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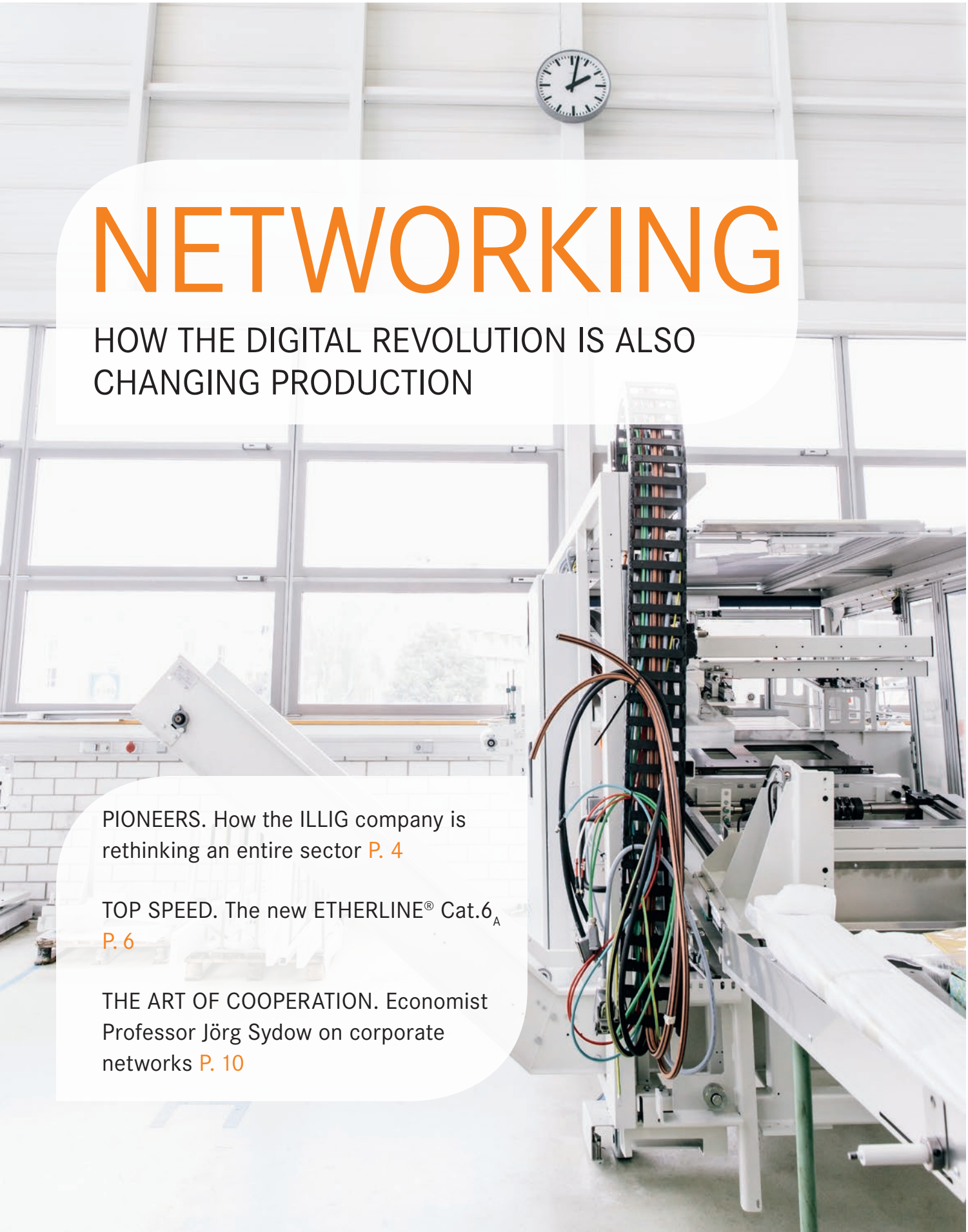


NETWORKING

HOW THE DIGITAL REVOLUTION IS ALSO CHANGING PRODUCTION

AT THE CENTRE OF THE FUTURE

Dear readers,

Do you remember how as a child you wildly dreamed of painting the future? Well, this future is here and we are at the centre of it. But contrary to many of our fantastic imaginations from back then, people in this future do not travel in flying cars, but rather virtually on the data highway. Our world is becoming interconnected at a breathtaking speed. The question now is whether you view the new challenges as opportunities or risks. For us as a corporate group, we see the digital age first and foremost as one full of potential.

But networking always needs roots. That's why I'm admittedly very happy that the Lapp Group remains at heart a down-to-earth family company in the networked world – a globally active technology pioneer which is not only able to keep pace with the digital revolution, but can also drive it forward with innovative solutions in cable and connection technology.

I hope you enjoy reading this magazine and wish you every success in your own networking.

Kind regards

Andreas Lapp

COVER STORY

FOCUS

THE URGE TO IMPROVE

QUESTION: WHAT DO YOGHURT POTS, BICYCLE HELMETS, GARDEN PONDS AND CAR DASHBOARDS HAVE IN COMMON? ANSWER: THEY ARE ALL PRODUCED ON ILLIG MACHINES. WE PAY A VISIT TO THE GLOBAL MARKET LEADER IN THERMOFORMING.

From the coffee capsules that sell billions around the world to the boot of a car, thermoformed plastic products have become part of everyday life. But despite this, the thermoforming industry remains a small, highly specialised niche branch. The heart of this sector beats in Heilbronn. This is home to ILLIG, not only the champion in the sector, but also the only provider in the world which produces the machines and tools itself.

That makes ILLIG a true system provider. The combination of machinery, tools and material-specific expertise is unique in the industry and is a recipe for success for the company in south-west Germany. ILLIG systems are used wherever there is the need today to efficiently produce sophisticated formed parts in consistently high quality.

REINVENTING THERMOFORMING EVERY DAY

The business has 68 series machines in its product range, plus countless individual configurations. After all, having to quickly react to technological changes means that thermoforming is reinvented here every day.

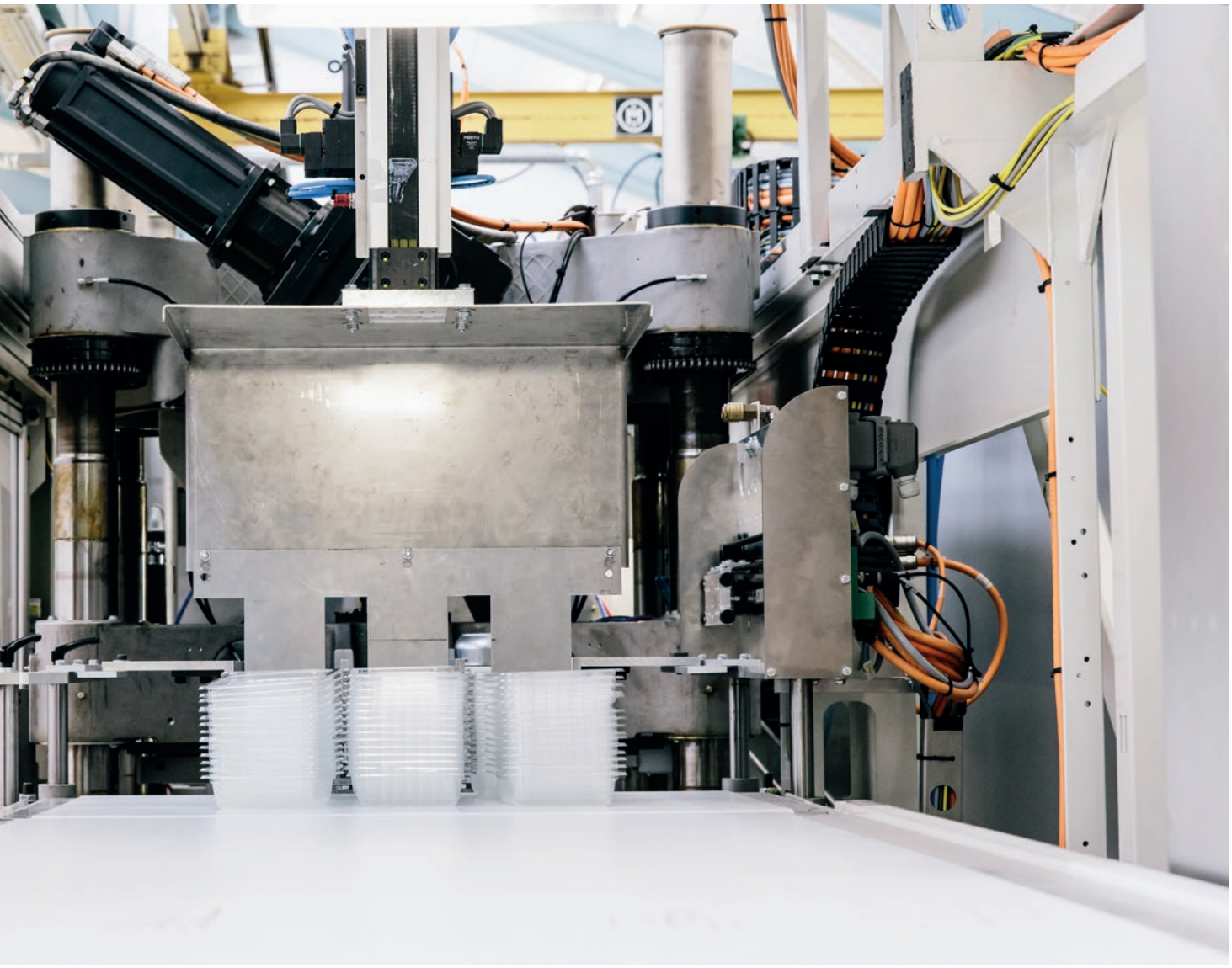
"That is why we rely on a partner like Lapp who accompany us in this development," says Karl Schäuble. "Lapp products meet our high standard and can withstand the great mechanical stresses, accelerations and temperatures in our systems."

Karl Schäuble is not just the Managing Director of ILLIG, but is also the founder's son-in-law. That makes ILLIG a purely family company. Like many companys' stories, ILLIG's history began in a garage. 65 years later, it has become a truly global success story. Even it's competitors in the market produce officially to "ILLIG standard".

THE SELF-TAUGHT COMPANY

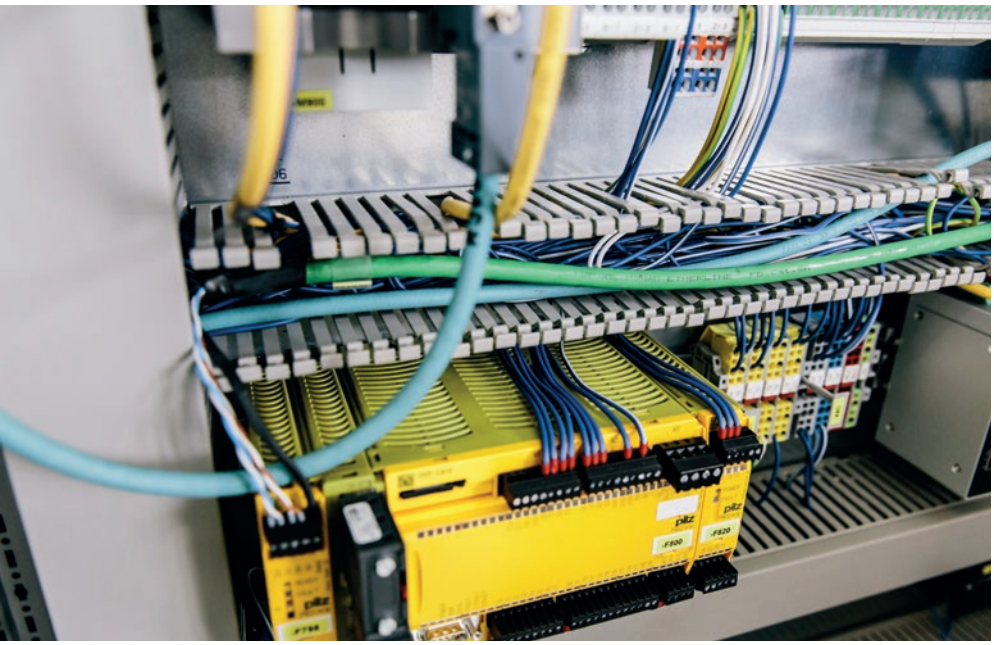
Creating the standard is what they are used to here at ILLIG, as thermoforming is not taught at either school or university level. So it is something that has to be self-taught and conveyed to others. "We deliver the infrastructure such as training programmes with every machine," says Schäuble, who points to the modern customer and training centre behind him. All of the 300 to 400 machines that ILLIG builds every year are collected from the plant by the customer, making it a true showroom. Customer staff are trained on the machine in Heilbronn, meaning that when the customer leaves, they have the knowledge to operate the machine and can pass on the skills they have learned.

PAGE 4 – 5 Whether it is yoghurt pots, coffee capsules or garden ponds, global food companies are not the only ones who use ILLIG machines from Heilbronn for their production.



THE URGE TO IMPROVE IN NUMBERS

One single ILLIG machine can, in theory, provide coffee for the entire city of Cologne. One ILLIG machine can produce **180,000** coffee capsules per hour. That is more or less right for the city, assuming **4** cups are drank per day, in line with the German average.



PAGE 6 – 7 Hardness test for the electronics, which have to cope with high cycle rates, high temperatures and mechanical stresses and accelerations.

As there was no specialist literature of thermoforming in the entire market before ILLIG, ILLIG's engineers wrote it themselves, compiling and organising their pooled expertise. The resulting book has been translated into seven languages and is viewed today as the benchmark for the entire sector.

PARTNERS WHO KEEP UP WITH THE PACE

The assembly hall smells of machinery oil and precision. The production here occurs in so-called "slots". Every machine goes through 18 stations which are precisely calibrated. Every day, one machine or partial components for a whole series leave the hall.

"We need reliable partners who can keep up with the pace," says Sales Director Heiko Wenka. "because if our delivery times are too long, we lose our competitive advantage."

So it is no coincidence that Lapp solutions can be found at the heart of every ILLIG machine. These include the new ETHERLINE® Cat.6_A. This new Ethernet cable was the answer to Illig's need for a cable suitable for power chains and with enough potential for the anticipated increasing transmission rates for the cross communication of two safety relays.

ILLIG and Lapp share a decades-long partnership which has only become more intense in recent years. Specifically when ILLIG began to get its production in even better shape for the future. The urge to improve – for some companies, it is in their DNA.

ILLIG and Lapp have something in common; they both share the tinkering spirit characteristic of south-west Germany. The pair are both family companies and global players. And they are both pioneers: "When we enter new markets, we depend on a good network," confirms Managing Director Karl Schäuble.

"With an export rate of over 87 %, we need components that are reliable," explains Sales Director Wenka. "When a customer anywhere in the world buys an ILLIG machine, then they buy a thermoforming machine from the market leader and rightly expect high quality."

ABOUT ILLIG

ILLIG Maschinenbau GmbH & Co. KG has 750 employees and is one of the leading providers of machinery and tools for thermoforming and packaging technology. Over 20,000 machines worldwide produce branded products around the clock. Every year, for example, around three million pots for Müller yoghurt are made on ILLIG machines.

THE DATA HIGHWAY FOR PRODUCTION

THE FACT THAT DATA NEEDS TO BE TRANSMITTED QUICKLY HAS LONG BEEN ACCEPTED, EVEN IN THE TOUGH WORLD OF INDUSTRIAL PRODUCTION. CAMERA-SUPPORTED QUALITY CHECKS FOR MOVING APPLICATIONS, OR ROBOT MONITORING ARE AMONG THE APPLICATIONS WITH ESPECIALLY HIGH REQUIREMENTS FOR DATA TRANSMISSION. WITH A CAT.6_A ETHERNET CABLE, THE LAPP GROUP HAVE DEVELOPED FOR THE FIRST TIME A CABLING SOLUTION THAT IS HIGHLY FLEXIBLE AND CAN WITHSTAND THE HIGH STRESSES IN PRODUCTION.

Until then, the market could provide choice but not the solution. Either a rigid or flexible cable with the Cat.6_A parameters, or a highly flexible cable which could only manage a maximum transmission rate of up to 1 Gbit/s.

With the introduction of the ETHERLINE® Cat.6_A, the customer now gets the best of both worlds; high data transmission rates of up to 10 Gbit/s , whilst being suitable for moving applications such as in power chains. This was possible thanks to innovative material selection and wrapping technique, but the idea came from two of Lapp's youngest talents.

THE BRAINS BEHIND ETHERLINE

Ralf Weine, responsible for cable development and standardisation, and his colleague Jennifer Lehmann, product manager in automation and network, are the brains behind the cable. Two real home-grown talents. Both completed dual study programmes in industrial engineering at Lapp, before striking out to rethink the Ethernet cable.

"We asked ourselves why this kind of thing isn't already available – a highly flexible data network cable for use in applications where it is constantly moving?", the pair explained in conversation. "The technical challenge was finding a shielding that was tear-resistant enough for use in constantly moving applications whilst offering reliable protection against EMC influences." Jennifer Lehmann laughs as she explains: "So that there aren't any disruptions like there used to be with crosstalk on the telephone," even though she is actually too young to have experienced this problem herself.

An Ethernet cable for large data volumes, which can be moved and bent, for example, when used in power chains, or a torsion-proof variant – that impressed both users and the industry press.

"It's a good feeling to be in the customers' heads," confirms Jenny Lehmann. "We knew that we had started something good, but we never expected that it would become so big." Industrial engineer Weine adds: "These kinds of innovations are a real boost for the market, our customers expect that of us". That does not sound like something he has been told to say, but really believes. The obvious question then is what comes next? Cat.7, they both say in unison, as if this challenge was the most normal thing in the world for two 25 year olds.

10 GBIT PER SECOND

In the long term, a standard data transmission rate of up to **10** Gbit/s will be required, and is already fulfilled by the ETHERLINE® Cat. 6_A today.

10 gigabytes per second, that is a data volume equivalent to

25,000 websites
or **170** hours of online radio
or **30** episodes of your favourite series
or **300,000** e-mails
or **2,600** MP3 songs.

"WITHOUT COOPERATION, NOTHING IS POSSIBLE."

BUSINESS AND SCIENCE. TECHNOLOGY AND LOGISTICS. PEOPLE AND MEDIA – EVERYTHING SEEMS TO BE CONNECTED. FOR COMPANIES TOO, NETWORKING HAS BECOME AN IMPORTANT FACTOR IN BEING SUSTAINABLE. HOW COMPANIES ARE SUCCESSFULLY NETWORKING TODAY AND THE RISKS AND OPPORTUNITIES THAT THIS PRESENTS – WE SPOKE TO DR JÖRG SYDOW, PROFESSOR OF CORPORATE COOPERATION AT BERLIN'S FREE UNIVERSITY.

Professor Sydow – let's try and peer into the future. What role do you see networking playing in the economy in the year 2025?
The need for networking will continue to grow, both between companies and between companies and research institutes. That has a lot to do with the kind of products and services that we will consume in the future. These will be even more knowledge-intensive in 2025 than they are today, if not science-based, as they are already today in bio and nanotechnology or in new materials.

Even though this issue is a very modern and current one, it's not a new one is it? Since when have networks been around?
The last textiles factory to produce its own machinery stopped doing so in 1865. Today, we would call that "outsourcing" but all it means is that certain tasks are left to specialists. This outsourcing of business tasks is increasingly leading to long-term cooperative arrangements: networks.

Is the network the economic structure of the future? Does that then mean that companies that do not network have no future?
The network is essentially a traditional organisational form with a great future. But I wouldn't go so far as to say that companies that don't use the network form have no future, even today with the immense number of alliances, networks, clusters and value-creation partnerships. Many of the so-called "hidden champions" are said to outsource rather less, instead preferring to perform many functions and services themselves. But even this is not possible without some degree of cooperation. Newly founded companies have no other choice but to turn to outsourcing in the start-up process or to even start within a network.

Technically speaking, the infrastructure for a networked business landscape is there, but what about at an individual level? Are we as a society even ready to connect with others?
Indeed, that is an important question. The problem of economically effective networking is less a technical one and more one of human organisation. In networks, for example, people have to learn to serve "two masters", displaying loyalty not only to their employer, but also to the client company. For the latter, you may be involved in implementing a complex company software in a multi-year project where it is often easy to forget for whom you are actually working. The role of the superior is different in networks too. Negotiation and motivation become more important than giving instructions.

Is this ability to network with others a factor for success then?
The ability to network, in particular the ability to manage a network, is definitely becoming an increasingly important success factor. This can be seen in countless studies. Under certain circumstances, this ability can even become a constant source of competitive advantages.

Isn't this true for individuals as well ?
Yes it is. But we shouldn't put individual and organisational skills, for network management for example, on the same level. An organisation or an entire network systematically developing such a system is completely different to an individual developing his or her networking skills.

Cars are becoming increasingly connected to traffic, the fridge with the smart phone, and in social networks, everyone connects with each other. In this whole closely meshed network, is it not also necessary to have an "unnetworked" place, just for us?
The ability to network and to manage networks always includes the ability to precisely consider whether and above all with whom to network. Even in research and development facilities like SEMATECH, which have seen decades of success, not all knowledge is shared or transferred. There are private areas, for both people and organisations, and for good reason.

“THE NETWORK IS A TRADITIONAL ORGANISATIONAL FORM WITH A GREAT FUTURE.”

ABOUT JÖRG SYDOW

Dr Jörg Sydow is Professor of Business Studies, specialising in corporate cooperation, in the management department of the Free university in Berlin, Visiting Professor at the Graduate School of Business, University of Strathclyde and the author of a number of books, including "Managing International Relations" (Stuttgart, 2011) and "Networking Tools" (Wiesbaden, 2013).

"I LOVE THE FAMILY SPIRIT THAT THERE IS AT LAPP."

STAN FRENCH. RELATIONSHIPS MANAGER

HE HAS WORKED IN CALIFORNIA, OKLAHOMA, HONG KONG, LIECHTENSTEIN, KUALA LUMPUR, SHANGHAI AND MANY OTHER PLACES AROUND THE WORLD. BUT STAN FRENCH, CHIEF SALES OFFICER AT LAPP GROUP FOR ALMOST A YEAR AND A HALF, IS NOT CONTENT TO LOOK BACK AND HAS MANY GOALS PLANNED FOR THE FUTURE.

Stan French is without doubt a globe trotter. But the list of destinations throughout his career, which he can list from memory in order, were more for business than pleasure. The avid traveller has been working in sales and marketing at Lapp Group since August 2012, after spending most of his almost 30-year career at Hilti.

Whilst there for example, he helped the company, which until then was best known as a concrete specialist, to "break the steel market" as he puts it. Later, in another position, he managed to capture the potential of the booming construction business following the fall of the Berlin Wall. He is therefore comfortable with big projects and the big responsibility that comes with them. In fact, he is comfortable in general:

"I love the family spirit that there is here at Lapp," he answers when asked what it is that tied this great traveller down to this place. He then points to Lapp's guiding principles, a compass with the points "customer-oriented", "success-oriented", "innovative" and "family-orientated".

He focuses on the last one, family oriented. "Most of the people who I have spoken to here love how they feel valued by the company," as Lapp values quality of life. He has seen both sides himself: family companies and major listed firms. "Believe me, they are worlds apart, if you know what I mean", he says with a knowing smile.

He then speaks about the great changes at Lapp, as this is part of his role too. A relationship manager, but also an agent of change. "Our customers should know that we have a global strategy for the future," he says, "and that this strategy promises them greater value, greater focus and greater expertise. In future, Lapp will also see itself more than ever before as a provider of solutions." French sees the cable industry as being dominated by providers of products. Hardly anyone offers solutions tailored for clients' requirements – that is what he wants to change. This fits well with Lapp's slogan "Reliably connecting the world".

But what does that slogan really mean? "Lapp stands for absolute reliability. The quality of our products is world-renowned and we want to keep making connections in the future", he answers. "Not just physical ones, but above all between people."

A CALL FOR HELP FROM HAITI

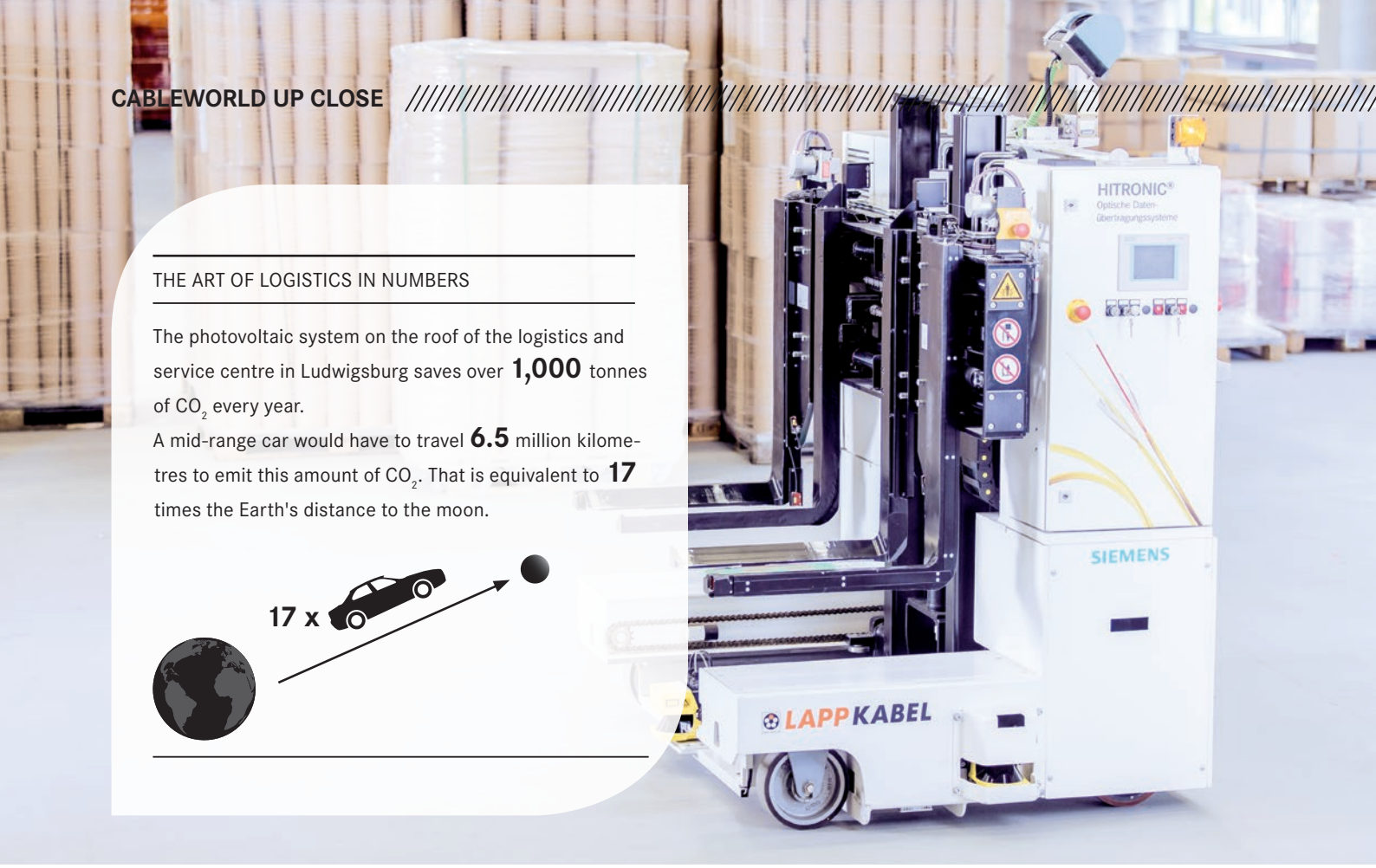
AS BOTH A FAMILY COMPANY AND A GLOBAL PLAYER, LAPP'S RESPONSIBILITY DOES NOT END OUTSIDE ITS OWN DOOR, BUT STRETCHES WORLDWIDE – IN THIS CASE ALL THE WAY TO HAITI.

It has been over three years since Haiti was rocked by a severe earthquake, but the effects can still be seen in many places. Even today, many are still homeless, medical care is still very poor. Haiti still needs help.

With a very special donation, Lapp Cable is supporting the St Damien Children's Hospital on the earthquake-hit island of Haiti. ÖLFLEX® solar cables and EPIC® solar connectors secure the vital power supply to the children's hospital in Haiti, where the public electricity grid is unstable and the previous solution was a costly diesel generator.

CABLE AND MORE FOR THE CHILDREN'S HOSPITAL

90,000 young patients are treated here in one of the country's most modern hospitals. The photovoltaic system on the roof of the children's hospital is securing the power supply and lowering costs for the aid organisation nph Deutschland e.V., freeing up funds for other important projects. The first containers with modules and connection technology from Lapp Cable arrived in Haiti in March 2013. The new photovoltaic system is being installed in three stages and will provide 250 kW of power, enough to cover at least half of the electricity requirements. Mindestens.



THE ART OF LOGISTICS IN NUMBERS

The photovoltaic system on the roof of the logistics and service centre in Ludwigsburg saves over **1,000** tonnes of CO_2 every year.
A mid-range car would have to travel **6.5** million kilometres to emit this amount of CO_2. That is equivalent to **17** times the Earth's distance to the moon.

THE ART OF LOGISTICS

WHO NEEDS A DRIVER, WHEN THE FUTURE STEERS ITSELF. THIS IS AT LEAST THE IMPRESSION ONE GETS FROM THE LAPP GROUP'S NEW LOGISTICS AND SERVICE CENTRE, WHICH OPENED THIS SUMMER IN LUDWIGSBURG.

As if by magic, the transporter moves through a hall which can only be described as massive. There are no markings on the floor to indicate that this vehicle is controlled by someone, or something, else. The secret is an autonomous navigation unit that uses a scanner to orientate itself around the structural objects. This technology is called DTS - driverless transport system. It is just one of many innovations with which logistics is being celebrated here in a facility the size of 4 football pitches.

All one can do standing in front of the 270 metre long and 11 metre high building is marvel at the 30 truck loading ramps for loading and removing goods. The new logistics and service centre connects three halls with a total surface area of 30,000 square metres.

In hall 1, cables are cut to length in line with customer requirements, packaged and labelled, with hall 3 containing the standard pallet storage facility. But it is in the centre's heart in hall 2 where the real innovative force can be seen and felt best. Up to 74,000 cable drums are stored there. They are brought via forklift to a conveyor belt. From there on, the process is fully automated.

AN INVESTMENT IN THE FUTURE, THE ENVIRONMENT AND IN STAFF

"We invested over 50 million euros in the new logistics and service centre, the largest single investment in our family company's history. This will benefit customers, staff and the environment," explains Andreas Lapp, Chairman of the Board of Lapp Holding AG, with pride.

For customers, this means that in many instances they can now receive all ordered products in a single delivery, instead of multiple packages from different sites. This shortens delivery time. But the new centre also benefits the 130 people who work there, as it is completely dust free, and designed to be ergonomic and kind to their backs. Finally, the concentration on a single site is better for the environment, with approximately 750 fewer company-internal journeys per year, resulting in an annual CO_2 saving of a respectable 155 tonnes.

NETWORKING IN NUMBERS

60 MINUTES ON FACEBOOK

Every **60** minutes, **3,000,000** links are shared on Facebook, **3,969,000** photos are tagged, **5,553,000** status updates are published, **5,916,000** friend requests made, **8,148,000** photos are uploaded and **30.6** million comments are posted.

ETHERLINE DURABILITY TEST

In the test in a power chain cable, the ETHERLINE® Cat.6_A completed 2.5 million cycles, and travelled a total of **25,000 kilometres**. The torsion cable also achieved **2.5 million cycles with +/- 180° rotation. Installed in an actual robot, the cable has been transmitting a video signal for over 6 months, a total of 4,300 operating hours.**

BROADBAND PARADISE

3 out of 4 inhabitants in Bermuda have a broadband internet connection. This puts the small island nation in first place in the world for best broadband internet cover.

FLOWING ENERGY

5 % of the world's energy usage is related to internet use. Und: Worldwide, the sending and receiving of spam e-mails uses enough energy to power a city of a million people.

INVESTING IN THE FUTURE

The German government has earmarked 200 million euros for the future project Industry 4.0. In a study by the Fraunhofer IAO entitled "Manufacturing Activities of the Future – Industry 4.0", over 600 production managers and experts depict their vision of the factory of the future.

THE NETWORKED HOME

55 % of consumers expressed interest in the idea of living in a networked home. But **54 %** expressed concerns about data security in such a home.

PUBLISHING DETAILS

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