher, therefore, we would be well advised to engage in the interdisciplinary debate surrounding Industry 4.0 at the earliest possible stage, for example in the form of the WITTENSTEIN-initiated ENTREPRENEUR 4.0 AWARD photography competition. This recommendation is even more important if – like Heike Catherina Mertens, Director of Art and Culture at the Schering Foundation – you are conscious of the active role played by art in any kind of structural change: "Art produces

»Greenhouse« (top) and »Sperm Tank« (bottom) from »Circle I.« ©Bastian Gehbauer








»Bright New World« ©Mara Ploscaru

»Will the new generations be able to tell the difference between the virtual and the real? Will the human essence as we know it today be able to keep pace with technology or will technology devour us?«

MARA PLOSCARU
RUNNER-UP IN THE ENTREPRENEUR 4.0 AWARD 2014
IN THE STUDENTS CATEGORY

From the »Growing Hope« cycle ©Julia Runge

»Whoever wishes to change the future
must not be afraid to think in unconventional dimensions.«

JULIA RUNGE
RUNNER-UP IN THE ENTREPRENEUR 4.0 AWARD 2014
IN THE STUDENTS CATEGORY

implicit knowledge". For Oliviero Toscani, photographer and jury chairman, photography is in any case the most appropriate art form for understanding the future: "Our work inevitably presupposes that we have understood the present. We can only photograph something that actually exists, though we obviously also make use of the opportunities opened up to us by picture editing technologies." Professor Eckard Minx, Chairman of the Daimler and Benz Foundation, concurs absolutely: "The starting point for any photo artist is what they see. That's why the theme of the competition was tailor made for photographers. And any entrepreneur worthy of the name is a good artist by definition."

»Yet the point is not merely to leave the earth behind us but to reflect on our world and what it means to us and the generations who'll come after.«

MICHAEL NAJJAR
PARTICIPANT IN THE ENTREPRENEUR 4.0 AWARD 2014

Photography embedded in the daily production routine of a mechatronics corporation – the WITTENSTEIN Innovation Factory will soon be transformed into an art gallery. At the end of May 2014 the "industry versus art" dialogue will be continued with a major exhibition in honour of the award winners and other nominated artists in the new building at the WITTENSTEIN headquarters. The exhibition will be curated by Felix Hoffmann, Chief Curator of C/O Berlin and member of the ENTREPRENEUR 4.0 AWARD jury: "Photography is the ideal medium for getting to grips with such a red-hot issue on a technical level." A comprehensive catalogue containing the works of all artists nominated for the ENTREPRENEUR 4.0 AWARD and including their accompanying statements will be published in May 2014.

unternehmer4punkt0.de
entrepreneur4point0.com

»Liquid Gravity«
From the »Outer Space« cycle
©Michael Najjar

»Actually, we inhabit, we take up residence
in a filter which rejects all that is undesirable to us.«

DIONISIO GONZÁLEZ
PARTICIPANT IN THE ENTREPRENEUR 4.0 AWARD 2014

»Dauphin VII« from the »Busan / Dauphin Island / Favela« cycle ©Dionisio González

Security

in mechatronic drive technology

At the very latest when you board the Airbus A380 as a passenger you begin to wonder – at least indirectly – about safety and security in mechatronic drive technology.

Faults in mechatronic components and systems soaring through the skies must be prevented at all costs. The doors of the A380 are automatically opened and closed by WITTENSTEIN actuators – absolutely reliably. Fatal consequences for people and animals would also be the likely outcome in other areas such as medical technology, robotics or offshore oil extraction if security and safety were not systematically accorded top priority. For many years now, WITTENSTEIN has offered a concise but powerful answer to complex challenges such as these: “control complexity, minimize risks, engineer safety“.

Complex tasks complicate the solution

Throwing a ball up into the air and catching it again as it comes down is not a problem for most people. As soon as there are two balls, however, the task is less easy – your left and right arm have to be coordinated. The artistic feat becomes more complex with each new ball – it gets more and more difficult to juggle and a few dropped balls are unavoidable. It‘s a similar story with mechatronic drive systems: the products are increasingly customized while the solutions are more powerful and multifunctional, and they‘re also smarter and more interconnected. The complexity grows along with the desire to control it safely and reliably. This is where it starts to get complicated – what do safe, secure and reliable actually mean in this context? Manifold, varied, constantly changing – like a kaleidoscope, we discover new perspectives on these topics every time we focus our attention on them. Personnel protection, the need to avoid damage to machinery and plant and optimal reliability embrace many of the numerous possible meanings and interpretations. Safety, security and reliability are vital signposts in the world of mechatronic drive technology. The goals include functional reliability, freedom from defects, data security and safe operation – in a word, controllability.

Secure engineering

WITTENSTEIN has long had its eyes firmly on this desire for security, safety and reliability in a wide range of industries, including medical technology, the aerospace sector and energy supplies, when developing and designing mechatronic drive systems. “We are seeking to mitigate the risk that systems could become uncontrollable with efficient, controllable drive technology for complex mechatronic challenges“, says Professor Dieter Spath, President of WITTENSTEIN AG. Security, intelligence, resource efficiency – each of these three aspects are seamlessly integrated into the development of our products and system solutions.

Security is impossible without expertise

Companies like WITTENSTEIN that are aiming to develop, design, size, manufacture and maintain their solutions safely and reliably must be able to draw on rich technological know-how and application experience. Aspects such as product and process expertise are fundamental for anticipating emergency situations and thus ensuring that a swivel actuator in the A380, for instance, or an electric drive in a vehicle is operated correctly and works perfectly every time. Smart hardware and software embedded in the actuator enables pilot training to be optimized in flight simulators and helps improve aviation safety. Security through redundant design reduces the environmental risks

Sicherheit
FACTOR S
Safety
Security

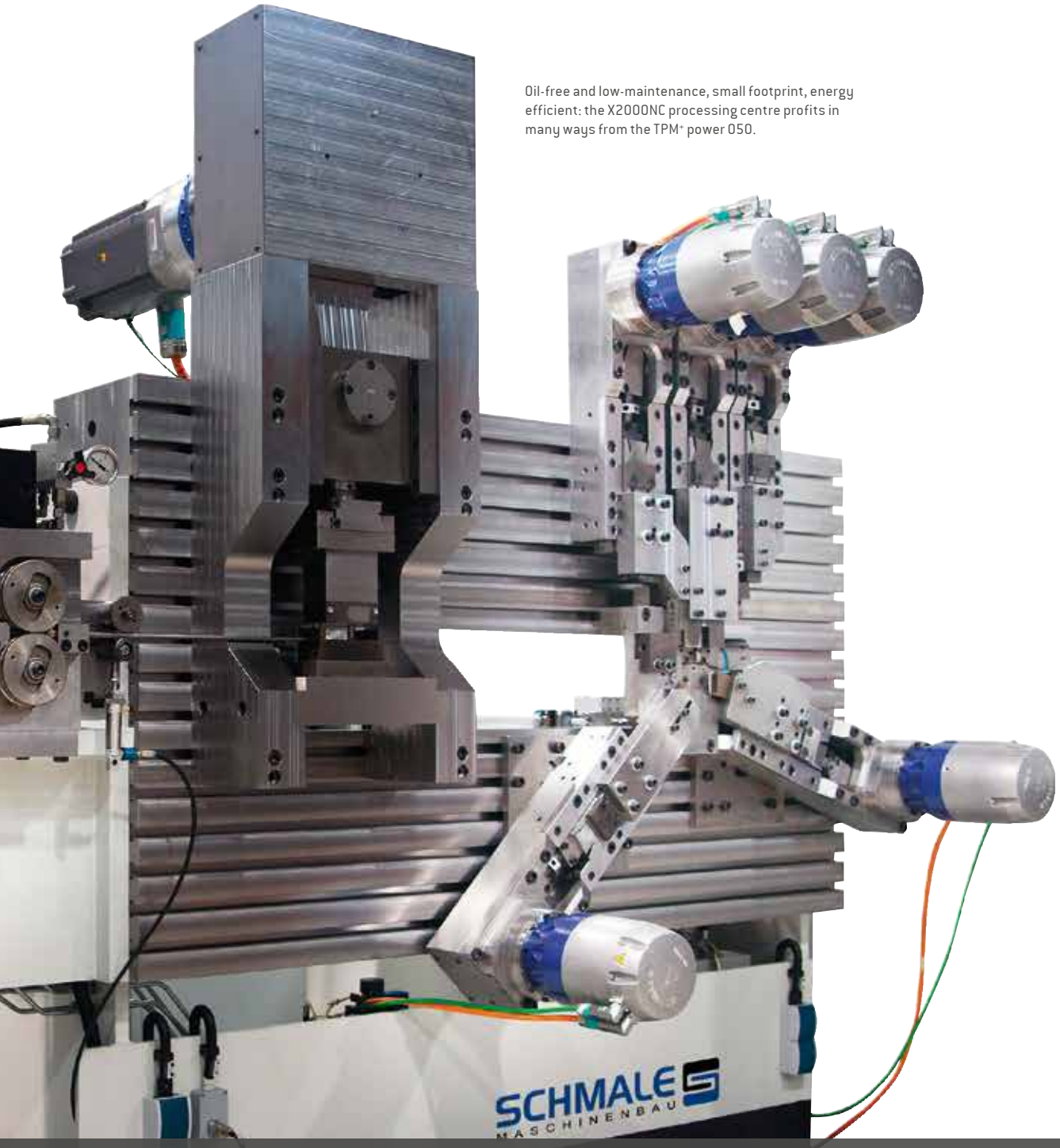
when AC servo actuators are used in offshore oil extraction. Our knowledge of the hygienic requirements in the food processing industry contributes to the development of "axenic" – or germ-free – servo actuators and protects us as consumers by preventing contamination in foodstuffs.

Industry 4.0 depends on secure data

"Data security is a key prerequisite in the Industry 4.0 landscape", explains Dr. Bernd Schimpf, Director Mechatronics at WITTENSTEIN AG. "We can only succeed in interconnecting smart components to form complex production systems if the data at our disposal is interpreted, transferred and stored accurately and securely." As far as WITTENSTEIN is concerned, this means that without secure data there can be no reliable communication in intelligent mechatronic drive systems.

Security hierarchies are unknown

Security is a very diverse field; it always plays an important role and it defies any form of categorization in a priority hierarchy. One or more security, safety and reliability aspects may be relevant depending on the product or system solution and on the industry and intended application. Safety needs may change – but WITTENSTEIN will continue to keep a watchful eye on the "Factor S", our set of design principles for secure mechatronic drive technology.



Oil-free and low-maintenance, small footprint, energy efficient: the X2000NC processing centre profits in many ways from the TPM⁺ power 050.

Modular technology is a claim to which Schmale is deeply committed. “We see ourselves as an engineering consultant that also builds machines“, explains Managing Director Daniel Schmale. Amongst other things, the company sets benchmarks with its consistent integration of servo solutions – notably servo actuators – in the construction of machinery and control systems. The X2000NC processing centre, featuring TPM⁺ power 050 servo actuators from WITTENSTEIN motion control, is the latest in a long line of examples: it is driven without hydraulic assist and controlled electronically.

Servo actuators for a

“hoseless“ future

No hydraulic oil, no hoses, no problems

There are several good reasons why WITTENSTEIN motion control‘s TPM+ power 050 servo actuators play a central role in the innovative wire, pipe and strip processing centres manufactured by Schmale Maschinenbau GmbH in Altena, about 25 miles south of Dortmund. As key components of these oil-free machines they also knock about seventy percent off energy consumption.

One with the future – Schmale‘s innovative machine concepts are a good example of how the WITTENSTEIN vision is transformed into a sustainable reality together with the customer.

Schmale heralds in a new era in forming technology

“The X2000NC constitutes a minor revolution as the first machine that‘s virtually oil-free“, says Schmale‘s Andreas Goseberg. As Service & Sales Manager, he is thoroughly familiar with the key benefits of this system concept. “The servo axes of the processing centre manage without any hydraulic assist. Instead we use TPM+ power 050 servo actuators made by WITTENSTEIN motion control. The decision to do away with all hydraulic hoses and units means the spectre of leaks in the hydraulic circuit is no longer hanging over users. What‘s more, the amount of maintenance work has been reduced because the hydraulic system no longer has to be filled, bled and cleaned – quite apart from the problem of disposing of the hydraulic oil.“

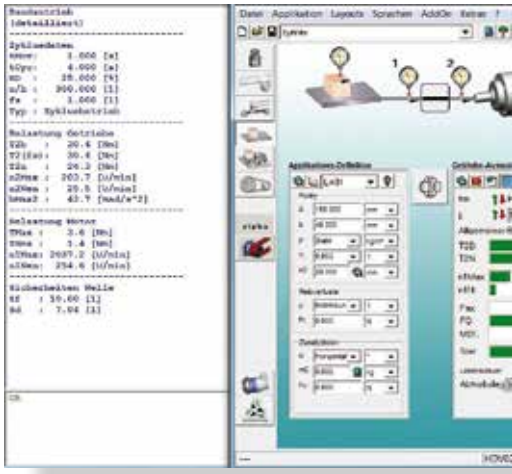
TPM+ power 050: a compact, muscle packed solution for all servo axes

A motor output of 18.4 kW, maximum acceleration torques of 750 Nm at the output and an overall length of just 346 mm including the brake and the encoder are what make TPM+ power 050 motor-gearhead units such a viable alternative to hydraulic pressure systems when it comes to power and integration. “In machines with several dozen auxiliary axes, these servo actuators can reduce the size of the footprint by as much as forty percent“, Schmale enthuses. And as far as energy consumption is concerned, the TPM+ power 050 is a true champion saver. “Sample calculations with different machine configurations, numbers of axes and cycle rates demonstrate the enormous potential for improving energy efficiency“, confirms sales engineer Andrea Esser of WITTENSTEIN alpha‘s Engineering Office West in Oberhausen. “Up to seventy percent of the total energy demand can be economized compared to traditional hydraulic manufacturing.“ The machine is far more simple to operate thanks to the servo driving technology. The electronic control system merely needs to be told a few parameter values such as the stroke and the number of degrees, which can be entered on a touch screen. All mechanical cams have been eliminated from the forming processes – as has the time consuming task of retooling the machine. Servo control simultaneously makes the system extremely flexible. Daniel Schmale: “If the worst comes to the worst, it‘s much quicker to replace an actuator than to repair a hydraulic problem. The TPM+ power 050 also helps optimize machine uptime, in other words.“

Schmale relies consistently on servo technology

The manifold advantages have also persuaded Schmale to rely consistently on Igersheim-built servo actuators in other projects. “A project involving several servo actuators in the TPME 500 series is currently under way“, reports Siegfried Wallauer, Product Manager at WITTENSTEIN motion control. This actuator series uses a water cooled motor with 107 kW peak power and 63 kW continuous power. “Owing to the innovative cooling technology, the continuous power has been doubled and there’s been a significant improvement in productivity“, adds Wallauer proudly. “Yet in spite of this high power density the maximum surface temperature is no more than 50°C.“ Schmale forming technology and WITTENSTEIN servo actuators have joined forces to bring the hydraulic era in this segment to a close and pave the way for a new age.

1



WITTENSTEIN alpha's optimized software tools evidently keep their promise of "more efficiency just a mouse click away". Feedback so far has been overwhelmingly positive – with satisfied users reporting energy savings, optimal powertrain sizing and even more convenient creation of essential documents.

More efficiency just a mouse click away

Software tools provide access to expert know-how

[1] cymex® 3 sizing software: The software tool for reliable and efficient drive sizing as well as optimal power density

[2] Online Product Configurators: Step by step to the optimal solution with all key parameters such as torque, speed, precision and forces

[3] With its intuitive navigation and customizable 3D animations, the newest release of the Info & CAD Finder is more versatile than ever

Benefits of WITTENSTEIN alpha software tools at a glance:

+ With more than 2000 licenses a year the cymex® 3 sizing software is one of the most successful tools of its kind.
+ The three Online Product Configurators already get more than 18,000 clicks a year.
+ The download figures for the new release of the Info & CAD Finder are rising every month.

In November 2013, new releases were issued of three different tools for customized efficiency engineering: cymex® 3, the proven sizing software, our versatile Online Product Configurators and the comprehensive Info & CAD Finder. Each of these tools is available online and makes a perfect complement to the professional consulting expertise of WITTENSTEIN alpha's highly qualified engineers. The operator interface and navigation concept are designed to facilitate a short learning curve for novices or experts and occasional or regular users alike. Detailed, accurate product selection, sizing calculations and documentation are now a reality.

Optimized powertrains

The cymex® 3 sizing software has many hidden talents. Sizing and evaluating complete powertrains is now quick, easy and reliable thanks to the large, regularly updated database of motors and gearheads. At the same time, the software is capable of optimally abstracting all important influencing factors and customer-specific parameters – by identifying extended drive design spaces that are not apparent simply from the catalogue data. The WITTENSTEIN engineering team's longstanding experience "hidden" in the software is leveraged, for instance, in order to calculate higher maximum gearhead loads or reveal downsizing opportunities for the drive system. The benefits for users are undeniable: they profit from reliable and efficient drive sizing as well as optimal power density.

Online Configurators

"What came first, the chicken or the egg?" This question of causal links, which will probably remain unresolved in biology for ever more, is

elegantly answered by our Online Configurators for mechatronic drive technology. It ultimately makes no difference which of the two you consider first: each user can either select the optimal gearhead for their particular application and then add a motor to match (Gearhead-Motor Configurator) or choose a suitable gearhead for that application and combine it with a motor that already exists (Motor-Gearhead Configurator). There is a third Product Configurator for rack-and-pinion systems, which likewise provides a fast and convenient way to configure exact fit components. The chicken and our software tools do have one thing in common, however: they both have to be "fed". The Online Product Configurators are supplied with key parameters such as torque, speed, precision and forces in order to guide users step by step to the optimal solution. They are absolutely intuitive to use and all relevant application and configuration information is visible at a glance. Even drawings and 3D models can be downloaded with a simple mouse click.

Documentation on demand

The Info & CAD Finder is especially popular with external users. A broad database comprising more than 11,000 motor types helps the online tool select the optimal product specifications, CAD files, operating manuals and motor mounting instructions for each customer's individual needs. The complete WITTENSTEIN alpha product range is covered, from low-backlash planetary and servo right-angle gearheads through mechanical systems to couplings and rotary actuators – and all information is just a mouse click away. Once the product has been selected or the solution defined, the Info & CAD Finder is an invaluable tool not only for compiling the documentation but also for creating 3D animations or generating complete order codes. Optimal system configuration, efficient sizing, customized product documentation – well-honed software and know-how guarantee consistent efficiency engineering in mechatronic drive technology.

WITTENSTEIN motion control recognized the signs of the times early on: "tool drives", the world's first direct drive CNC woodworking system, was developed a while ago.

Optimized drilling technology: simpler, cheaper, more transparent production!

tool drives

The insights gained in this connection are currently being put to use within a high-tech support programme to safeguard Germany's position as a manufacturing location and a centre for innovation. WITTENSTEIN motion control's new technology is making an active contribution to what could turn out to be a crucial future project.

Leading-edge achievements with leading-edge clusters

The Leading-Edge Cluster competition was launched by the Federal Ministry of Education and Research in the summer of 2007 under the slogan "Germany's Leading Edge Clusters – more innovation, more growth, more employment". In one of these clusters – "it's OWL", Intelligent Technical Systems OstWestfalenLippe – Ostwestfalen-Lippe University of Applied Sciences is cooperating with WITTENSTEIN motion control and its tool drives Business Division. it's OWL is presently engaged in the development of intelligent direct drives for furniture production in the framework of the government funded "NoVHoW" project (novel, self-optimizing feed for high speed drilling with direct drive spindle systems in the mechatronic CNC system construction kit). The goal is to make the machining processes more flexible, more precise, more repeatable, more resource efficient and more economical. There are numerous drilling systems still in use where the main drive's rotary power is distributed to the machine tools of a rigid drilling head by the pinions, belt drives and deflection gears – which are forced to rotate too if the drilling plan does not show any holes to drill. The self-optimizing, individually controllable drill drives designed by the it's OWL cluster represent a new technology which, though still in its infancy, offers a whole string of benefits for engineering firms and furniture makers. It improves the quality and precision of the drilling process while significantly reducing energy consumption, not to mention the time and effort for adjusting and maintaining the drilling spindles and machine tools. This project could potentially double the productivity of woodworking machinery – a truly leading-edge achievement!

Leading-edge technology protects Germany‘s position

More than the sum of its component parts:
tool drives – the mechatronic system construction kit.

“it‘s OWL“– a Leading-Edge Cluster Intelligent Technical Systems OstWestfalenLippe

The intelligent products and production systems developed by cluster partners in 45 projects worth a total of 100 million euros will hopefully generate fresh momentum for Germany as a manufacturing location and a centre for innovation. WITTENSTEIN motion control is one of 24 core companies. In the “NoVHoW“ cluster project, WITTENSTEIN is engaged in joint research with its partners at Ostwestfalen-Lippe University of Applied Sciences, the laboratory for power electronics and electric drives and the laboratory for wood and production technology.

One part of this project, which will run until September 2014, involves the development of a demonstration model for self-optimizing drilling processes. WITTENSTEIN and Ostwestfalen-Lippe University will show the new system at the **Hanover Fair 2014 (Hall 16, Stand A04).**

Top-level research and a technology shift as an opportunity for the furniture industry

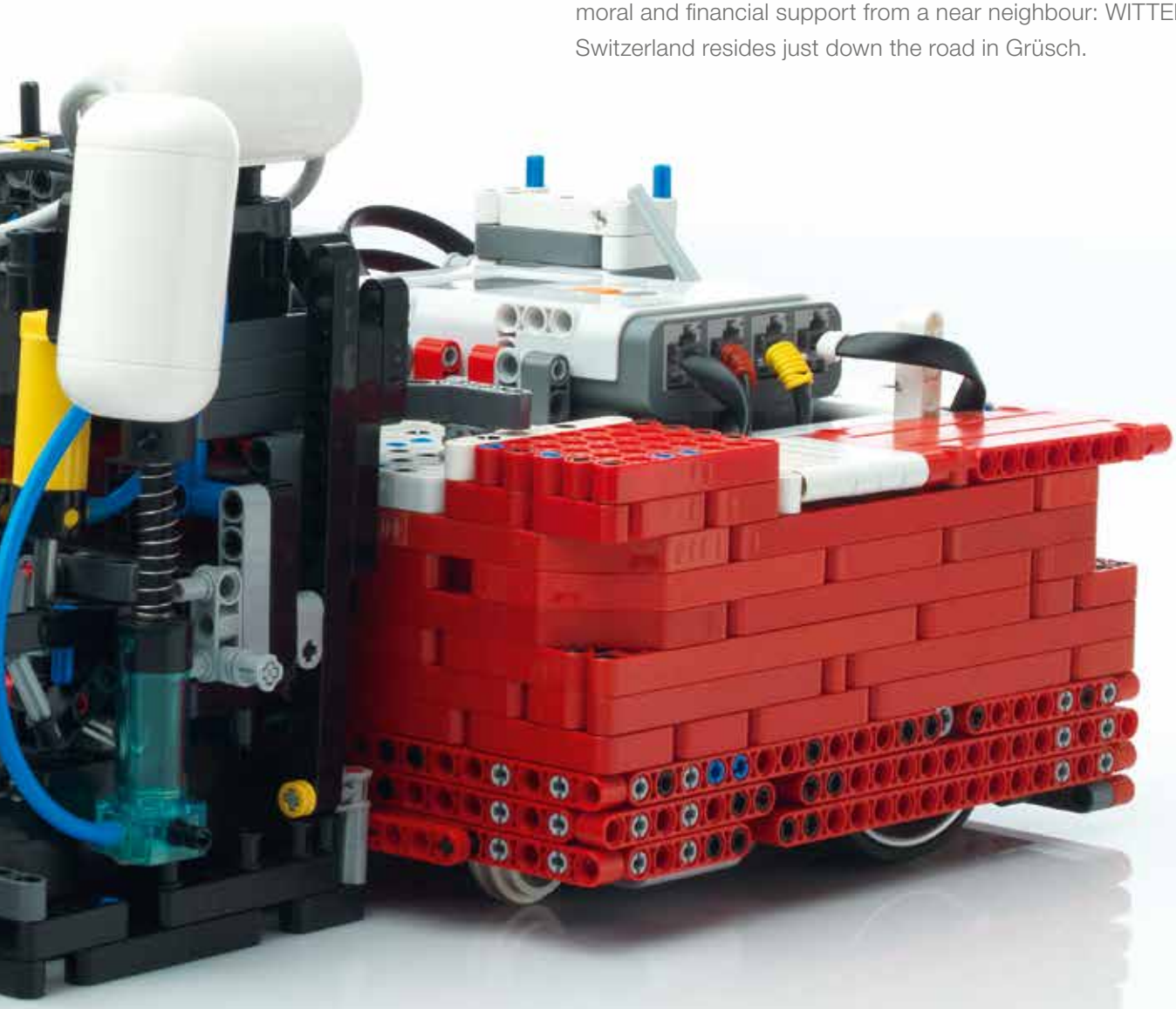
The cluster thus acts as a driver of innovation for one of Germany‘s core industries in a difficult economic climate. The association of the German furniture industries (VDM) estimates around 16.1 billion euros in sales for 2013 – down approximately 3.5 percent on the figure for the previous year. At the same time, furniture making is one of the Federal Republic‘s biggest economic sectors – with nearly 90,000 people employed at more than 500 companies. Germany is the most important market, accounting for some seventy percent of the total turnover – despite fierce competition from foreign manufacturers selling at cut-throat prices. In this kind of environment, where flexibility, productivity and cost efficiency are more vital than ever, crucial long-term growth momentum can be generated by implementing the outcomes of the “NoVHoW“ research project. Experts see the tool drives concept with its self-optimizing drill drives as laying the foundation for a new generation of machinery and equipment concepts in the German furniture making industry – absolutely in line with the objectives of the Leading-Edge Cluster competition.

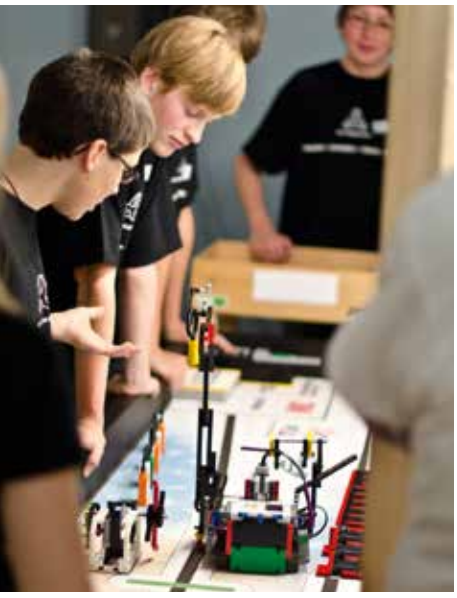
FIRST® LEGO® League:

With WITTENSTEIN on a journey to the world championship

The robot (red bricks) designed by "Electronic Machines Schiers" is capable of solving the most diverse kinds of challenge. In the configuration shown here it is lifting a house which is under threat of being flooded with the help of an ingenious, electropneumatic add-on module.

Chur, Locarno, Paderborn, Pamplona – these are the stages on the Electronic Machines Schiers (EMS) team's impressive march to the "Robotics Competition" championship in the FIRST® LEGO® League (FLL). The successful team – five pupils from Evangelische Mittelschule, a private, state-approved school on a Christian foundation in Schiers in the Swiss canton of Grisons – is receiving moral and financial support from a near neighbour: WITTENSTEIN Switzerland resides just down the road in Grüsch.





Brilliant if it works: The "Electronic Machines Schiers" team "rocks" the FIRST® LEGO® League.

The FIRST® LEGO® League (FLL) is a worldwide programme, which, since its inception in 1999, has attempted to capture young children's inherent curiosity and direct it toward discovering the wonders of science and technology through a robotics competition in combination with a research mission. More than 200,000 teams from around the globe took part in last year's competition, which was initiated by FIRST® (For Inspiration and Recognition of Science and Technology), an American non-profit organization, and LEGO®, the Danish toy manufacturer. Apart from the mobile robots' table performance, the jury also awards marks for their mechanical and software design.

Teamwork, motivation and stamina in a group context are core ingredients along with each team's general strategy for tackling the scientific research project and a presentation related to the challenge theme. The competitions are organized on a regional, country and finally international level. The top European teams, like "Electronic Machines Schiers" in 2013 for example, are subsequently invited to travel to the FLL World Festival – the world robotics championship.

"We think it's fantastic the way youngsters are introduced to science and technology in the atmosphere of a sporting competition." Armin Jud, Business Division Head, is the WITTENSTEIN contact for the EMS team, which was formed in 2010. Last year, for the first time, the school also entered a junior team sponsored by WITTENSTEIN in addition to "Electronic Machines Schiers": the "Robotic Pirates" came sixth in the regional competition, a very encouraging result.

Robots arouse interest in mechatronics

LEGO® – there's probably no other toy in the world that has remained so well-known over several generations. "I'm reminded of my own childhood", Jud admits, "though nowadays it's something completely different. There's much more to it than simply assembling plastic bricks; LEGO® today is the preliminary step on the way to developing mechatronic systems." The toy manufacturer also provides the necessary electronics and software for its LEGO® Technic sets through its Mindstorms series. You can buy programmable bricks as well as electric motors, sensors and assorted other parts such as gears, axles and pneumatic components which can also be used to design and program robots. Every year, between 100,000 and 200,000 girls and boys worldwide have a chance to draw on unlimited technological resources in the FFL. "Their experience on this small scale is very similar to ours on a much larger one", Jud comments on the surprising parallels between the robotics competition and reality. "Not every technically sound approach is also stable and not every design is failsafe and convertible – and the quality of the teamwork can make a huge difference. In the end, though, it gives a tremendous boost to these young people when their own ideas actually work in practice." Their enthusiasm increases even more if – like the Swiss EMS team – they end up among the FLL champions. After being named runners-up at the regional competition in Chur last November, they went on to victory only three weeks later at the Semi-Final Switzerland in Locarno. The list of successes has got even longer in 2014: at the Final Central Europe in Paderborn (Germany) at the end of January the team qualified for the FLL Open European Championship in May in the Spanish city of Pamplona. In finishing eighth, they beat not only sixteen other teams at the event itself but also the awesome 858 who originally entered the qualifying rounds throughout Central Europe. "It will certainly be another tough challenge in Pamplona", anticipates Matthias Liesch, team coach and teacher. "More than three thousand participants in ninety teams from seventy different countries are expected to be there – and we want to rock them all!"

Trade Fair Calendar
2014

Hanover Fair
Hanover (Germany)
Industrial Automation, Hall 15, Stand F08
WITTENSTEIN Group
April 4 to 11, 2014

OTC
Houston / Texas (USA)
International Offshore Technology Conference
WITTENSTEIN motion control GmbH
May 5 to 8, 2014

components
Dusseldorf (Germany)
Platform for Components and Automation Solutions – Especially for the Packaging Industry
WITTENSTEIN alpha GmbH, WITTENSTEIN motion control GmbH, WITTENSTEIN cyber motor GmbH
May 8 to 10, 2014

MECANICA
São Paulo (Brazil)
International Machinery Trade Fair
WITTENSTEIN do Brazil
May 20 to 24, 2014

SPS IPC Drives Italia
Parma (Italy)
Exhibition for Electric Automation
WITTENSTEIN S.P.A.
May 20 to 25, 2014

BIEMH
Bilbao (Spain)
International Machine Tool Exhibition
WITTENSTEIN S.L.U.
June 2 to 7, 2014

Metalloobrabotka
Moscow (Russia)
International Exhibition for Materials Processing Technologies, Machines and Tools
WITTENSTEIN alpha GmbH
June 16 to 20, 2014

Eurosatory
Paris (France)
International Exhibition for Land and Land-Air Defence
WITTENSTEIN motion control GmbH
June 16 to 20, 2014

Farnborough International Airshow
Farnborough (UK)
International Aerospace Exhibition and Airshow
WITTENSTEIN aerospace & simulation GmbH
July 14 to 20, 2014

World of Technology & Science
Utrecht (Netherlands)
Forum for Technology
WITTENSTEIN bvba
September 30 to October 3, 2014

Motek
Stuttgart (Germany)
International Trade Fair for Assembly and Handling Technology
WITTENSTEIN Group
October 6 to 9, 2014

Forum Maschinenbau
Bad Salzuflen (Germany)
Trade Fair for Suppliers in the Machinery Manufacturing Industry
WITTENSTEIN alpha GmbH, WITTENSTEIN cyber motor GmbH, WITTENSTEIN motion control GmbH
November 5 to 7, 2014

SPS/IPC/Drives
Nuremberg (Germany)
Exhibition for Electric Automation – Systems & Components
WITTENSTEIN Group
November 25 to 27, 2014