THE TECHNOLOGY AND PEOPLE AT LEINE & LINDE

Impulse

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Feedback that creates true value

WHAT'S YOUR PASSION? I've put a lot of thought into this question and responded to it on a number of occasions. It came up again when making the decision on whether or not I should accept the offer of becoming the CEO for Leine & Linde nearly a year ago.

I have a passion for ensuring that we at Leine & Linde meet our customers' needs in the best possible manner. This may not sound especially grandiose, but after more than ten years at the company, I know it's true. Those of you who know me have probably noticed that I'm not one to exaggerate.

LEINE & LINDE stands for products that are robust and relevant. We have an incredibly strong brand and a tradition of developing products for customers that dates back to 1967. But this doesn't mean that we can rely on our solid reputation in continuing our success. Our branch is in a period of transition, with a shift of focus from mechanics to increasingly intelligent solutions based on programmable electronics. The rate of change is higher than ever before and our customers' needs are evolving. Leine & Linde is more than a supplier of components – we know how feedback creates value for our customers' production facilities and applications.

We need to lead the change with the same reliability and certainty as we've always conveyed in our operations.

THIS REQUIRES that we all step up. The organisation must be both stable and quick to react. Decisions must be made as close to the market as possible. This in turn, requires coaching leadership.

I want to encourage all employees to be constantly prepared to take the initiative – all for the good of our customers. It is not just our encoders that provide relevant feedback, our entire organisation should be based on feedback. I want us to continue to be good at listening to the valuable feedback we receive from our customers and in helping them to profit by partnering with us.

With this approach, we keep providing the optimal solutions, both now and in the future.

Strängnäs, October 2015
Håkan Högberg
CEO, Leine & Linde

EXPANDING WITH ETHERNET/IP

The number of industrial Ethernet-based interfaces is constantly increasing. With Leine & Linde's EtherNet/IP initiative, encoders for the most physically demanding applications are becoming available to a larger portion of the market than ever before.

THE MARKET is fragmented. Many interfaces are competing for the lead in systems for industrial control, but EtherNet/IP is the most widely adopted Ethernet-based communications interface on the American continents, primarily among users in the US and Brazil. It is also either directly or indirectly supported by most of the larger control system providers via modules.

EtherNet/IP is an open industrial Ethernet network built on basic Ethernet standards – such as Internet Protocol (IP) and IEEE 802 – to regulate, control, configure, collect and transfer various types of data. This is combined with Common Industrial Protocol (CIP), which controls and executes various automation functions.

For systems using EtherNet/IP, new opportunities are becoming available for using Leine & Linde's assortment of robust, high-performance encoders.

Three encoder series and a gateway

Three encoder series have been developed with embedded EtherNet/IP communications. The 1000 series is for the most extreme applications, such as in the steel and mining industries. The 900 series provides exceedingly good resistance to high temperatures, moisture, vibrations and impact, while the 600 series is for industrial automation and demanding environments.

The assortment of products becomes even more complete with a gateway, which enables connection via EtherNet/IP for EnDat encoders. A benefit of a gateway is that the somewhat more sensitive connections to EtherNet/IP can be physically located away from the encoders so that they can manage even tougher operating conditions. EtherNet/IP can thus be used in applications with ambient temperatures of up to 100°C. Moreover, encoders can be replaced without interrupting communications since contact is still maintained via the gateway function.

Embedded functionality

The encoders measure position and speed, and deliver the values in accordance with the customer's preferences for the application. With automatic addressing, encoders do not need to be opened – configurations can be executed in the associated software. Both free scaling as well as binary and non-binary scaling can be performed and the zero point can be moved. Via EtherNet/IP, the control system or other machine functions can receive and configure input values or set limit values. An encoder's operational feedback can also be used to activate various functions when selected limit values are reached.

One example is that speed can be automatically regulated if a unit should accelerate faster than desired. This is accomplished by the encoder sending a warning to the control system when a limit value has been exceeded. There are several such ready-to-use assemblies that make it easy not only to configure encoders, but also to give users access to data – such as for speed, position and acceleration – all with a cycle time as low as 1 ms. ■

EtherNet/IP communications are implemented in three encoder series and a gateway.

Terminology

Internet Protocol, IP
A protocol used in the transfer of information by sending small data packets with information about the sender address and the recipient address. IP does not guarantee that the information will arrive at its destination; this is handled by other protocols in transfer or application layers.

IEEE 802 standard
Common standards for networks that transfer information packets of various sizes. These standards form the basis for how different information layers interact with information technology and telecommunications, for example.

Common Industrial Protocol, CIP
A protocol used in industrial automation. The protocol embraces message suites and services for control, security, motion, synchronisation, configuration and information. These can be shared from the machine level to a higher level using Ethernet or the Internet. CIP is used in EtherNet/IP, and DeviceNet, CompoNet and ControlNet, for example.

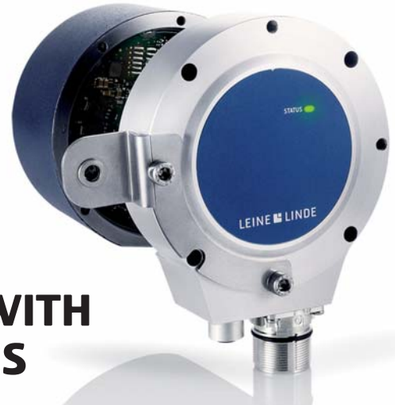
Carbon dioxide reduction

LEINE & LINDE is continuously improving its processes for developing and providing value to customers. As the company operates in a global market, it is important to fulfil social and environmental responsibilities in all contexts. In accordance with this, the company strives to serve as an example for others.

The company's electrical power is generated exclusively by wind power plants. Active work is also done to minimize carbon dioxide footprint, calculated based on GHG, Green House Gas Protocol. During 2015, the carbon footprint is estimated to be reduced by 15 percent, even though production is growing.

Value for customers is not just in the product, but also in the long-term sustainability that characterizes Leine & Linde's operations. ■

ADS ONLINE



UPGRADE ENCODERS WITH DIAGNOSTICS

Avoid production stops with the ADS Online Upgrade Unit. The product is easy to install on all Leine & Linde encoders in the 800 series. Just replace the rear covers on your existing encoders. Thanks to diagnostics, preventive maintenance is no longer needed. The encoders indicate when they need to be replaced.

The encoders in the 800 series have a documented service life of more than 10 years. But predicting how long a specific encoder can remain in service is no easy matter, since this depends on several different factors, including how it has been installed and the environment it is used in. ADS Online monitors various basic functional parameters in the encoders and warns when wear is detected. ■

DMI CONVERTER – split signals increase usability

Leine & Lindes DMI Converter divides up encoder signals so that they can be used in parallel functions. The DMI Converter can also be used for conversion between different signal levels. It features galvanic separation between the input signal and both output signals.

With the DMI Converter, an encoder can simultaneously supply input to parallel systems, such as control and automation systems or for other application areas. It works with any of RS422 and HTL signal levels as input, and provides the capability to choose one or both signal levels as output.

The DMI Converter is installed on DIN rails and is easy to configure. It operates in temperatures ranging from -25°C to +70°C and complements Leine & Linde's robust assortment of encoders and accessories for feedback of speed and position in demanding environments. ■

Andrew Sullivan has the entire world as his workplace.

Global key account manager for oil and gas sector

ANDREW SULLIVAN has been appointed as Leine & Linde's new global key account manager. From Strängnäs, he will be working with development of the oil and gas sector as well as the marine sector. Previous to joining Leine & Linde Andrew was export sales director for the Norwegian Government defence company Nammo.

Andrew has lived and worked in Ireland, the UK, the US and Spain, but has found a home in Stockholm with his Irish-Spanish-Swedish family. When they are not out enjoying Stockholm, they like to visit relatives in other parts of the world.

Andrew can be reached at *a.sullivan@leinelinde.se*, +46 152-267 15 or mobile phone number +46 76-786 94 19. ■

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Newsletter

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As a subscriber you will also receive automatic invitations when we exhibit at a nearby trade show. ■

FISH FED WITH NORWEGIAN TECHNOLOGY

For more than 25 years, Steinsvik AS has supplied fish-feeding systems for fish farming. Leine & Linde's encoders are used in the systems' feeding equipment – in selector valves to put it more precisely.

STEINSVIK AS has its main office in southwestern Norway at Aksdalsvatnet, a small lake in the mountainous region north of Stavanger. The company has several offices throughout Norway, as well as subsidiaries in Chile, Scotland, Canada and Tasmania. Steinsvik supplies equipment for feeding fish, monitoring and remote control of fish farms.

The feeding system is used for salmon, trout, halibut, cod, sea bass, sea bream and cobia. The market is huge – in Norway alone, one million tons of salmon are produced each year, but the customers are all over the world. Because each facility has different environmental conditions, feeding strategies and growth conditions, they must be individually designed.

Salmon and trout are often bred as fish for stocking and then from eggs to a size of a few hundred grams. When they are bred for the table, salmon can increase in weight up to five kilos within 16 to 19 months. Growth is not as fast as with meat production, but it is feed-efficient. It takes 1.2 kilos of feed for a farmed salmon to grow one kilo. Beef cattle require all of eight kilos of feed to match that increase in weight. Fish farming is thus an important part of the world's food production, both from the resource and environmental perspectives.

Cobia, with its torpedo-shaped body, is a fast-growing fish that can reach up to ten kilos in weight in two years. Cobia live in warm waters and farming is increasing both in Asia as well as in American and African countries. Fully grown they can be two metres long and weigh up to 70 kilos.

Controlled feed supply

Accurately controlled feeding with careful follow-up plays an important role for fish survival and growth, but also for the aquatic environment, which should not be overburdened.

With Steinsvik's feeding equipment, there can be three different feed supply lines per silo. Each supply line can receive feed from up to four silos. A special three-way selector enables controlled and efficient supply. An encoder from Leine & Linde is mounted on the shaft of each selector valve. It provides constant feedback on valve position, which is essential for the function of the entire system.

"Since 1986 we've delivered the most reliable feed supply systems," says Tor Henrik Håvik, export sales manager at Steinsvik. "All parts of the system must meet our high quality demands, which we develop in close collaboration with our customers. Costs for our customers are lower thanks to first-rate industrial components that reduce service needs."

Robust encoders are required in many different contexts. Here they give fish farmers full control of the feeding process in a system that is both economical and environmentally sustainable. ■

The encoders in the selector valves either control specific functions or are connected to a main supply box with a programmable control system for the entire feeding facility. Devices are often located about 25 metres apart, which places special demands on signal transfer.

PRECISION MEETS FORCES OF THE SEA

Leine & Linde's 2000 series can be installed directly on motor shafts with large dimensions, such as those in marine propulsion systems.

Quiet perfection is the order of the day when the 2000 series does its job in marine applications for Indar.

INDAR, which is celebrating its 75th anniversary this year, has its headquarters in Beasain, a small town of 13,000 inhabitants in the Basque province of northern Spain. Indar is a part of the Ingeteam Group and ranks among the absolute world leaders when it comes to the design and manufacture of rotary electrical machinery.

Indar's large and modern production facilities are beautifully situated in a lush area between the mountains. Generators are produced here for the wind industry, as well as hydro generators and motors for marine applications. Indar uses Leine & Linde encoders in many of their applications.

"We're very proud of Indar selecting our 2000 series for a pioneering project in marine applications," says Fransesc Comas, Leine & Linde's country manager for Spain and Portugal. "The project puts extremely high demands on functionality and durability, making our bearingless magnetic ring encoder an excellent choice for the application."

Francesc Comas, Leine & Linde Spain.

Ships and large yachts

Indar has a long tradition of building propulsion motors for vessels and large yachts. These motors are built with technology for low frequencies and all components must be able to handle heavy loads with the greatest possible precision.

Leine & Linde maintained contact with Indar throughout the process to determine a technical solution that would meet the special requirements for such an application.

> **"CHOICE OF SUPPLIER WAS EASY"**

"The level of Leine & Linde's contribution with technical and design expertise has been decisive in our collaboration," says Rocío Ortiz, head of Control & Instrumentation at Indar Motors.

She feels that Leine & Linde has responded well to complications that arose during the various phases of the project.

Special mechanical conditions

Leine & Lindes's magnet ring is attached directly to the motor shaft, which is connected to the propeller. Because the dimensions can be quite large, the ring can be divided into segments. The ring is mounted with the company's ClampFit solution, which enables stable attachment without a flange.

When the motor is running the encoder must constantly provide precise feedback on rotation. Rotation feedback is picked up by two permanently mounted scanning heads. This solution fulfils the special mechanical conditions that occur at sea, where temporary axial displacement of the shaft is inevitable, especially during the motor's start phase. The propulsion system is burdened by the forces of the sea, which create different loads depending on currents, direction and resistance.

"As we progressed to the construction phase, we realised that this encoder solution was the only one on the market that would permit axial displacement of plus-minus 4 millimetres," says Rocío Ortiz. "But the application also required a redundant signal, and at the time, Leine & Linde didn't have a magnetic encoder with two scanning heads. They were

willing to solve this by tailoring a solution to our needs."

Choice of supplier

With dual scanning heads, the system is robust and tolerant, and provides constant and exact feedback, which is an absolute requirement for low frequency propulsion motors at sea.

"I was happy to hear from Indar that their choice of supplier was easy to make," says Francesc Comas at Leine & Linde. "They said that they were aware of the quality of our services, due to our 862 and 865 encoders being standard parts in their products. They also had praise for our sales and service organisation, and in return I'd like them to know that we work with pleasure to do our part in their world-leading applications." ■

ADDED VALUE FOR OIL AND GAS INDUSTRY

Leine & Linde can now boast of a full range of incremental and absolute encoder solutions for the demanding oil and gas industry. Relevant products and development resources bring added value to the industry.

LEINE & LINDE is bringing added value to the oil and gas industry though its expanded range of products, as well as by dedicating increased resources in strengthening its presence in the industry. The company is now fully qualified as a supplier to Europe's major oil and gas companies and is listed on the Achilles supplier lists FPAL and JQS.

Standing up to heavy forces

The scale of offshore operations is enormous, with capacity and load conditions placing higher demands than for most land-based operations.

"An example is the semi-submersible crane vessel, developed by the Dutch company Heerema," says Andrew Sullivan, global key account manager for oil and gas at Leine & Linde. "The vessel has dual cranes and a combined lifting capacity of over 14,000 tons."

When such heavy loads are moved, force and impact become major considerations. All equipment must be robust and able to handle the loads. Leine & Linde's origins in traditional heavy industries such as coal and mining have provided a good head start when it comes to developing products for the demanding operations carried out on platform drill floors and in adjoining areas.

"As one of our customers put it: 'If rough-necks chose the encoders, they'd choose Leine & Linde,' " says Andrew with a smile.

In the oil industry, there are enormous structures to be produced, installed and maintained. It is of the greatest importance that any mistakes are avoided as much as possible since expenses would otherwise be extreme. Constant and full reliability for each component is a must. "The best encoders are those you never need to think about" – the philosophy of Leine & Linde – is welcomed in the industry.

Preventive measures

The offshore industry has been known for its stringent demands on safety for quite some time, but recent developments have been focused more on preventative measures. Leine & Linde's unique Advanced Diagnostics System, ADS, is the answer to a question posed by the entire industry – how can problems be identified before they occur?

"Leine & Linde's incremental encoder 841, certified for Ex zone 1/21, has ADS as an option and this function has been extremely helpful out in the field where the encoder is used," says Product Manager Linda Carnbo. "Regardless of the robustness of an encoder, it can fail if subjected to extreme loads. ADS features self-diagnostics that can warn of impending encoder problems. This enables maintenance to be planned at an early stage and unscheduled production stops are avoided."

When data needs to be collected for analysis, ADS is an excellent tool.

"ADS Online is our incremental encoder for zones 2/22 and it monitors both encoder functions and associated risk factors such as temperatures and vibrations in surrounding areas," says Linda.

A natural development

Since its founding in the 1960s, Leine & Linde has been a reliable partner for heavy industry, with innovative solutions to the problems encountered in the most demanding applications. The company is now included on the European supplier lists for the oil and gas industry, and the initiative continues for inclusion on supplier lists in all important regions the world over. ■

Linda Carnbo and Andrew Sullivan from Leine & Linde visiting a customer oil platform.

Achilles JQS empowered by Achilles Qualified

FPAL empowered by Achilles Registered

Order now!

New brochure for the oil and gas industry now available. Request your copy via email: *info@leinelinde.se*.

Fresh momentum in wind power and renewable energies

Meet Leine Linde Systems in Hamburg, the result of Leine & Linde's successful venture in component technology for the wind industry and renewable energy sources.

LEINE LINDE SYSTEMS was founded in 2012 and is a fully owned subsidiary of Leine & Linde AB. The company is situated in Hamburg, Germany but works globally, serving the wind industry with a comprehensive approach to components and service.

"The companies we represent have two distinct but shared characteristics," says Alexander Tewes, CEO for Leine Linde Systems. "They have depth when it comes to manufacturing and extremely good quality control. In the wind industry, with its increasing requirements, these are decisive factors."

Point of contact

The company is the hub that provides access to all available resources in wind power at a world-leading group of technology companies that includes Heidenhain, Leine & Linde, LTN Servotechnik, E+E Elektronik, RSF Elektronik and SEM. At the Hamburg office, all the staff members are accustomed to working internationally and participating in the exchange of information between customers, technicians and engineers in everything from research to application know-how and documentation.

This results in technically refined products and simplified processes that benefit customers.

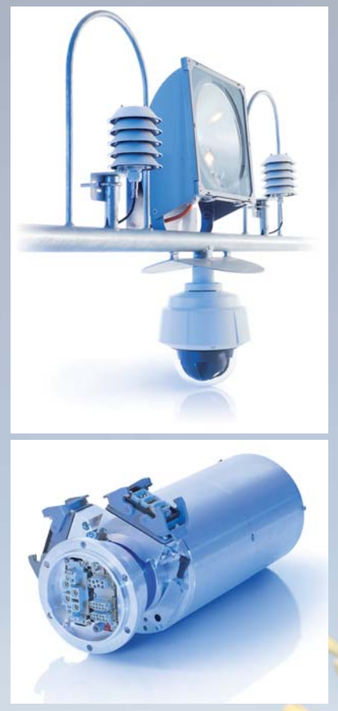
"Customer proximity is the answer to nearly all questions," says Alexander Tewes. "With our role in Leine & Linde's global network, we become a partner for our clients. We provide the shortest route to the most suitable solutions."

Development of products and systems

Leine Linde Systems works with a thorough understanding of the wind industry's applications and offers a unique product portfolio, from slip rings, rotary encoders, preventive ice detection, pitch motors and connection leads, to complete switch cabinets. Many products are manufactured, adapted or developed to meet specific customer needs.

Leine & Linde provides absolute and incremental encoders for various wind power turbine functions. The rotating magnetic ring, MRI 2202, is very popular due to the option of fitting it directly on generators or drive shafts with large dimensions. New this year is the YAWMO® for yaw position and speed measurement, which has been exclusively developed for use in wind power.

With its holistic approach to system solutions, Leine Linde Systems can continuously provide the wind industry with fresh ideas. ■



IMPS (at the top) is a highly efficient ice prevention system that detects risks for the formation of ice on the blades of wind power plants. The slip ring with ADSR (above) is especially designed for wind turbines and features integrated diagnostics.

Alexander Tewes, CEO for Leine Linde Systems.

And it is still working ...

LAST FEBRUARY Leine & Linde received a request from the maintenance department at the Ence paper mill in northern Spain. The company wanted to know the resolution for an encoder installed on an industrial paper cutter. Because the rating plate was worn, this information was no longer legible, but they knew that the encoder had been in production for quite some time. The serial number however, was still legible. After a look in Leine & Linde's registry, the right information could be quickly provided. The encoder had been manufactured on 30 March 1990, which means 25 years of service. And it is still working.

As the story spread around Leine & Linde, several more reports came in from different parts of the world about old but still functioning encoders. A Leine & Linde encoder in Brazil for a paper production weaving loom from Texo seems to hold the record. The encoder is on a shelf for spare parts and is 26 years old, but an even older encoder is on the loom. Good quality pays off in the long run. ■

ACTIVE AUTUMN FOR TRADE SHOWS

Welcome!

LEINE & LINDE was represented at Sweden's booth – along with SSAB, among others – at SPE Offshore Europe in Aberdeen. The booth was officially opened by Sweden's ambassador in London, Nicola Clase.

"As a part of our investments in the oil and gas market, it was important for us to participate," says project manager Linda Carnbo. "Our participation resulted in many interesting discussions and new contacts."

During autumn and winter, you can meet Leine & Linde at the following events:

- **Automaatio** at Teknologia 15 in Helsinki, Finland, Booth 7E41
- **OTD, Offshore Technology Days** in Stavanger, Norway, Booth C:3204
- **Paperex** in New Delhi, India, Booth 7F01
- **SPS/IPC Drives** in Nuremberg, Germany, Booth 4A:531
- **Elecrama** in Bangalore, India.

You can also meet with Leine Linde Systems at:

- **Husum Wind 2015** in Husum, Germany, Booth 4D04
- **China Windpower** in Peking, China, Booth W1B26

Welcome! ■

Open mind, quick answers

– Welcome to Leine & Linde! If you visit Leine & Linde or call, it will be one of the office sales representatives who greets you or takes your call.

NAME:	Ilja Landelius	Kenneth Nyberg	Bo ”Bosse” Eklundh
POSITION:	Office sales representative		
YEARS AT THE COMPANY:	19 years	37 years	34 years
LIVES IN STRÄNGNÄS:	House in the country	Apartment in town	Apartment in town
MISCELLANEOUS/ INTERESTS:	Likes to travel, spend time with friends and relatives, cooking. Has an English bulldog namned Buffy.	Likes walks, reading books, watching football and dining.	Dining, architecture and music. Also enjoys travelling.

OFFICE SALES REPRESENTATIVES Ilja Landelius, Kenneth Nyberg and Bo Eklundh have all worked at Leine & Linde for several years and consequently have extensive experience, giving them considerable knowledge and solid problem-solving skills. While they can answer many questions straight away, it is sometimes necessary to get help from product managers for example, or others with advanced technical expertise.

“The absolute nicest thing about the job is the contact with all the great people who get in touch,” says Ilja Landelius and her colleagues fully agree. “We have so many interesting customers.”

As far as what customers appreciate most, there is full consensus here as well: “They really appreciate our products – that they are extremely robust, long-lasting and reliable,” says Kenneth Nyberg. “And they definitely like that we can provide answers so quickly. Our delivery precision and speedy deliveries are often decisive factors.”

The company’s 24-hour service is used on a daily basis. This entails that Leine & Linde can deliver a standard encoder from the factory within one day. Because stops in customers’ production can have major financial consequences, encoders are sent via special delivery.

Customer service

Bo Eklundh relates something that occurred a few years ago when a factory in Gothenburg, Sweden, needed an encoder as fast as possible.

“We received a call during the afternoon, asking if we could arrange delivery by lunchtime the following day. The customer first suggested that we send the encoder by taxi. They then called back and told us they’d chartered a helicopter. The encoder was taken to the airport by taxi in record time and then got a first-class helicopter ride to its final destination. Production was saved.”

“In most cases shipping and delivery to customers go smoothly. But customs and shipping companies can sometimes throw a spanner into the works and cause problems with deliveries to certain countries,” says Ilja, who has extensive experience from direct exports and finds ways of resolving most of the problems that come up.

Leine & Linde’s office sales representatives have daily contact with international sales offices and distributors, and departments within the company. All so that customers receive the support and service they need, regardless of where they are in the world. ■

Impulse is published by Leine & Linde. The aim is to provide information about our business and the rapid development of new products and systems.
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