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Customer Magazine of the Lapp Group

Power chains from Lapp for the world-renowned Bolshoi Theatre

Vocational students from Schongau learn with Lapp

Lapp Group expands in Romania and Panama

LAPP GROUP

Title

The Lapp Group shares its automation expertise using a miniature racetrack at the SPS/IPC/Drives trade fair.

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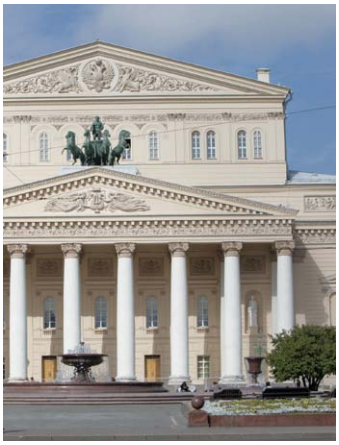

The stage machinery for the world-renowned Bolshoi Theatre is operated using power chains from Lapp.

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The solar park in Preschen is one of the largest solar plants in Germany and is fully equipped with ÖLFLEX® SOLAR cables.

Also in this issue:

Ladies and Gentlemen,

I hope this year has started well for you all. It is unlikely that the economic situation will improve much in 2012 and there are big challenges ahead. The extent to which the European debt crisis will impact our business activity is as yet unknown.

This is why it is important that we protect ourselves against the risks as best we can and further strengthen our position on the competitive stage. This is only possible when we work as a team.

With our products and services, we are aiming to help you achieve greater productivity and competitiveness. Because if there's one thing we know, it's that we can only be successful when you too are riding high. We will thus be doing everything in our power to ensure this joint success story continues.

Here's to the continuation of our trusting relationship; together we are strong.

With best regards,

Andreas Lapp

ÖLFLEX® and the world-renowned Bolshoi Theatre

The Bolshoi Theatre in Moscow is the pride of Russia, recently restored to new splendour. Having fallen into disrepair over the last six years, the building, founded by Catherine the Great in 1776, was overhauled and fitted with new modern stage technology. The re-opening was celebrated at the end of October 2011. "We installed entirely new technology in the Bolshoi Theatre. Previously, there had just been one floor on the main stage, now we have two: one for the Opera and one for the ballet performances," explains Katerina Novikova, Spokesperson for the Bolshoi Theatre. Stuttgart is also represented in the new Bolshoi: Behind the scenes, as part of the new stage machinery, are numerous power chains and several kilometres of cable all from Lapp.

And here's how that came about: The Bolshoi Theatre required state-of-the-art technology that could be installed in the old, landmarked shell. A challenge if ever there was one. Bosch Rexroth AG, one of the world's leading specialists for drive and control technology, was thus brought on board for the stage equipment. "We correctly tailored the machine technology to meet our needs, redeveloping some drives completely from scratch," explains Wolf-Guido Patten, Project Manager for the Bolshoi Theatre at Bosch Rexroth.

Inside the building, significant alterations were made. The stage area was completely gutted and new rooms were created for the stage technology. The stage pit alone is more than 20 metres deep. Bosch Rexroth installed more than 600 drives for safe operation of the technology. A lot of work was required here as all stage changes need to be implemented as quickly as possible. A hoist, for example, needs to be able to lift loads weighing up to one ton and at a maximum speed of 1.8 metres per second. The four main podiums each weigh 80 tons. The hydraulics of the understage machinery raise and lower the hoist across a 16-metre range at a speed of 0.7 metres per second. And just as important: The hydraulic drives need to run as smoothly as possible and without making any noise. Under no circumstances is it acceptable for the audience to hear the movement of the drives; this destroys the illusion completely. Furthermore, both the hydraulic and electrical machines can be run synchronously to the stage controls.

The scenery for the various plays is saved in the stage tower; all it takes is the touch of a button to have, for example, the backdrop to Tosca, Act II appear. No slip-ups are permitted; as the decorations float over and back, the actors are performing on the stage underneath. Bosch Rexroth developed a special stage control system for this, designed to meet the high safety standards. Even the speed of the drives can be varied, as the actors themselves do not always move at the same pace.

Lapp Systems, a company from the Lapp Group, was called on by Bosch Rexroth to provide the reliable connections. Lapp Systems specialises in industrial high-tech products. For the Bolshoi Theatre, there were seven chains installed for the stage podiums, four chains for the orchestra podium, a

chain for the orchestra parapet and for the transport podium, as well as four chains for the control panel. One power chain supplies each podium with "power" and "data" and all podiums can be operated independently of each other. It was primarily the ÖLFLEX® FD 820 H drag chain cable that was used for the power chains. Its halogen-free core insulation and halogen-free outer sheath make it flame-resistant, in accordance with standard IEC 60332-1-2. Costly fire damage resulting from acidification caused by burning will thus be avoided. This is one of the reasons why cables like these are predominantly used in public buildings, where the protection of people and property is a top priority. The ÖLFLEX® FD 90, also flame-resistant, and the extremely flexible ÖLFLEX® SERVO motor supply lines form part of the power chain.

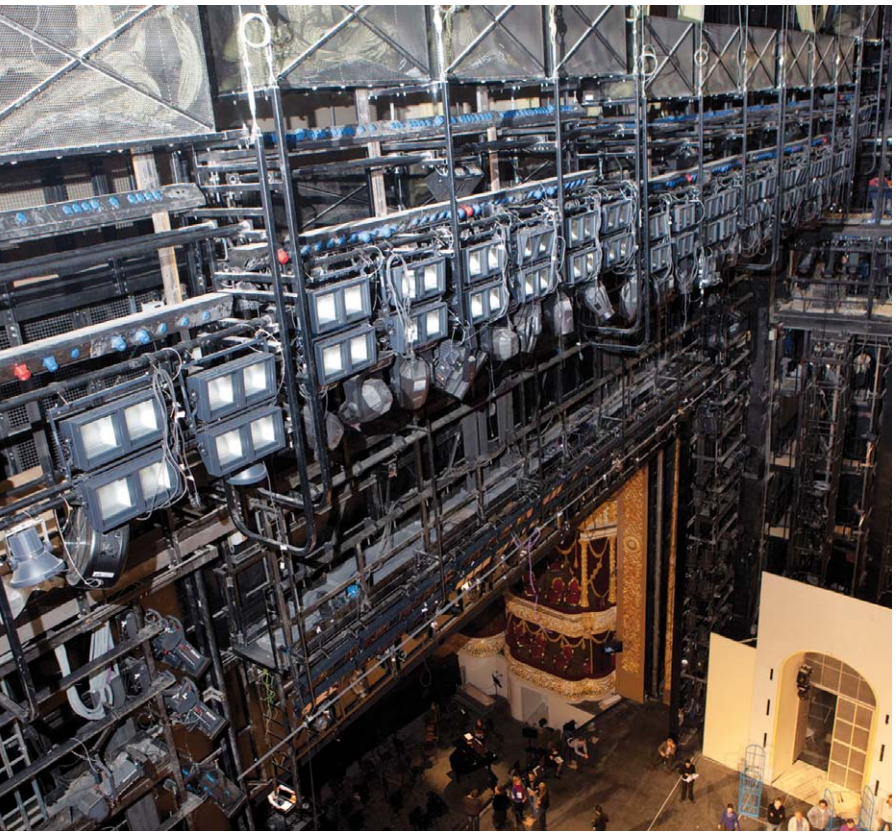
Reliable data exchange is guaranteed in the data chains thanks to the highly flexible UNITRONIC® FD CP (TP), working together with low-frequency data cables. Copper braiding protects against electro-

The Bolshoi Theatre

magnetic interference. This data cable is also halogen-free and flame-resistant, not to mention UL/CSA-approved. Responsible for ensuring secure network connections is the highly flexible ETHERLINE® FD P FC UL/CSA LAN cable.

All installed cables are particularly sturdy. Take, for example, the ÖLFLEX® FD 820 H, which has been designed to withstand up to five million alternating bending cycles in one power chain. The chains used for the stage podiums are 18.64 metres long, designed as "zig-zag chains". In other words, they fold in on themselves when being pulled into the special deposit tray, perforated and painted black in compliance with Russian regulations.

Just like the stage, the height of the orchestra podium can also be adjusted. The chains turned out to be significantly smaller here, ruling out the need for any special tray. Guido Help, System Engineer at Lapp Systems and Head of Energy Supply Systems: "We are very proud of the fact that our brand products and systems are now contributing to the impressive stage performances at the Bolshoi Theatre." ■



Behind the scenes: Five vertically movable lighting bridges with multi-part lighting frames illuminate the main stage

Bosch Rexroth AG is one of the world's leading specialists in the field of drive and control technologies. Under the brand name of Rexroth, the company supplies more than 500,000 customers with tailored solutions for driving, controlling and moving. Bosch Rexroth is a partner for Mobile Applications, Machinery Applications and Engineering, Factory Automation, as well as Renewable Energies, with the company representing the various aspects and characteristics of the respective markets. As "The Drive & Control Company", Bosch Rexroth develops, produces and sells components and systems in more than 80 countries. In 2010, the Bosch Group company generated turnover of around 5.1 billion Euro with 34,900 employees.

www.boschrexroth.com

Vocational students from Schongau learn with Lapp

The Berufliches Schulzentrum Schongau (Vocational School in Schongau, Upper Bavaria) is providing 65 apprentices with largely practical training in Energy and Building Technology, as well as Industrial Engineering. In the "House within a House", they are learning how cables are correctly laid and which cables need to be used for the respective applications.

Josef Lory (50), Head of Electrical Engineering: "Often students have only ever learned about the selection and laying of cables from books. This is something they can practice here." Almost all the cables required are provided by Lapp Kabel. Furthermore, every apprentice receives a Lapp Kabel Guide that contains the most important terms from the electronics industry. Lapp will also be providing the display boards and the main catalogue.

This cooperation was the brainchild of Hermann Robl, Sales Engineer at Lapp Kabel: "It is our aim to raise the awareness among young electricians early on about the importance of cables and system components. These are parts relevant to safety and a lot can depend on their correct application." The 15 x 7.5 metre large "House within a House" has a bedroom, living room, office, kitchen and bathroom. So if halogen spotlights are installed in the office, for example, heat-resistant cables will be required that are able to withstand the heat these spots emit. For this reason, ÖLFLEX® HEAT silicone cables are used. On the other hand, in the bedroom, it is important to ensure that there is no electromagnetic radiation. Here, screened cables are used, such as the ÖLFLEX® CLASSIC 110 CY connecting and control cable or the low-frequency UNITRONIC® 100 CY data network cable. For all other rooms, UNITRONIC® 100 control and signal cables, as well as PVC-sheathed ÖLFLEX® CLASSIC 110 connecting and control cables, are used.

On the roof: from left: Norbert Schallhammer (IES), Head of Electrical Engineering Josef Lory and Hermann Robl, Sales Engineer at Lapp Kabel

During the "House within a House" project, the apprentices also learn how photovoltaic systems are correctly set up. To this end, the Innovative Energie Systeme (IES) company from Peiting has installed a 600 Volt test box, as well as 554 photovoltaic modules on five roofs (total output 100 kWh). All modules are connected via the electron beam crosslinked ÖLFLEX® SOLAR XLR. Managing Director Norbert Schallhammer: "The modules on the roofs are not only facing south, but also south-west and north-east. The apprentices can thus see for themselves what influence the position of the system has on its performance."

Sunny prospects for Preschen Solar Park

With a peak output of over 10 megawatts (MWp), the Preschen solar park, in operation since 2010 in the south of Brandenburg, is one of the largest solar power plants in Germany and one of the 150 largest solar parks worldwide. On an area of approx. 31 hectares, almost 130,000 solar modules have been installed. The solar energy generated will be fed into the local power grid. The operators of the plant are expecting more than 9,600,000 megawatt hours (MWh) of energy to be generated in the first year.

The smooth implementation of the project within 12 weeks and a problem-free operation depended primarily on the professional collaboration between project manager Phoenix Solar and its components partners, among them the Lapp Group. In order for investment in such a facility to be worthwhile and to ensure a smooth production of solar power, it is essential that all components are coordinated exactly to what is required and the type of conditions.

Aerial view of Preschen Solar Park

Today, Lapp is offering its own series of products specifically for the photovoltaic industry under the name ÖLFLEX® SOLAR. All products are UV-, weather- and temperature-resistant, guaranteeing the long-term function of PV systems at any time of the year. “We decided to use Lapp Kabel products because they are competitively priced and of a high quality, something we here at Phoenix Solar simply couldn’t ignore,” explains Christian Strebe, Press and Public Relations Officer at Phoenix Solar. “Our Technology & Innovation department put the cable to the test and confirmed its easy handling, good insulation and sturdiness.”

“In addition to the quality of the products, we also place great importance on a successful partnership. Extremely important for project collaboration are reliability, punctuality and a high level of availability,” adds Dr. Peter Steinborn, Head of Plant Construction at Phoenix Solar AG.

For the Preschen Solar Park, Phoenix Solar used around 147 kilometres of ÖLFLEX® SOLAR XLR 6 mm², primarily for the string wiring. The ÖLFLEX® SOLAR XLR cables with cross-linked cable sheath represent the latest generation of solar cables according to the PV1-F design. Crosslinking, a technology also used in the aerospace industry, involves

the interlinking of copolymer molecules to give the material a particularly high level of thermal and mechanical resistance. The TÜV-approved ÖLFLEX® SOLAR XLR cables thus offer excellent thermal resistance (-40 to +120°C) and a long service life under any weather conditions. Furthermore, the cables reduce the spread of fire and prevent the build up of toxic flue gases. The ÖLFLEX® SOLAR cables from Lapp Kabel are also sturdy enough to withstand mechanical influences and quantity can be accurately estimated thanks to metre markings on the cable sheath.

Phoenix Solar and Stuttgart's Lapp Group have been successfully working together since 2005. Phoenix Solar AG is a leading international photovoltaic system vendor. The company plans, builds and operates large photovoltaic power plants and is a specialist wholesaler for complete solar power solutions, solar modules and accessories.

New SKINTOP® SOLAR with cold shock guarantee

New to the photovoltaic programme from the Lapp Group is the SKINTOP® SOLAR cable entry for photovoltaic junction boxes. It already meets all requirements of the new and considerably stricter DIN standard EN 50548.

The most important test criterion of the new DIN standard is the increased cold shock resistance in line with UL 1703/UL746C. This impact resistance has been achieved with the new SKINTOP® SOLAR cable entry through the use of a polycarbonate compound. Polycarbonates like this are also used in the production of bulletproof glass. Another feature is the high UV- and weather resistance complying with UL F1 outdoor use which guarantees an exceptionally long service life. These properties mean that the new SKINTOP® SOLAR satisfies all of the requirements for the sale of photovoltaic products on the US market. Furthermore, it is extremely flame retardant and self-extinguishing in the event of fire. The temperature range is between -40 and +125°C, guaranteeing excellent weather resistance in hot conditions, ice, snow or rain. This is supplemented by outstanding strain relief. The cable can easily withstand even the strains caused by wind and ice. With its IP68 - 5 bar protection rating, the cable entry offers optimum protection against water and dust. The SKINTOP® SOLAR (plus) M12x1.5 is available now, the M16x1.5 version from the end of March.

A wealth of innovation

Armed with a whole host of innovative ideas, the Lapp Group took part in the SPS/IPC/Drives trade fair in Nuremberg at the end of 2011. The most important new product on display was the ÖLFLEX® SERVO FD 796 CP motor cable. This premium cable replaces seven servo motor cables and is the perfect solution for ultra-modern machines and plants with high traversing rates and acceleration.

High-speed multiple changes of position is exactly where the new premium cable from Lapp shows its excellence, in energy supply chains with an acceleration of up to 50 m/s², at speeds of up to 5 m/s and travel distances up to 3 m. It thus facilitates a significantly faster and more efficient operation than previous drag chain cables. Another new product presented was the EPIC® DATA M12 PROFIBUS connector. It was specially developed for connecting PROFIBUS devices with SUB-D connection to a PROFIBUS cable. It allows for the reduction of assembly times from between three and ten minutes to just 30 seconds.

The Lapp Group will returning with more impressive ideas to the Hanover Fair event. Certain to cause quite a stir will be the racetrack at stand C03 in Hall 11, a model based on the Formula 1 course in Shanghai. Managing Director Michael Collet explains: “With China being the partner country of Hanover Fair this year, we knew we needed to incorporate aspects of this country into

Customers deep in discussion at the Lapp stand

our stand." The almost 18-metre long race track is fully equipped with products from the Lapp Kabel automation program.

The Lapp Group presented four new ranges in the field of connecting and control cables for power chains: ÖLFLEX® CHAIN 808 and ÖLFLEX® CHAIN 809, as well as their shielded versions. All four models are particularly suited for low to medium stress in mechanical engineering and conveyor technology applications and impress with their extremely good price/performance ratio in this segment. The ÖLFLEX® CHAIN 808 has a polyurethane outer sheath and is thus particularly resistant to oils, lubricants and other chemicals. The ÖLFLEX® CHAIN 809 is sheathed with PVC and certified for the North American market (AWM style).

Lapp is thus expanding its range for "chain" applications. The ÖLFLEX® CHAIN 815 and ÖLFLEX® CHAIN 879 were previously used for higher mechanical stress and expanded normative requirements. The 879, as a "MTW Approved NFPA-79 Compliant Cable", is specially designed for use in the mechanical engineering and installation in the North American market.

"The World of Lapp", the company's new main catalogue, will also be appearing right in time for the Hanover Fair. On around 1000 pages, all the brand products for the perfect connection, along with plenty of technical tips and service offers, will be presented. The new edition is somewhat leaner, making it more convenient and customer-friendly. Even so, the comprehensive range of products is unrivalled. The product portfolio includes standard and highly-flexible cables, industrial connectors and screw technology, bespoke assembly and system solutions, automation technology and technical accessories. From mechanical and plant engineering to device and apparatus construction and for growth sectors such as renewable energy, mobility and life sciences.

The innovative EPIC® ULTRA rectangular connector housing

As you would expect, all new products are already included in the latest edition. And, for the first time, "The World of Lapp" will be appearing simultaneously and with identical content in German, English, Chinese, Italian, Polish and Spanish. ■

Lapp Ideas – Connecting Creativity

Right on time for the SPS/IPC/Drives trade fair in Nuremberg in November of last year, the initial version of the new Lapp Ideas platform (www.lappideas.com) was presented to the public. Since then, technology buffs have had the opportunity to share their ideas on new products or product improvements using the online platform.

Best of all: The ideas are directly viewed, commented on and monitored by Lapp Product Management experts. In order to present the new platform and its functions in the best possible way, a computer terminal was set up at the trade fair stand where interested visitors could test out the Lapp Ideas platform for themselves. It quickly became apparent that this new opportunity to participate in the product development process of the Lapp Group was very well received by a large number of visitors.

There was also plenty of interest shown by members of the press who flocked to the podium discussion addressing “Social Media in the Innovation Process”. Speaking at this event was Michael Collet, Head of the Innovation Competence Center at U. I. Lapp GmbH and Dr. Axel Glanz, a renowned expert in the area of innovation management, who both looked at the opportunities presented by this new method for generating ideas. The numerous questions put forward by the journalists, which led to a lively discussion, showed that the Lapp Group is once again playing a pioneering role in its sector with this project.

Just like any other innovative idea, potential users will need to be given time to get used to the new Lapp Ideas platform. However, there have already been extremely creative ideas submitted in just the first few weeks. Particularly pleasing is that most users have decided to publicly share their ideas on the platform, instead of sending them confidentially to the Lapp Group. In this way, Lapp Ideas is able to provide its technology fans with a platform where like-minded people can meet, coming together to design the future of cable and connection technology together.

Visitors can share their ideas quickly and easily at www.lappideas.com

Lapp Group now also in Romania and Panama

The Lapp Group is expanding to incorporate new markets. Just a few weeks ago, Lapp was involved in the take-over of former sales partner Coelco in Romania, and in Panama a Support Office has been set up for the Latin American sales partners. Managing Director Josef Holz talks to us about the company's current strategy.

General Manager Josef Holz

Why is Lapp expanding to Romania?
The Balkan countries, and in particular Romania, boast a very large market potential. Many Western European companies are increasingly outsourcing production there. The growth rates are certainly promising. If we want to profit from this, we have to make sure we are as close to our customers as possible.

Is this a completely new start for Lapp in Romania?
No. We have successfully collaborated with sales partner Coelco for the past 15 years. As the company was lacking a successor, we decided to take it over. 80 employees work there and turnover stands at around 10 million Euro. Coelco is not your classic distributor, it has also made a name for itself in switch cabinet construction, something we found particularly appealing.

What potential does Romania offer?
In my opinion, we are looking at doubling turnover to reach around 20 million Euro over the next five years. We want to achieve this with an even better cultivation of the market – the delivery service will be further improved through larger on-site warehousing facilities.

Why is Lapp now in Panama?
We had very little dealings with Latin America in the past, with connections to only a few select countries. About a year ago, we started developing a comprehensive sales structure for the entire region. It quickly became apparent that the distance and time difference to Germany, as well as the different mindsets, would make implementation extremely difficult.

But why Panama?
Panama is strategically well positioned. There are direct flights there from every country in Latin America. And, thanks to the Panama Canal and the freetrade area, Panama is an ideal logistics hub for the entire region.

How big is the new office?
The Lapp Support Office started off with five employees. If all goes well, we also plan to set up our own central warehouse for the region there.

What market potential does the country offer?
In the countries served by our sales partners (excluding Brazil and Mexico), there are 280 million people who generate a gross national product of €1,400 billion. So in answer to your question, plenty of potential! ■

Global News

A show during the wine festival "Stuttgart meets Mumbai" 2011

Bachelor thesis on field bus system

Christoph Möckel, BA student currently at U.I. Lapp GmbH, has successfully completed his studies at the Baden-Württemberg Cooperative State University on the efficiency of AS interface field bus systems. And what did he discover? That an AS interface network can be relied upon to work efficiently even with a linear expansion of over 100 metres once certain conditions are met. These conditions are: no external electromagnetic interferences, the use of no more than 20 slave modules (distributor with sensors/actuators), a precise earth-symmetrical installation and the use of an AS interface cable with the insulation material TPE (such as UNITRONIC® AS Interface). When a ring structure meets these conditions, a 220-metre linear expansion is even possible.

India in the spotlight

German-Indian relations have been a special focus of Lapp this year. Celebrating 60 years of diplomatic relations between Germany and India, Andreas Lapp lent his support, as Honorary Consul to the Republic of India for Baden-Württemberg and the Rhineland-Palatinate, to the concert tour "Classic Incantations: German Film Orchestra Babelsberg performs A. R. Rahman". Composer Rahman is one of India's biggest stars and has been recognised with two Oscars, Grammy Awards and a Golden Globe, to name just a few. The Babelsberg Film Orchestra performed his hits at the end of January in Mumbai, Delhi, Calcutta, Chennai and Bangalore. The series of concerts was exclusively presented by Lapp India. For the 8th time already, Andreas Lapp organised the wine festival "Stuttgart meets Mumbai" in Mumbai. The aim of the festival is to provide opportunities for establishing and strengthening contact between politicians, entrepreneurs and representatives from the worlds of tourism, economics, as well as film and media. Workshops also took place alongside the wine festival.

Brush up on Lapp! 71 years ago: Signals from distant galaxies

In 1931, the American engineer Karl Jansky discovered the reason behind the noise made by the radio during programme breaks. It was the radio waves, transmitted from outer space. His development of a large antenna carousel heralded the introduction of radio astronomy. Today, signals are bundled in the receiver and evaluated by a computer.

This involves registering the radio frequencies which come from quasar galaxies billions of light years away.

From the book: “Lapp – Distribution of Electrical Energy and the Transmission of Electronic Information”. From an idea by Oskar Lapp. The third extended edition can now be ordered in German, English and Russian (each 649 pages) from: www.lappkabel.de. Price: €16.90 per book, plus postage and packaging.

The Green Voltage Racing Team from TU Clausthal

Lapp Group supporting Formula Student

In the international Formula Student competition, interdisciplinary teams develop and build single-seat race cars to compete against fellow students from all over the world. Last year, Stuttgart’s Lapp Group lent its support to five teams: The Green Voltage Racing team from TU Clausthal with their electric race car, two teams from TU Berlin (FaSTTUBe with their combustion engine and the zedX Group with their electric version), as well as the two racing teams from the University of Stuttgart: the Green Team with the E0711-2 electric car and the racing team with the F0711-6. All teams primarily needed data and control cables, however temperature-resistant single cores made from Teflon and accessories such as cable ties, connector sleeves, cable lugs and tools were also required. The Lapp Group will be supporting Formula Student teams once again in 2012. The innovative loading system in its “snail” design, the LAPP HELIX, will be used for the first time in the race car from the Clausthal University of Technology.

Trade fairs 2012

AATX West
Anaheim, USA 14. – 16.2.2012

ELEKTRO 2012
Rostov, Russia 29.2. – 2.3.2012

PV Symposium
Bad Staffelstein 29.2. – 2.3.2012

ELEKTROTECHNIKA
Warsaw, Poland 12. – 14.3.2012

ELECTRICITY
Lviv, Ukraine 14. – 16.3.2012

AUTOMATICON
Warsaw, Poland 20. – 23.3.2012

AMPER
Brünn, Czech Republic 20. – 23.3.2012

EURO EXPO
Skelleftea, Sweden 28. – 29.3.2012

All of the Lapp Group’s trade fairs can be found at www.lappkabel.de/messen

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