



### A System for Troubleshooting and Preventative Maintenance

At the Stora Enso paper mill in Hyltebruk, an unplanned production stoppage costs around \$10,000 an hour. In order to avoid encoders causing such stoppages, **Leine & Linde** has developed a Heavy Duty sensor with an advanced diagnostic system, ADS™.

#### Self-diagnostic system

Deep in the woods, in the southern parts of Sweden, a paper mill was established at Hyltebruk back in 1907. Since 1972, paper has been produced here for newspapers, and there are currently four paper machines in production, operating in three shifts.

"The paper machines can produce paper at up to 1,550 meters per minute with a width of 8.4 meters," explains Ulf Ahlstrand, technical engineer at Stora Enso. "We primarily



Roland Lindström and Ulf Ahlstrand by the 8.4 meter paper rolls that are then cut down into the required widths and supplied to printers and newspaper publishers.

use encoders to obtain feedback on the speed of the rollers in the paper machines. An unplanned production stoppage is, as mentioned, extremely costly and therefore we have set very high requirements with regard to the reliability of the encoders."

In order to meet the requirements for a high level of reliability, Leine & Linde has developed an advanced diagnostic system, ADS™, for the incremental encoders in the robust 800 range. The system is based on rapid logic in conjunction with a microprocessor continuously monitoring all the encoder's functions and is therefore able to detect faults at a very early stage. This happens early enough for the encoder to fulfill its function, so that the encoder can be changed during a planned maintenance stoppage instead of causing an unplanned stoppage.

### Did You Know...

...that a **RENCO** encoder (available through parent company HEIDENHAIN Corporation) is an important component in the world's most accurate robotic camera systems available today in the broadcast industry, according to manufacturer **Telemetrics Inc.** in New Jersey? Specializing in innovative camera control systems, Telemetrics ([www.TelemetricsInc.com](http://www.TelemetricsInc.com)) offers camera remote controls, camera robotics and transmission systems for numerous broadcast, educational, industrial, medical, religious and government applications throughout the world.

Just designed into a new robotic camera system over the past year, RENCO's R35i encoder is strategically mounted onto the pivot shaft in the Telemetrics Brushless pan/tilt head. This head boasts smooth variable operating speed, has heavy duty bearings and a belt drive system providing quiet operation. The head has the capability of motion by sequence of position or motion record playback. Two hundred and fifty-five (255) presets are available, memorizing all axes.

"The RENCO encoder allows us to now move a camera absolutely perfectly so that there is no shake or vibration," said Sergio Penetra, Telemetrics engineer who further explained that high accuracy and smooth movement is important in commercial camera applications, especially critical during zoom functions where movement is severely amplified.

Several of the largest and most



Telemetrics camera

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### Involved in product development

“When it comes to our requirements, we feel that we have received a very good response and service from Leine & Linde”, explains technical engineer Roland Lindström. “We have actually felt involved in their product development! Our partnership with Leine & Linde started back in the 1980s and over all these years we have maintained a continuous dialog with them to find the right products for the paper industry.”

In order for the encoders to function optimally, it is important that they are fitted in the right way. At Stora Enso, around 200 encoders are in use every day, and as the requirements for precision in speed feedback are high, the company has created procedures that ensure that the encoders achieve full performance and service life.

### Encoders with excellent durability

“It is currently the ADS™ model of our Heavy-duty 862 incremental encoder that is most used in the paper machines at Stora Enso,” says Håkan Karlsson, salesman at Leine & Linde. The choice of 862 is because the encoder is



*Leine & Linde 800 with ADS™*

*Company:* Stora Enso Publication Paper  
*Location:* Hyltebruk, Sweden  
*Production:* Paper mill  
*Employees:* Around 900  
*Production capacity:* 800,000 tons/year



*Since 1972, Hyltebruk has been producing paper for newspapers.*

equipped with ceramic bearings that result in an unsurpassed service life and price and performance ratio.

“It is important for us to have a close partnership with our customers”, continues Håkan. “In this way, we gain excellent knowledge of their applications and challenges. Based on that, we can subsequently develop and improve our pulse encoders, which leads to more efficient production activities for our customers.”

For more information visit [www.leinelinde.com](http://www.leinelinde.com) or contact your HEIDENHAIN sales representative.

### Did You Know... *continued from Page 1*

sophisticated television networks in the world depend upon Telemetrics technology everyday.

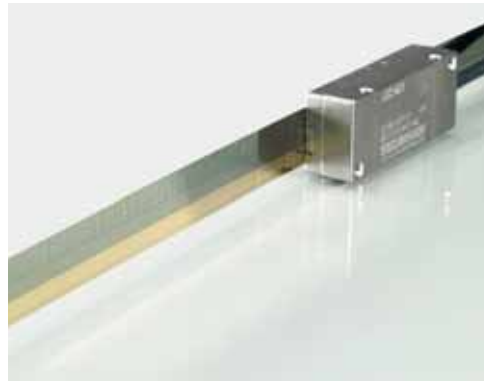
“We chose the RENCO R35i for our new camera control system mainly because of the excellent resolution it offers in a small package,” said Penetra. “This small encoder was easily mountable in such a way to offer superior performance on the robotics head. It allows us to offer our customers the highest accuracy on the market today.”

RENCO's R35i encoder is a 35 mm modular encoder that is characterized by line counts up to 10,000 PPR. It has a hollow shaft size up to 8 mm and TTL quadrature output.

For more information visit [www.renco.com](http://www.renco.com) or contact your HEIDENHAIN sales representative.

# The Scale Tape Solution for a Wide Variety of Applications - HEIDENHAIN'S LIC 4000 Absolute Linear Encoder

Incorporating absolute technology to a multi-substrate scale tape linear encoder design, HEIDENHAIN offers the versatile LIC 4000. Besides its capability of absolute position measurement, this new encoder is characterized by its high resolution of 1 nanometer and its fast, purely serial EnDat 2.2 interface.



Absolute encoders, which provide the current position immediately upon switch-on, offer high technological reliability and safety because they can operate without the reference runs that would otherwise be necessary. Absolute encoders are especially well suited for use on direct drives. Together with the current position, the commutation offset is known immediately upon switch-on and the motor can immediately be provided with power and held in the control loop. Critical operating states, such as switching on a vertical axis with direct drive or retraction after an emergency stop, are controlled safely.

Thanks to their specialized scanning technologies, these LIC 4000 encoders with up to 27 meters of measuring length are insensitive to contamination and therefore guarantee a high degree of equipment availability and a high traverse speed, while at the same time achieving a high resolution. The dimensions of the LIC 4000 match those of the HEIDENHAIN LIDA 400 incremental linear encoder, which has already successfully established itself on the market. This makes it possible to easily retrofit today's machines to absolute measurement technology by

exchanging the encoders. Only the subsequent electronics must be adapted correspondingly.

Exposed linear encoders from HEIDENHAIN are characterized by their high accuracy together with customer-friendly mounting tolerances, high traversing velocity, and low height of the scanning head.

For more information visit [www.heidenhain.com](http://www.heidenhain.com) or contact your HEIDENHAIN sales representative.

## Looking Forward to 2011

*By Tom Wyatt, National Sales Manager, Automation Division*



**Tom Wyatt**  
National Sales Manager  
Automation Division

Another year has gone by and the holidays are upon us. For me, this year has been an exciting blur! Here at HEIDENHAIN-North America, it has been both interesting and busy, with sales not only happily rebounding but going through the roof.

Now, as we approach 2011, we are very positively looking forward. I say this for several reasons. First and foremost, we go into the New Year with the most

diverse product offering in the area of rotary encoders in our industry. And after 31 years with HEIDENHAIN, I can honestly

say that right now, this moment, the organization has never been stronger or more dedicated to R&D.

Being the Automation sales and marketing arm for HEIDENHAIN is extremely exciting, simply because the range of applications is endless. In the morning, we could be talking about a telescope application that requires a measuring system of 30 meters in diameter. That afternoon, it could be a slip ring application on a wind turbine. And through it all, we know we can offer the right product needed from any of our HEIDENHAIN, LEINE & LINDE and RENCO product brands.

On a regular basis, we like to share interesting and often unique tidbits about the various applications across all of our three divisions (including Machine Tool and Electronics divisions). One of the small ways we do this publicly is through our eNewsletter column titled "Did you Know". That said, any customer that has an interesting or possibly unusual application using a HEIDENHAIN measurement component,

## Looking Forward to 2011

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**James Rago**  
Product Specialist

can feel free to drop me a line to tell me about it. That, along with the proper approvals and a picture or two, could result in a free company showcase in one of HEIDENHAIN's upcoming eNewsletters. We understand the importance of you being successful first, and want to support you.

In closing, I would like to welcome and introduce the newest member of our

HEIDENHAIN Automation team, James "Jimmy" Rago. Jimmy will take over the role of product specialist for rotary and drive encoders once his training program is complete. This, of course, includes coverage of HEIDENHAIN, LEINE & LINDE and RENCO products. Jimmy is an engineering graduate from the Rose-Hulman Institute of Technology. Welcome aboard Mr. Rago!

I wish you and your loved ones a wonderful holiday season and the best of luck in 2011 too!

### Technical Tidbit:

## Functional Safety

To understand "functional safety", it is important to note that many individual components contribute to the overall safety concept of any automated process.



One of those components can be a drive encoder or linear encoder. Nevertheless, the builder of the

machine bears the responsibility for the safety of the complete system.

It is our job as an encoder manufacturer to provide a feedback device that offers the functionality to allow the machine builder to fulfill those safety requirements. We know that the goal is to reduce the probability of a failure that would result in human casualty or serious injury. This also helps prevent and protect material assets as well. To say a machine is "functionally safe" is to say that its components and design of it are such to proactively prevent injury.

## HEIDENHAIN SUPPORTS AMERICAN PRECISION MUSEUM

Showcasing the largest collection of historically significant machine tools in the nation, the American Precision Museum (APM) in Windsor, VT now adds HEIDENHAIN Corporation to its long list of members.

Located in the 1846 Robbins & Lawrence Armory where the concept of interchangeable parts was brought to practical perfection, APM gives visitors a look into the history of early machines and their impact on society. The advent of highly precise, exact parts started here with guns and rifles for war, with the concept later making its way to mass produced machines.

"This museum preserves the heritage of the mechanical arts and we understand



its significance to all of us even today," said HEIDENHAIN Holding company president Rick Korte. "HEIDENHAIN also has a long, strong past in precision measurement, and we know the importance of maintaining history. We are proud to be a member."

Open from Memorial weekend through October, visitors to the APM will see collections of not only significant machine tools, but also early firearms, measuring devices, sewing machines, typewriters and other unique objects. Museum information is available at [www.americanprecision.org](http://www.americanprecision.org)

"The richness of history and relevance to our more elaborate lifestyles of today is completely underscored by what took place

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here," explained Hub Yonkers, APM board trustee since 2002. "The concept of precision manufacturing provides the foundation for modern industry around the world – from mass communication, rapid transportation, modern standard of sanitation and medical care, as well as the basis of abundant food and clothing, and we are pleased to be able to preserve its evolution here at the museum."

Besides supporting an important cause, members receive a subscription to the APM's "Tools & Technology" newsletter, invitations to special events, and free museum admission and discounts on site.

A Machine Tool Hall of Fame is part of the museum's website and began as a joint project with the AMT (Association for Manufacturing Technology) in 1993. This Hall of Fame includes

approximately 50 elected members who have made significant contributions to the industry (from 1765 to present).

"It is an extraordinary thing that this factory building is still standing," said Yonkers. "It is so rare to have an event focal point of real historic significance still in existence, and we are thrilled to have preserved it to serve as the home of the museum to house our collection of historic machine tools." Over 150 years old, the well-built gun armory has undergone some significant renovations over the past several years, but more restoration work is necessary.

To view an 8 ½-minute video about the American Precision Museum, please go to: [http://www.americanprecision.org/general/video/a\\_video\\_introduction\\_to\\_the\\_american\\_precision\\_museum/](http://www.americanprecision.org/general/video/a_video_introduction_to_the_american_precision_museum/)

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