

THE TECHNOLOGY AND PEOPLE AT LEINE & LINDE

Impulse

No. 1 2012

ON THE RIGHT TRACK

– with robust encoders Page 6



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Ready for growth

BY THE TURN OF THE YEAR we finally started work in our new premises. 2000 new, modern and fresh square metres, just a stone's throw from the main building. The move in itself was an impressive process – a real team effort – and was carried out without downtime in production. The new building is an important part of the work to future-proof operations. With more surface area and improved production flow, we have improved our position to serve you as a customer. We can continue to grow while maintaining our high quality and service offering.

IN THIS ISSUE of Impulse, you can read more about Building B, which is the name of the new building. You will also get to meet the talented engineers at AQ Mekatronik who use our encoders in their master controllers, which among others are fitted in China's high-speed trains. We also present ADS Online, which was launched last year. Currently Leine & Linde's employees are travelling around to present the system while visiting customers and at trade shows worldwide. Early indications show that there is great interest and feedback from initial installations is positive. Self-diagnostic online systems for encoders are the future.

All this and much more.
Pleasant reading.

Strängnäs, May 2012
Björn Zetterlund
CEO Leine & Linde



Cover image: © SJ / Stefan Nilsson



"Leine & Linde's range fits the Korean market perfectly," adds Lee Sangho, sales manager of the branch in Changwon.

A GREETING FROM SOUTH KOREA

In South Korea there is a large and significant manufacturing industry with a need for robust encoders. Lee Sangho, Leine & Linde's office manager in Changwon, has direct contact with the market.

SOUTH KOREA is only one-fifth the size of Sweden in area. Yet it is a huge industrial country and is a world leader in many industries. Lee Sangho is sales manager at Leine & Linde's office in Changwon.

"South Korea is a small country, but we are one of the largest in terms of industrial production. Here there is a great need for new and advanced technologies. I'm frequently visiting customers, speaking about applications based on the engineers' needs and they are always interested in Leine & Linde's products.

The largest companies in South Korea can be found in shipbuilding, automotive, electronics and semiconductor industries. And the production of wind turbines is also an emerging industry," says Lee Sangho. All of these are industries with a need of robust encoders.

"Customers here place high demands on quality, they want quick service and short delivery times, the same values that have made Korean companies successful on the global market," says Lee Sangho. ■



reddot design award
winner 2012

Best product design

LEINE & LINDE has been awarded the Red Dot Design Award 2012 for the design of the new inductive 600 series. The prize has been awarded since 1955 and the competition is one of the world's largest and most prestigious. The 600 series was nominated for its outstanding design in the product category Industry and craft. The new design is part of a larger project that Leine & Linde has conducted in close collaboration with Avalon Innovation with the intention of creating identity and clarity in the range. The encoders in the inductive 600-series are among the first in which the new design has been implemented. ■

Meet Leine & Linde at trade shows across the world

IN JANUARY, Leine & Linde participated at the Elecrama trade fair in Mumbai, India. The trade fair is well attended and the largest in the world for the T&D industry. All the main and largest manufacturers were there. Leine & Linde participated, among other things, to present ADS Online and to speak about the new compact 700 series.

"We enjoyed numerous, interesting meetings with both new and old customers. Many of whom we had previously only spoken to on the phone, and now had the chance to meet face to face. In summary, we are pleased with the trade fair," says Somnath Mukherjee, sales manager at Leine & Linde in New Delhi.



Elecrama trade fair, 2012

Upcoming trade shows in 2012

During the year Leine & Linde will participate in the following trade fairs. Take the chance and arrange a personal meeting.

SPS/IPC/DRIVES

Parma, Italy, May 22–24.

Euro Expo

Ålesund, Norway, September 5–6.

Husum Wind

Husum, Germany, September 18–22.

Euro Expo

Trollhättan, Sweden, October 17–18.

Matelec

Madrid, Spain, October 23–26.

SPS/IPC/DRIVES

Nürnberg, Germany, November 27–29.

Bauma China

Shanghai, China, November 27–30. ■

RIGHT SPEED WITH NEW GATEWAY

CRG Overspeed is a new speed monitor with integrated system for monitoring the function of the encoder.

THE LATEST ADDITION to Leine & Linde's gateway family is CRG Overspeed. It is designed for use in applications where reliable speed feedback is required. One example is a crane where a motor that rotates at a specific speed lifts the load. Here an incremental encoder is used to monitor the speed of the motor and make sure it maintains a safe level.

Leine & Linde's CRG Overspeed is preprogrammed to a specific speed value, which is critical for the application in question. If the machine reaches the speed limit value, the gateway switches a relay and indicates

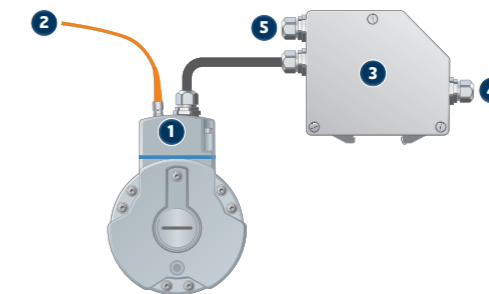
ates that the system must react to stop a potential accident.

Automatic function monitoring

Usually CRG Overspeed is connected to a dual encoder with two separate outputs – one for feedback to the motor's drive system and the other connected to the gateway to monitor whether the speed reaches the critical level.

In safety-critical applications, it is also important to know that the control system itself is reliable. CRG Overspeed therefore features advanced logic to monitor that the encoder's basic function is reliable in all situations. Functionality includes redundant overspeed relays as well as monitoring of signal detection, state transition and encoder diagnostics.

The combination of speed monitor and function control makes CRG Overspeed a unique product for safety-critical applications where a reliable speed is needed. ■



1. Dual encoder with two galvanically insulated outputs
2. Incremental signal for drive system
3. CRG Overspeed
4. Relay output for overspeed or function alarm
5. Power supply

GATEWAYS

Leine & Linde's product range comprises several gateways for use with encoders. A gateway is an electronic box that receives an encoder signal and adds a function before sending it on. This may for example be a PROFIBUS gateway for connection of an absolute position sensor to a field bus system, or an Optolink gateway for optical transfer of signals over long distances.

Better service in Norway

IN NORWAY Leine & Linde's products are in demand primarily within the oil industry and industries for marine applications. We are now providing customers with a higher level of service. No intermediaries, all contact takes place directly with Leine & Linde's experienced and knowledgeable sales representatives at the head office in Strängnäs, Sweden. The aim is to increase access and improve service on the whole Norwegian market. Leine & Linde's representatives will participate at more trade fairs and increase the frequency of customer visits.

The next trade fair in Norway is Euro Expo, September 5-6 in Alesund. For more information and product enquiries, please contact Leine & Linde's head office, telephone +46-(0)152-265 00. ■



Sales leader in Norway, Håkan Karlsson, on Leine & Linde's stand in Kristiansand, earlier this spring. Thanks to everyone who visited us there and in Kongsberg.

DRIVE-CLiQ – INNOVATIVE INTERFACE FOR ENCODERS AND MOTORS

The communication interface DRIVE-CLiQ is Siemens' new Ethernet-based protocol for connection of incremental and absolute encoders. Leine & Linde's encoders are designed for the new environment.

DRIVE-CLiQ is Siemens Sinamics' new open system interface for drive systems that is used to simply connect components such as frequency converters, motors and sensors. Leine & Linde is in the process of adapting its encoders to the new interface, which was developed by Siemens to create a network, specially adapted for drive applications.

Integration with DRIVE-CLiQ is a natural development to future-proof the range.

"With a transfer rate of 100 Mbps and a cycle time of 31.25 µs, DRIVE-CLiQ offers the performance needed for the most demanding applications," says Ulf Thorsander, chief engineer at Leine & Linde.

Automatic configuration

Components with DRIVE-CLiQ have an electronic label, which is used to store component-specific data used during commissioning of the drive system. The frequency converter receives information about the motor and connected sensors and configuration can be performed fully automatically. Alarms and warnings are transferred quickly via DRIVE-CLiQ to

the master control system for assessment.

"Siemens is one of the world's largest manufacturer of drive and automation systems, it is therefore natural that we constantly adapt our encoders for use in their environments," says Ulf Thorsander.

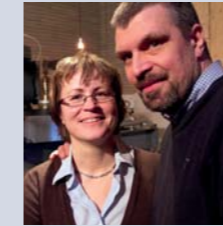
Encoders from Leine & Linde are supplied with specially adapted connectors, with power supply and data in the same connector, making it easy for customers to connect the encoders. ■

Ulf Thorsander, chief engineer at Leine & Linde.



Effective watercourse

At Årängsån in Horndal in southern Dalarna, Inger and Anders spend their time on a different hobby. Together, the couple operate three of their own hydropower plants.



THERE ARE THOSE who are handy and build a veranda or perhaps renovate a bathroom on their own. And

there are those like Inger Gustavsson and Anders Berggren in Horndal, in southern Dalarna. In December, they put their third hydropower plant into operation.

"Once you've started with hydropower you no longer look at water in the same way. I don't even mind when it rains anymore. Besides, these old mills that are suitable as power plants are often located in beautiful

old cultural heritage environments," says Anders Berggren as an explanation to their interest.

"Hydropower is the most long-lived of all industrial production units, if you choose the right components from the outset, you can look forward to a future with a minimum of disruption and maintenance."

Anders Berggren adds that it is the surplus from the first two plants that has funded the third. The couple have not economised on materials, either technical or for the surrounding constructions.

"When building a hydropower plant for yourself, you become slightly choosy. We have not quibbled on either quality, function or feel."

Construction-wise, this means glazed panels, tiled floors, beautiful wrought iron handrails with wood details in oak. Technically, this means a high quality turbine – a full Kaplan, built entirely of stainless steel – a high-efficiency generator and a powerful control system.

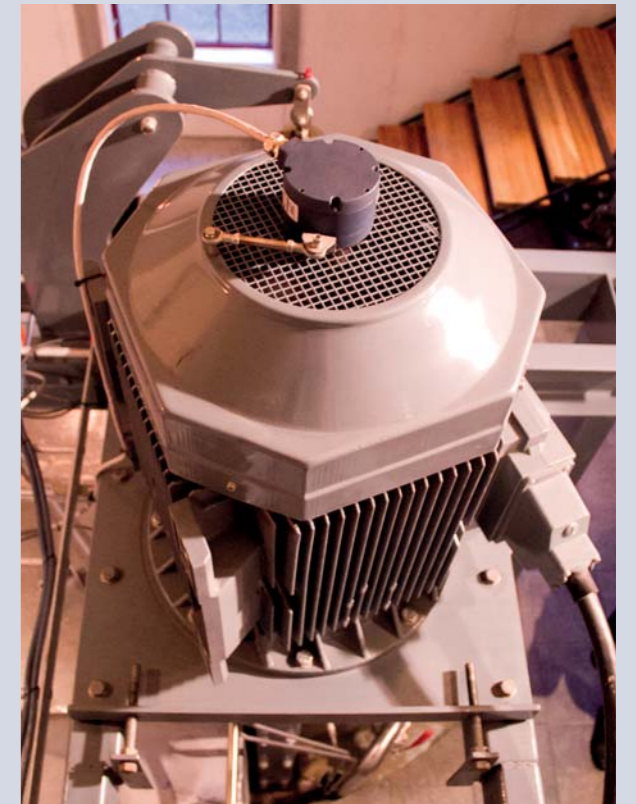
"And of course, to cap it all, an encoder from Leine & Linde."

On top of the generator is indeed an incremental encoder, model 861, from Leine & Linde. Fully operational the power plant generates 1100 kWh per day.

Build mostly everything themselves

Normally Inger Gustavsson works as an economist at Stora Enso and Anders Berggren is workshop manager at Krylbo Elektra. The latest project began in 2006 and they have done virtually everything themselves. The idea was to build a new power plant

Fully operational the power plant generates 1100 kWh per day.



On top of the plant's generator is an incremental encoder from Leine & Linde.

between the two existing ones. In that way it would be possible to use the height of fall between the two old mills by adding a tube, about 100 metres long, from the upper to the lower. The permit process was started and accomplished; taking about one year. Planning, design and construction was also handled under their management.

"Naturally some things you cannot do yourself, such as casting, excavation and blasting work. There we have had the invaluable help of local contractors. But in December 2011 everything was complete and we could start producing." ■



TECHNICAL DATA

Height of fall	7 metres
Flow	1.3 m ³ per second
Installed output	75 kW
Turbine	Weab full Kaplan
Blade wheel diameter	500 mm
Supply tube	100 m
Tube diameter	900 mm

TRAIN WITH FULL CONTROL

© SJ/ Stefan Nilsson



AQ Mekatronik in Bollnäs (Sweden) manufactures master controllers for the SJ 3000, and other modern trains across the world. The controllers are equipped with custom-made absolute encoders from Leine & Linde.

MORE ABOUT AQ MEKATRONIK

AQ Mekatronik manufactures and markets products for electrical, mechanical and automotive industries. The company develops, designs and manufactures equipment for train driver environments.

Background: In 2005 the Aros Quality Group acquired part of ABB Relays and ABB Nordkomponent and formed AQ Mekatronik.

Personnel: Approximately 40 people in Bollnäs and 40 people in Västerås.

Turnover: Around SEK 140 million.

THE PREMIERE of SJ's latest and most modern high-speed train, SJ 3000, took place in February 2012 between Stockholm-Sundsvall. During the year, the train model, which has a top speed of 200 kilometres an hour, will be introduced on several medium-distance routes in the country.

AQ Mekatronik in Bollnäs has made the new high-speed train master controller. The model is called MC 400 and is used to control the train's speed and braking. It is a redundant system with two custom-made absolute encoders from Leine & Linde in each unit which produce a digital output signal pattern. Micro-switches were previously used for the signal pattern.

"Reliability is significantly improved with the current system.

We are very pleased with the encoders as they give an exact on-off function. Something we also heard from the train drivers," says

Håkan Fredholm, sales manager at AQ Mekatronik.

Safety requirements in these environments are high, it is important that the master controllers work without problems or interference. It is estimated that there are currently about 800 absolute encoders in 400 units in operation worldwide.

Mechanics for demanding environments

As sales manager, Håkan Fredholm has the whole world as his workplace. AQ Mekatronik manufactures driver's desks, control cabinets, master controllers and safety pedals for a number of different train models in both Sweden and abroad. Apart from in SJ 3000, master controllers can be found in trams in Gothenburg, Regina trains and high-speed trains in China.

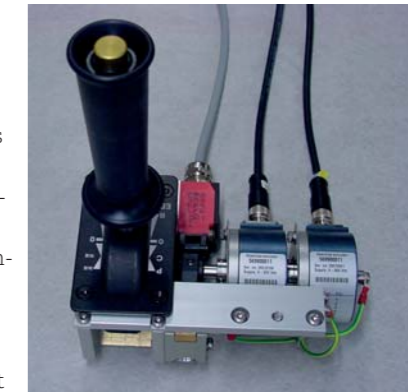
In addition to equipment for train driver environments, AQ Mekatronik also develops and produces products

for companies in automation, electrical, mechanical and automotive industries, such as limit switches for lifts, rotary switches and electrical cabinets. The mechanical products are often used in harsh industrial environments that require extra durability.

Studies are made for each new product to discover where it is most cost-effective to locate production. Small series and prototype work take place in Bollnäs or Västerås. For larg-

"WE ARE VERY PLEASED WITH THE ENCODERS"

er volumes and more manual work, production is located to a factory in Bulgaria.



Model MC 400 provides parallel redundant signals to control speed and braking in several steps. An emergency stop function is also included.

Customised solutions

AQ Mekatronik has a separate design department. The company possesses extensive knowledge of precision engineering and provides advice, ideas and test solutions, both for new production and production changes. Håkan Fredholm says that specialised and customised solutions are common:

"We frequently have longstanding relationships with our customers and development takes place in close cooperation. Many appreciate, thanks to the resources available here in the house, that we can offer a quick process, from drawing board to prototype and testing in production. ■



In production Håkan Fredholm tests a master controller that will soon be ready for delivery.

Leine & Linde meets future challenges by expanding operations in a new building. Building B will safeguard delivery quality at the same time as manufacturing capacity for encoders is raised.

WITH A COMPLETELY NEW production and storage facility, Leine & Linde has future-proofed operations for the next few years. Operations in the new building started shortly before the new year.

“We have significantly increased our capacity to manufacture encoders. We have larger stocks and new opportunities to efficiently handle large volumes of material. This building allows us to keep the small company’s flexibility, while we can manage the large company’s volumes,” says Per Andréason, production manager at Leine & Linde.

Leine & Linde’s head office is located exactly on the edge of Strängnäs’ town centre. Operations

have been run at Olivehällsvägen since 1981. At various times the main building has been extended and changed as the company has expanded. A few years ago when the company management once again looked at the opportunities for expansion they were forced to recognize that the existing site could not be expanded further. Instead, a new building erected in the vicinity was acquired.

Peaceful environment

The property, known as Building B, is located only a few hundred metres from the main building. It still smells new, it has high ceilings, is spacious, quiet and clean. There is peacefulness in the premises that you do not usually associate with an industrial environment.

“This is our entire stock of finished products,” says Per Andréason who points to the end of a conveyor belt where about twenty packaged deliveries are waiting. The packages are ready to be shipped and have recipients in towns such as Lund, Linköping, Uddevalla, Flensburg in

Germany and Graz in Austria. As all production is order-driven, there are no stocks of finished products. The principle is, no order, no production.

The new building represented the start of a process where all production flows in the operations were reviewed.

“We have been able to rectify and improve everything we were not happy with. The company’s unofficial

There is now more space and deliveries in and out are far more practical with the new loading bays.

motto is that it should be easy to do it right,” says Per Andréason.

In order to attain the best result, the personnel who work on the production lines have been involved in the development process. In this way, the processes have been optimised at the same time as it has been possible to create a pleasant working environment. The new production facilities have been recognised in the industry and, from time to time, the company receives curious visitors.

Plenty of storage space

The move meant that the department’s shipping, manufacturing of cable assemblies, research and development and the test room left the main building. Space has also been created for a new and large main stores. Yet the premises are far from fully utilised yet.



ROOM FOR EXPANSION

The new premises have been designed to cope with continued growth.

who took the wrong goods. The problem is now a thing of the past.”

Every consideration has been given to the environment during the construction of Building B. A geothermal heat pump provides heating, all transportation between buildings takes place with electric vehicles and the premises are equipped with smart lighting, which automatically ensures that the lights only come on when there are people in the room.

“WE ARE WELL EQUIPPED FOR THE FUTURE”

Successful move

“The move was meticulously planned,” says Per Andréason. Every-



Per Andréason, production manager, and Chatarina Gustafsson, fitter, find the new premises pleasant.

thing so that all surrounding operations were not affected.

“It took 14 days, all without production downtime or delivery delays. We held daily meetings to make sure everything went according to plan. It was a fantastic collaboration between our property manager, Kjell Löfgren, and the production engineering department. Everyone involved did an incredible job. ■

BUILDING B

The new building has resulted in Leine & Linde increasing its production capacity by 40 per cent. All to ensure continued growth.

Area: 2000 square metres, of which approximately 200 square metres is office space.

Personnel: Approximately 30 people.

Functions: Shipping, manufacturing of cable assemblies, test chamber, main stores, loading bays for incoming and outgoing deliveries.



AUTOMATIC DIAGNOSTICS AND TROUBLESHOOTING WITH ADS ONLINE

With ADS Online the function and performance of the encoder are read in real time. This is done quickly and directly on your computer monitor.

ADS ONLINE is Leine & Linde's diagnostic system for encoders. The product had its world premiere at the SPS Drives trade fair in Nuremberg last November. During the winter, Joel Zachrisson has been responsible for the introduction of the product. He is product manager for the Motion Control market segment, which includes electric motors and generators where encoders are used. ADS Online is tailored for these applications, especially for use in heavy industry such as paper mills, steel mills and wind power. Encoders are used here for speed control on advanced machinery where high demands are made on reliability.

"The ADS Online concept has been very well received by our customers. We have spoken to many people who come into daily contact with our encoders, such as end users at paper mills and steel mills. They realise the value of a diagnostic system where it is easy to determine the status of an encoder," says Joel Zachrisson.

Increased user-friendliness

ADS Online is a further development of Leine & Linde's diagnostic system ADS. Many of the end users are therefore used to the concept of self-diagnosing encoders.

"Over the years our existing ADS users have put forward many good ideas and feature requests which we needed to develop. With the new ADS Online many of these ideas have become reality and it is therefore great fun to go out and show what the new

product can do," says Joel Zachrisson.

One of the main objectives of the development of ADS Online has been increased user-friendliness – information must be easy to access and easy to interpret.

"If there is a problem in the machine where the encoder is installed it may be difficult to troubleshoot. A typical encoder is like a black box, it is impossible to know whether the fault has occurred inside the encoder or somewhere else in the system, e.g. with a signal transfer. We see this not least in our complaints department, most encoders that are returned to us are fully functioning.

Using ADS Online you can look into the black box and see whether it is the encoder that is the problem or not.

"A green LED indicates that it is functioning correctly and you should troubleshoot elsewhere. However, if the LED flashes it is an indication that the encoder is malfunctioning.

LED shows the status level

ADS Online groups each non conformity in one of four status levels depending on its severity. Just by looking at the physical LED it is possible to see which of

the four status levels that apply – recommended measures are also given for each level, which indicate whether the encoder needs to be replaced or not. The associated PC software is connected for a more detailed analysis of the fault.

"The PC software is perhaps the clearest example of increased user-friendliness. The software allows you to read live data regarding the encoder's surrounding environment, such as temperature and vibration. In addition, each encoder has an integrated database containing operating data shown on detailed graphs. It provides an opportunity to analyse the operating environment that the encoder has been subjected to during its lifetime, which is of great value if you want to understand the machine where the encoder is fitted.



Joel Zachrisson, product manager, Motion Control.



Read the encoder's status directly while the machine is running. Multiple channels for information provide flexibility for each application.

VISUALLY

Status indication via LED.

ELECTRICALLY

Status indication via signal cable.

ONLINE

Detailed data about the encoder status for analysis via PC software.



ADS Online will be presented in detail at the international Wind Energy trade fair in Husum, Germany, later this autumn. Here you will be able to meet and put your questions directly to Joel Zachrisson, Leine & Linde.

>> Husum Wind Energy, September 18–22, 2012. Stand: 3G11.

Easy reading online

The idea of ADS Online is of course that the connection really is just online, that is, with the diagnostics connected to a network. Consequently, all communication between the encoder and software takes place via Ethernet. However, the software can also be used as a service tool for connecting point-to-point to the encoder.

"It's important that it is straightforward to connect the PC software when you need detailed data. We have solved this by an extra connector dedicated for PC communications. Using this, it is easy to connect the software directly while the machine is operational. ADS Online represents an immense technological leap compared with before, but the

key point is that the advanced diagnostics have become more accessible for the user," says Joel Zachrisson. ■

PRODUCT FINDER



Download the data sheet quickly and easily

This is how to access your product sheets in just a few clicks.

AT LEINE & LINDE'S WEBSITE, www.leinelinde.com, you can easily search for product and data sheets. If you have access to an article number you can search directly using this. Otherwise you can find what you are looking for by choosing from a number of technical criteria.

1. Start by selecting the function you want the encoder to have, incremental or absolute. Now select the type of shaft, size and model. When these first four selections have been made, you will see a result comprising articles that have similar characteristics.
2. You filter the results by selecting additional specifications that match the encoder you are looking for.
3. Click on the model in the table that corresponds to the product you are looking for to receive more information, a data sheet or other related material.

If you cannot find the combination you are looking for, please contact Leine & Linde. It may well be the case that the product is available to order, but is not available in the product guide. ■

Project manager with special assignments

Consultant assignment to employment. Today, Anders Backström is the leader of a team responsible for fast customer projects and special solutions.



ANDERS BACKSTRÖM is team leader of the assignment department in Research & Development. His role includes taking care of short assignments and customer-oriented projects. This can involve an order for a custom-made shaft to a batch of encoders or a customer that needs a product in a different material. It is then Anders Backström and his team who ensure the work gets done.

"We are responsible for new drawings being made, that the materials needed are ordered, and that the product can be put into production. We follow-up and ensure that the product has the qualities desired by the customer.

Anders Backström is a graduate engineer, educated at Linköping University and has worked at Leine & Linde for six years. He started as a consultant, but the assignment resulted in employment after just two months. He sits in an open and light office, which he shares with five others. On the

desk are cables and tools from the recently completed projects.

Fast pace

The team he leads often work against the clock.

As team leader it's a question of prioritising and ensuring that the right things are done at the right time. For a new mechanical product we usually promise the customer a test device within 8-10 weeks. And we usually have four or five such projects running simultaneously.

How should it be at work for you to be happy?

"Good colleagues, a good atmosphere and challenging tasks. I like to be busy, balancing projects, with a great deal going on. When there is too little to do I become restless."

What is the best thing about your job?

"Being involved and producing solutions to problems, when I feel I contribute to making a product better. We have a terrific atmosphere here, everyone can talk to each other and everyone helps out, there are never any problems in getting feedback on what you're doing." ■

NAME: Anders Backström

POSITION: Team leader of the assignment department in Research & Development

AGE: 32

LIVES: Strängnäs

MISCELLANEOUS: In his spare time Anders Backström enjoys outdoor life. He has a great interest in put and take fishing.

"I like both spinning and fly fishing, even if fly fishing generally results in swearing and not much fish.