CABLEWORLD
MAGAZINE FOR LAPP GROUP CUSTOMERS

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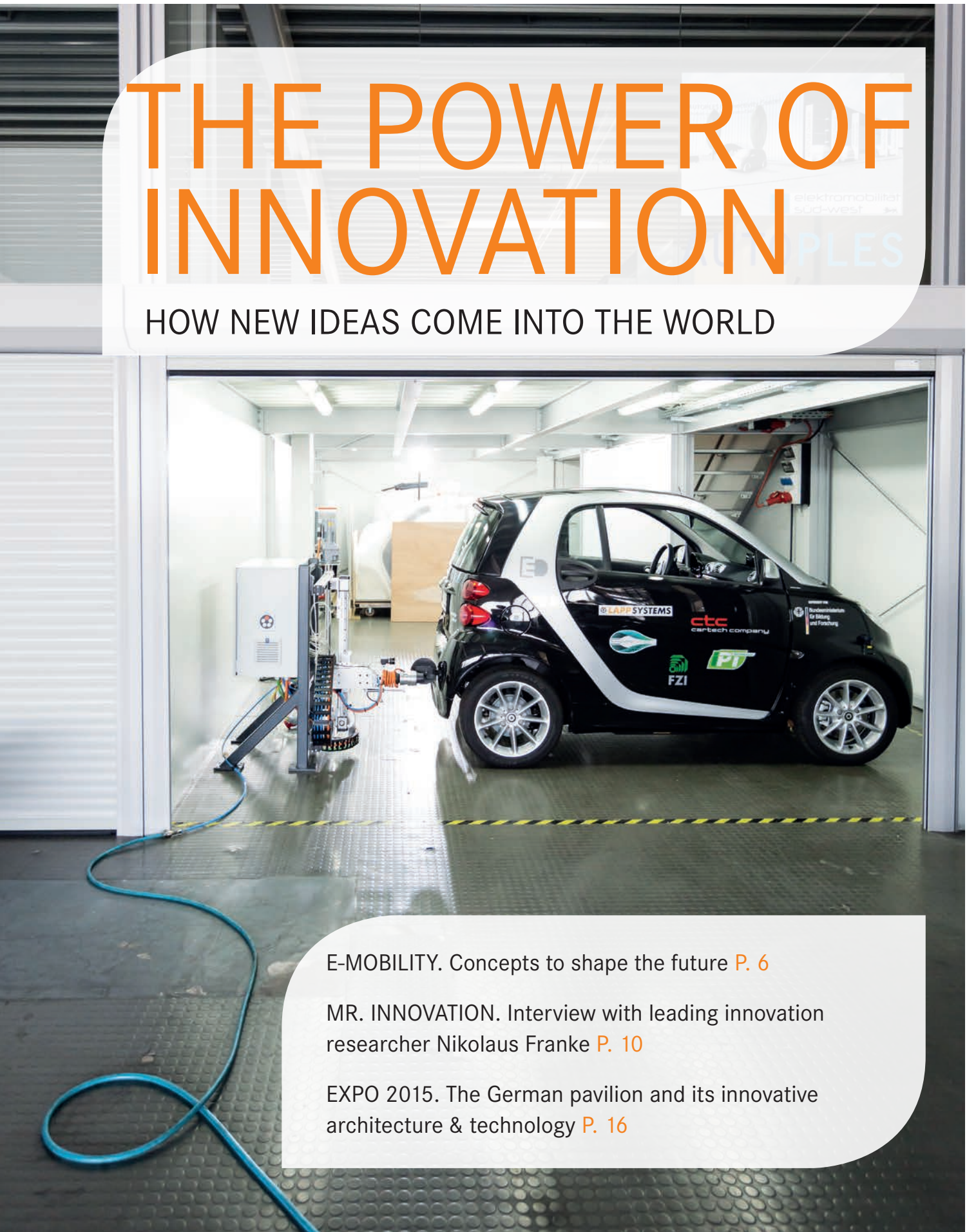
THE POWER OF INNOVATION

HOW NEW IDEAS COME INTO THE WORLD



NEW THINGS START WITH CURIOSITY

Dear readers,

For some people, an innovation is a proposed new solution to an old problem. For others, innovative means someone inventing a pioneering new concept or a revolutionary product idea, even if nobody actually needs it (yet) at the time of its invention.

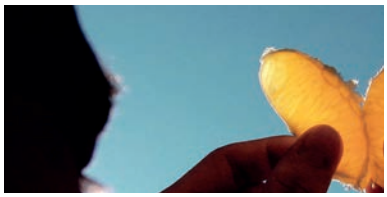
In the Lapp Group, we believe that an innovative person is someone who makes things better and helps their customers or colleagues to get better too. By doing this, they reinvent themselves and their company. Meanwhile, products become simpler or safer, faster or more environmentally friendly, higher quality or more economical. But ultimately, an innovation does not necessarily have to be a new product. An optimised production process or more intelligent service can be just as good, and just as innovative.

We believe that the definition of an innovation can definitely be rewritten. As can the formula behind it. Ultimately, it is not just necessity that makes people inventive, it is primarily curiosity.

With best regards,

Andreas Lapp

COVER STORY



IN FOCUS

OF LATERAL THINKING AND DOING THINGS DIFFERENTLY: THE POWER OF INNOVATION

"AN INNOVATION INVOLVES THE INTRODUCTION, ADOPTION AND SUCCESSFUL USE OF SOMETHING NEW IN BUSINESS AND SOCIETY." THIS IS THE EUROPEAN COMMISSION'S RATHER SOBER DEFINITION OF ONE OF THE MOST EXCITING ISSUES OF OUR TIMES – THE GREAT ART OF INNOVATION. THE IRISH WRITER SAMUEL BECKETT PUT THE ESSENCE OF INNOVATION INTO WORDS MORE POETICALLY: "EVER TRIED. EVER FAILED. NO MATTER. TRY AGAIN. FAIL AGAIN. FAIL BETTER."

Failure is just as much part of innovation as success. When the Swiss engineer, Georges de Mestral, was walking his dog in 1941, a burr got stuck in the animal's fur. To understand why it stuck so firmly, he examined it under the microscope – and invented Velcro. Today, his company is the global market leader and employs 3,000 people.

But being innovative doesn't just mean inventing new things that radically change a market – like Velcro – or even create a totally new market. Even breakthrough innovations like the steam engine or the Internet had precursors before they achieved their breakthrough. These precursors lacked small but critical details.

Innovation ultimately means renewal. And renewal is a process. It is often made up of a great many minor improvements. Things get better, more economical or more customer-friendly in small steps. The really innovative companies improve not only their products, but also their manufacturing processes and services.

INNOVATIONS NEED VISION

How can we improve things – that was the question Oskar Lapp was asking himself more than 50 years ago and, with his vision for a better control cable, he laid the foundation for the family company that has grown into a global player – the Lapp Group. It's a great example of what innovation can achieve.

As increasing industrialisation in the 1950s brought a higher demand for cables, Oskar Lapp asked himself how the most common method used up to that point – time-consuming manual insertion of single cores and control wires into hoses – could be optimised.

His answer was a true innovation – the first industrially produced, oil-resistant and flexible control cable with differently coloured individual cores. The invention of ÖLFLEX® not only turned the company into a big name, it also shaped its innovation culture. As a result, the Lapp Group is constantly inventing and reinventing things – with current examples to be found in the exciting new fields of photovoltaics and electric mobility.

EDDIE LAPP AWARD

The "Eddie Lapp Award" is an **internal incentive** for Lapp Group employees to engage with innovation. Submissions are assessed by external experts and the winners are fully involved in the realisation of their ideas. For example, the winning idea from 2013 was turned into a brand new product – the **"ÖLFLEX® SERVO 7 DSL" hybrid cable.**


AUTOPLES
electric drive
108

REINVENTING THE WHEEL

ELECTRIC CARS THAT INDEPENDENTLY FIND PARKING SPACES WHICH THEN TURN INTO CHARGING STATIONS. CABLES THAT ROLL THEMSELVES UP INTO FLAT COILS. CONNECTORS THAT CAN IDENTIFY THEMSELVES. THREE EXAMPLES OF INNOVATIVE THINKING AND HOW MOBILITY IS REINVENTING ITSELF.

Lapp Systems constructed and programmed the charging robot that automatically charges the vehicle as part of the Autoples project.

The modified Smart ForTwo autonomously drives into a car park at the push of a button. It scans its entire surroundings and looks for an empty parking space that is large enough for it. Then it tells the charging robot: "I'm ready." And it certainly is ready. It sounds like science fiction, but it's a reality. That reality is a joint project called AUTOPLES, which has been funded to the tune of 2.3 million Euro by the German Ministry of Education and Research.

"Automated parking and charging of electric vehicle systems" is what the name AUTOPLES stands for. Five partners have collaborated to invent a pioneering parking and charging system for the electric mobility market – including the Lapp Group, which is the specialist in tailored solutions for charging electric vehicles.

"Once the vehicle has driven autonomously into the parking space, it communicates with the charging robot via WLAN. Our charging system then hooks up the vehicle to the connection system and retracts the connector again automatically later, once the vehicle is charged" – this is how the process is described by Peyman Negahban Kardjan from Lapp Systems, the AUTOPLES project manager at Lapp.

THE VEHICLE FINDS ITS OWN WAY. AND A CHARGING STATION.

"Our objective was simply to present automatic charging of an electric vehicle combined with an autonomously driving vehicle", says Kardjan. The word "simply" is definitely a big understatement. The project had its première at the Hanover Trade Fair 2015. "Even the doubters – and there were plenty of those at the outset – were thrilled by the result", says Karl Knezar, head of the Automotive division at Lapp Systems.

Video of the Lapp Systems charging robot
www.lappkabel.com/autoples

BRIEF INFORMATION ABOUT AUTOPLES

The aim of the AUTOPLES project is to investigate automated parking and charging of electric vehicles in public car parks. A modified Smart Electric Drive, which can drive into and out of parking spaces autonomously, is being used to test rapid, convenient recharging of electric vehicles with a flexible charging robot.

Electric mobility is not a new area for the Lapp Group. The company has been supplying 3-phase cables for the Chevrolet Silverado since 2006, and assemblies for the battery systems on the BMW 7 Series hybrid since 2009. AUTOPLES is another example of how existing experience can be drawn on to create something innovative in a new area of business. Another case of reinvention.

INNOVATION ON BOARD AT BMW

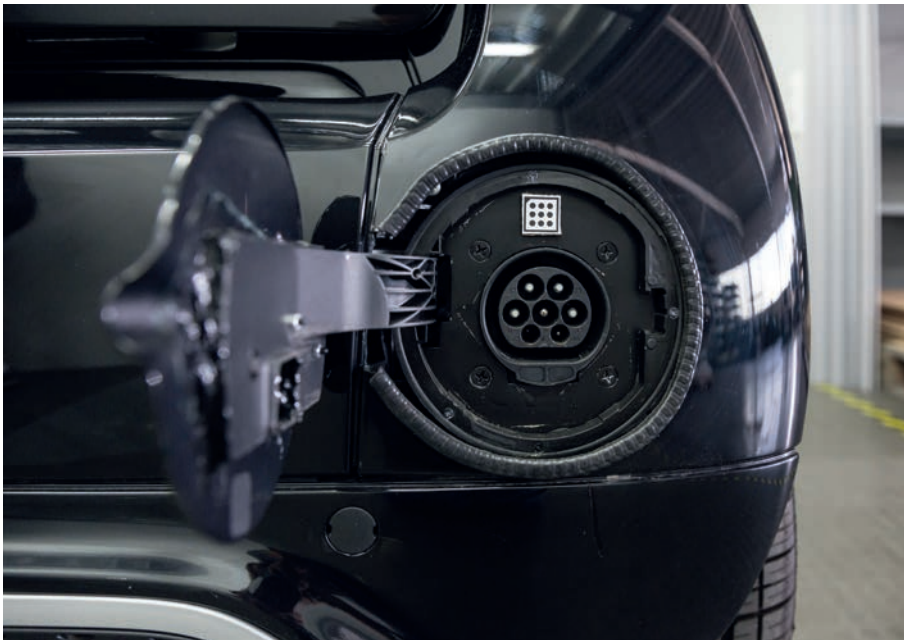
No longer a prototype but a successful series production model for some time, the BMW i3 is BMW's first pure electric vehicle. It has innovative solutions from Lapp on board. In this case, it is a tailored charging system, with components primarily designed for low weight and space requirements. These are factors that directly influence energy consumption and the range of the vehicles.

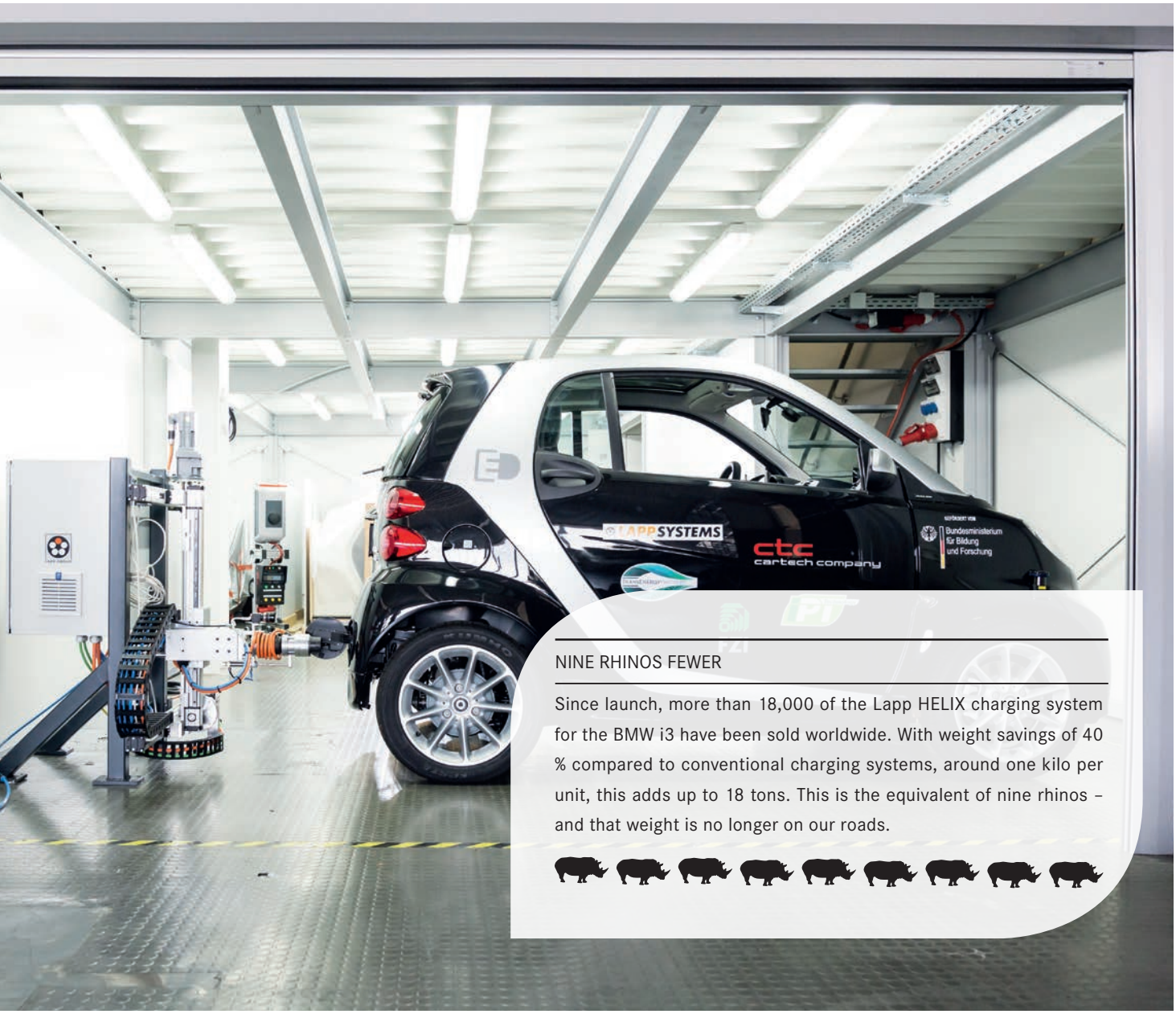
An innovative production technology was used to develop the LAPP HELIX charging system. It is a spiralised charging cable that rolls up flat after use. The LAPP HELIX uses only half the amount of material as a coiled cable, enabling weight savings of around 40% to be made.

The cable also has what is known as shape memory and, when charging is complete, rolls back up so that it can be stored tidily.

CONNECTOR INSTEAD OF MAGNETIC CARD

Another example of how new mobility methods are bringing about new technological solutions measures just a few centimetres. A fleet of 400 BMW i3 vehicles used in Copenhagen has been fitted with very special charging systems for the car sharing provider DriveNow. An RFID tag is integrated into the charging plug, which registers and authenticates itself at the charging station. "Constantly searching for the magnetic card – or losing it – is a thing of a the past", reports Karl Knezar, head of Automotive at Lapp Systems, who is keen not to underestimate the value of small innovations. After all, it is often the small, low-key advances that bring big leaps forward.





NINE RHINOS FEWER

Since launch, more than 18,000 of the Lapp HELIX charging system for the BMW i3 have been sold worldwide. With weight savings of 40 % compared to conventional charging systems, around one kilo per unit, this adds up to 18 tons. This is the equivalent of nine rhinos – and that weight is no longer on our roads.

THE INNOVATOR

"AS LONG AS PEOPLE HAVE PROBLEMS, THEY WILL BE INNOVATIVE", SAYS PROFESSOR NIKOLAUS FRANKE. AS THE FOUNDER AND CHAIRMAN OF THE INSTITUTE FOR ENTREPRENEURSHIP AND INNOVATION AT VIENNA UNIVERSITY OF ECONOMICS, HE IS AN EXPERT WHEN IT COMES TO BREAKING NEW GROUND. AN INTERVIEW WITH ONE OF THE LEADING INNOVATION RESEARCHERS.

Professor Franke, when is an innovation an innovation?
An innovation is when something makes our life easier, better, healthier, less complicated, more varied and richer. Many people confuse innovation with inventions, discoveries and new technologies. But something only becomes an innovation if it offers genuine benefits and is used for a particular purpose.

What makes up innovations – knowledge, curiosity, research, competitive pressure or technology?
They are all important components. Innovations tend to be creative new combinations of existing elements. Sometimes a new element is invented, but this is the exception rather than the rule. The key is that new solutions to problems are always found and organised by a person. They cannot be programmed or achieved by machines.

What business culture is needed to make people innovative?
Being innovative is human nature. Unfortunately many organisations fail to utilise this potential or actually suppress it. The factors that promote innovativeness have been clear for a long time – freedom, individual responsibility, interdisciplinary work, and valuing innovative achievements. You also need a sensible culture in terms of mistakes, where intelligent mistakes are rewarded and only stupid mistakes are sanctioned.

You studied in Munich, teach in Vienna and are currently conducting research at the Massachusetts Institute of Technology, so you are in a position to make international comparisons. Are some countries more innovative than others?
Of course there are differences. But this is not down to the average abilities of individual people, as there are people with huge innovation potential everywhere in the world. Two factors play a role. Firstly, the socio-political conditions, so education, encouragement rather than bureaucracy, access to finance, a stable legal framework and so on. The second factor is the culture. That means values, beliefs and traditions. If we want to become more innovative, we have to address both factors.

What is more important? Process or product innovation?
They are both important. We are more aware of product innovations because they are visible in the market. Process innovations are comparatively inconspicuous and as a result are often undervalued. However, their advantage is they have a direct impact on profit. Every Euro saved improves profits by a Euro. By contrast, an additional Euro of turnover because of a product innovation improves profit by only a few Cents, as the turnover has to be offset against costs.

Setbacks, failures, laborious persuasion –what can be done to counter torpidity in an innovation process?
Problems in innovation processes are totally normal. You are breaking new ground – that's the definition of innovations. Setbacks and mistakes are unavoidable, especially with more radical innovations. Entrepreneurs and innovators need a thick skin and the ability to deal constructively with setbacks.

Which innovation do you personally think is truly ground breaking, and which is overrated?
Every product, every service, every institution and form of organisation, every cultural achievement was invented, developed and often pushed through against fierce opposition by somebody. So that's a tough question to answer. I get annoyed by pseudo-innovations – unnecessary new things that are essentially nothing more than an advertising gimmick and actually cause switching costs – such as many software updates.

"REWARD INTELLIGENT MISTAKES, SANCTION STUPID MISTAKES"

ABOUT

He is one of the world's leading experts in open innovation and user innovation, and is one of the most active research professors in Europe. Nikolaus Franke has been a professor at the Vienna University of Economics since 2001 and is the founder and chairman of the Institute for Entrepreneurship and Innovation, which has run more than 500 practical projects. His main research focus has been in the areas of innovation and foundation research and in marketing.


Das Pferd
frisst
keinen Gurkensalat

INNOVATIONS THAT MADE HISTORY

A COMPUTER THAT FITS IN YOUR POCKET, POWER FROM A SOCKET OR A PRINTED EDITION OF CABLE WORLD. ALL EVERYDAY THINGS WERE ONCE GROUND BREAKING IDEAS. HERE ARE THE STORIES BEHIND THE INNOVATIONS THAT MADE HISTORY.

Agriculture. Cultivation of wild plants at the end of the Ice Age was the genesis of agriculture. What drove people to make this change remains a puzzle to this day. Hunter-gatherers actually had an easier life – the first farmers had to work harder, achieved lower yields and, because they concentrated on just a few crops, often suffered from malnutrition. Modern academics believe that the crucial factor was that agriculture made people into property owners for the first time.

The wheel. "Circular mechanism for making transportation easier" – this was how the Australian John Keogh reported his invention to the patent office in 2001. It was a normal wheel. Keogh – a patent lawyer – wanted to use the application to test whether a new patent application method introduced in Australia was sensible. By whom and when the most important invention in human history was actually invented has been heavily discussed in academic circles for more than 20 years. One thing is certain, it was not 2001 in Melbourne.

Printing. Gutenberg's big flash of inspiration was essentially "just" that he had managed to completely mechanise the manual activity of writing. The innovative basic idea was breaking down the text into its individual elements such as lower and upper case letters, punctuation marks and abbreviations. The Mainz goldsmith Gutenberg first used this new technology to print 180 copies of a bible in Latin, which took a group of craftsmen almost two years.

Electricity. Nikola Tesla, Thomas Edison or even Otto von Guericke with his electrostatic generator – who is the father of electricity? Strictly speaking, it is mother nature and it was discovered by Thales of Miletus. In 600 B.C., the Greek philosopher made an astounding discovery when he rubbed a piece of amber on an animal hide and small feathers and pieces of straw stuck to it. He was unable to explain it at the time and never suspected its potential, but it was the origin of the discovery of electricity.

Telephone. "The horse doesn't eat cucumber salad" – that was the first sentence ever transmitted by a telephone. It was spoken on 26th October 1861 by the German teacher Philip Reiss, who had succeeded in producing a remarkable prototype with his "Telephon", but did not have the money to utilise the full potential of his invention. Ultimately, it was the Scotsman Alexander Graham Bell who submitted the patent for the telephone innovation 15 years later.

Computer. The world's first mechanical-electrical computer was developed by a German. He was Konrad Zuse, who worked as an engineer at the Henschel aircraft factory in Berlin and tinkered with calculation machines at home in his spare time. "I'm too lazy to do my own calculations", he said when asked what drove him. In later life he received numerous awards and honours for his pioneering work. But it was other people who made the big money out of computers.

HIVE OF INNOVATION

PERSONALLY HE ARRIVED SOME TIME AGO – PROFESSIONALLY HE'S A LONG WAY FROM WHERE HE ULTIMATELY WANTS TO GET TO. FOR MORE THAN 2 YEARS, GEORG STAWOWY HAS BEEN RESPONSIBLE FOR TECHNOLOGY AND INNOVATION AT THE LAPP GROUP.

A man in his position doesn't have time for anything unless he makes it. Between a board meeting, a coordination meeting, a workshop on "Innovative business areas" and another one devoted to the issue of "intelligent products", Georg Stawowy somehow manages to find time to talk about innovation. And you notice immediately that it's not just his job, it's one of his favourite topics.

His duties include the areas of innovation, product management and product development, production, purchasing and – last but not least – quality. It's a broad range of responsibilities, and demonstrates the fact that innovation is something that permeates almost every level in the Lapp Group.

"We offer our customers not just components but solutions. We focus on specific market segments. And we engage with technological advancements such as Industry 4.0 or the "Internet of Things".

Stawowy is committed to this approach. He believes in entrepreneurial freedom, in enabling the local sourcing of products. At the same time, he is conscious that as a global organisation the company has to change.

INNOVATIONS ON THE TECHNOLOGY RADAR

"Lapp is a technology leader and an innovator, but technological change is constantly accelerating", Stawowy says. Trends such as the Internet of Things are driving faster and faster developments. "The main issue is that the environment is getting more complex. A few years ago, whoever was leading the way in Europe and the USA, also was leading in the rest of the world. Today, that's no longer the case." Because there are now more "powerhouses" of innovation and a constant increase in the impetus from different areas and regions of the world, he explains that it is becoming more important than ever to respond very quickly to trends.

"We work from both ends. We look which markets need which products and where new customer value is emerging." And the other end? "At Lapp, our work is driven by technology. We make sure that new concepts are picked up on our radar very early on and we investigate the exciting possibilities they might bring." Experts refer to this dual approach as market pull and technology push. "We need both", says the Rhineland native.

The solution? If the challenge is that impetus is coming from an increasing number of areas of the world and Lapp wants to be able to respond appropriately. "We have a global outlook and have innovation and development centres on every continent", Georg Stawowy says. The key is to integrate them more effectively and quickly into a network. "If we can create an effective "hive" out of these widely spread competences, I am confident that it will be more than the sum of its parts. This will benefit us and also our customers."

INNOVATIVE ARCHITEKTURE LOOKING FOR INNOVATIVE CONNECTIONS

IT WASN'T JUST THE SUPERFICIAL LOOK OF THE GERMAN PAVILION WITH ITS ORGANIC PHOTOVOLTAICS THAT CAUGHT THE EYE AT THE GLOBAL FAIR EXPO 2015 IN MILAN. A LOOK BEHIND THE SCENES REVEALED IMPRESSIVE TECHNOLOGY, INCLUDING CONNECTION COMPONENTS FROM LAPP.

"Feeding the Planet, Energy for Life" – this was the theme of Expo 2015, which ran for six months in Milan between May and October. These two issues were reflected in the architecture of the German pavilion at the world fair. One unmissable feature of its design was stylised solar trees with a huge leaf canopy made of organic photovoltaic modules.

Organic photovoltaics is one of the most innovative architectural forms for using solar energy. The PV modules can be made into almost any shape and are very versatile in terms of colour and transparency. This kind of photovoltaic application can be completely integrated into building shells and other objects, but also vehicles. At the same time, the production method is also comparatively cost-effective and straightforward.

Exactly how to incorporate innovative organic photovoltaics into groundbreaking architectural designs was shown by the German pavilion at Expo 2015, where semi-transparent organic PV modules from Belectric were integrated into the "leaf canopy". This enabled the modules to give shade and also supply the pavilion with energy.

A NEW KIND OF CONNECTION TECHNOLOGY

The innovative organic photovoltaics called for innovative connection components. Conventional PV junction boxes and thick cable connections were not suitable for this design concept. As a result, Lapp developed an innovative solution tailored to customer requirements, made up of an innovative connection system and extremely unobtrusive cabling for the solar specialist Belectric.

"We were keen to meet the challenge head on", explains Stefan Koch, Product Manager at Lapp, "But it couldn't be done with conventional methods. That's why we developed a new method for connection and cabling."

The new method involves moulding the connection point directly onto the module. The hot, liquid plastic bonds with the carrier material of the PV module. This means that the connection technology is not only visually much smaller and less conspicuous, but also helps simplify logistical and production processes. Because the customer now needs a process rather than individual items, they can make their production more lean and reduce their stocks.

This is more than just a positive side-effect. Because the connection technology no longer involves any gaps or openings, one of the most frequent causes of module failure – namely ingress of moisture – is ruled out.

POWERING ALL OF COLOGNE WITH SOLAR ENERGY

For more than 10 years, Lapp has been developing connection systems for photovoltaic modules, including those for Belectric. Since it was established in 2001, the solar specialist has installed 1.5 GWp of solar power. This would be enough to guarantee the power supply to more than a million people using solar energy – approximately the population of Cologne.

INNOVATIVE FACTS

EVERYONE'S RESEARCHING, DEVELOPING AND INVENTING

384 billion dollars was what companies worldwide spent on research and development last year – if we include governments and universities, the total investment runs to **1.4 trillion** US dollars.

INNOVATION AS GROWTH HORMONE

In a worldwide McKinsey survey**, 9,000** managers were asked for the most important prerequisite or future growth. The majority agreed: "Innovation".

LEADING IN INNOVATION

An innovation indicator formulated by a consortium of institutions compares the innovative ability of the most important industrial nations. Economists rated Switzerland as the most innovative economy in the world, with **76 points** out of a possible **100**. Next come Singapore **(65 points)** and Finland **(60).** Germany scored **56 out of 100** points and was in **6th place.**

FROM INNOVATION TO STANDARD

Something that was once a real innovation can soon be overtaken by progress. At the beginning of the 1960s, **42%** of all households had a camera. Analogue, of course. Today, the figure is **84%** and **73%** of these are digital.

WHY BE INNOVATIVE?

There are more different opinions about how to be innovative than why. European companies cited these as the **top 4** most important reasons for innovations: **1.** Increase in market shares, **2.** Increase in profit margins, **3.** Cost reductions, **4.** Increase in turnover.

EUROPEAN PATENT CHAMPION

The European patent office received a record **274,000** patent applications last year. The most **(**around **32,000)** came from Germany, but the country is only in **3rd place** worldwide. More than double this number of applications were recorded by the USA, followed by Japan in **2nd place.**

INNOVATION AS MOTIVATION

A survey of employees from large companies has asked about their motivation. A total of **79%** responded that innovative working conditions would motivate them. Meanwhile, **44%** would be prepared to leave a company that does not use innovative methods.

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