

● Technology

Efficient operation

Strategic and tactical decision-making support. [Page 6](#)

■ Knowledge

Logistics by hand-held computers

Investments in production logistics pay for themselves in less than 1½ years. [Page 7](#)

▲ Research and Innovation

Control System for Steelmaking

A research project aimed at reducing energy consumption and improving product quality. [Page 8](#)

KEEPING TABS ON UTILIZATION IMPROVES FLEXIBILITY AT ICA

Automatically collected data becomes valuable knowledge, every day. / [page 4](#)

PREVAS LAUNCHES NEW WEBSITE

www.prevas.com



Prevas' mission is to improve efficiency in our customers' production processes and be a step ahead in making new technology available for that purpose.

BETTER CONTROL IMPROVES GROWTH

EDITORIAL

THE HEADING IMPLIES THAT CUSTOMERS THESE DAYS are more in tune with their utilization of warehouses, production facilities and logistical arrangements, that they manage their deliveries with better precision, have better bases for their decisions and are better able to identify where the remaining problems lie.

All this indicates that systems for efficiency measurements, e.g. OEE dittos, provide management with tools that not only offer better insight but also contribute to savings in valuable resources such as money, people, raw materials and energy. This results in lean production with high productivity and high product quality.

This kind of efficiency is getting ever more important as businesses face growing international competition and strong pressure to achieve more from less. Consequently, to prosper, one needs to get more done quicker and at lower costs. That is the way to become a winner in one's field. Now, efficient industrial measuring and process analysis tools go a long way toward that goal.

The crisis mentality of the surrounding world is partially reflected in the fact that investments in so-called MES ("Manufacturing Execution Systems", can be viewed as overarching manufacturing control systems) are rising. Experience also tells us that MES usually pay for themselves in a surprisingly short time in the form of higher productivity, improved traceability, less rejects, less warehousing and higher quality. With better control over raw materials consumption, purchasing and warehousing can be improved so that neither shortages nor excess stocks occur. Similarly, better control over machine utilization and less manual involvement in production data acquisition lead to fewer error sources in the production chain. Experience from projects carried out with Prevas' involvement in different industries indicate typical improvements at 15 - 20 % in productivity, at 30 - 50 % in reduced need for warehousing and at 30 - 50 % in reduced throughput times.

But industrial IT is not all about technology. The important thing is that both the user and the supplier view the introduction of MES as a journey in which both parties take part for incremental development. Improvements in work processes can be every bit as important as new technology. This is the way Prevas operates, alongside their customers, usually building on existing solutions, which often are retained at a basic level. ✱



CHRISTER RAMEBÄCK

Senior Vice President
Industrial Systems

New Agreement of Cooperation with ABB

Prevas has entered into an agreement with ABB for the purpose of **marketing and selling the FOCS optimization and control system for furnaces.**

FOCS, an acronym for Furnace Optimization Control System, is currently used for advanced control of reheating furnaces. In this area, both ABB and Prevas have a long and proud history, having delivered many such systems to Nordic and international customers.

The agreement spans three years and offers the option of extension.

EXPANSION IN NORWAY

Prevas has opened its second office in Norway, this time in Kongsberg. The town has become the hub of one of Norway's largest high-tech areas and home to many international companies. Prevas' services in embedded systems and industrial IT fit well into the industrial profile of the area.

Expansion in Sweden

Prevas has opened offices in Sandviken and Kalmar, and has also expanded its presence in Linköping, offering services also in the industrial IT field. The new offices represent important strategic components in Prevas' efforts to provide first-class technological competence from around the corner to the company's key customers.

Innovation for Growth

With leading expertise in embedded systems and industrial IT, Prevas contributes by providing innovative solutions that create growth. Prevas is hired by customers wanting to develop smart products with IT contents and by customers wanting to streamline and automate their operations. The company has offices in Sweden, Denmark, Norway, United Arab Emirates and India.

www.prevas.com



EXCLUSIVE CONTRACT WITH SWEREA MEFOS

Alongside ABB, Prevas has entered into an agreement with Swerea MEFOS, giving the former two an exclusive right for ten years to use the latter's calculation engine FOCS-RF in worldwide deliveries of furnace optimization systems.

APPROXIMATELY 90 PER CENT OF ALL the steel currently made in Sweden is treated by furnaces controlled by FOCS-RF. ABB and Prevas have entered into an agreement cooperation for the purpose of jointly marketing and selling the FOCS-RF furnace optimization system.

– The deal with Swerea MEFOS is an important step in our efforts to supply furnace optimization systems internationally. Energy conservation and productivity-improving measures in the steel and metals industries will develop strongly in the years ahead, says Christer Ramebäck, Business Area Manager of Industrial Systems at Prevas.

**ENERGY CONSERVATION
AND PRODUCTIVITY-
IMPROVING MEASURES
IN THE STEEL AND ME-
TALS INDUSTRIES WILL
DEVELOP STRONGLY IN
THE YEARS AHEAD.**

FOCS, an acronym for Furnace Optimization Control System, is currently used for advanced control of reheating furnaces. The product is helping the steel industry to reduce energy consumption by 5 to 10 per cent in the furnaces where it is installed. In addition to reducing energy consumption, the system also contributes to higher productivity through intelligent pacing of the furnaces and other components of the processing chains. Productivity improvements at the level of 28 per cent have been recorded. *

BARILLA WASA MODERNIZES PRODUCTION

BARILLA WASA GETS HELP FROM PREVAS. Prevas' job is to supply a complete solution to overarching control of the company's crispbread-making line. Project management and software development are also included.

– The ability of Prevas to deliver solutions at high quality and in time, in combination with their use of well-documented routines for project management and support, made us choose Prevas as partner, says Brian Folkesson at Barilla Wasa.



As early as in the first quarter, ICA was able to carry out improvements based on information from the system.

VALUABLE KNOWLEDGE FOR ICA

ICA assigned the task of supplying a new system for efficiency measuring.

BEING ONE OF THE LARGEST DISTRIBUTORS of food and other consumer goods in northern Europe, efficiency of logistics is of paramount importance to ICA. An important means to this end is to ensure that the distribution facilities are used as efficiently as possible. Consequently, ICA decided to introduce efficiency measuring (OEE) at two of its automated facilities. In preparation for procurement, a preliminary internal study was carried out

over one year's time, which resulted in Prevas' being contracted to supply an application based on software from Invensys.

Measurements for better logistics The project involved one distribution center in Helsingborg and another in Västerås and was being run up to the summer of 2011. The Helsingborg facility covers 63,000 m² and serves 700 shops daily. The Västerås esta-

blishment handles packaged meat to most of Sweden's ICA stores.

Prevas' delivery stretched over three installments. The first included hook-up to approximately 100 OEE measuring points in the Helsingborg plant. After exhaustive tests, Prevas was chosen to take the project further by connecting up another 250 OEE measuring points in Helsingborg and another 80 in Västerås. At the same time, a new SCADA system was installed in Västerås, which enabled the operators to both control and analyze their facility.

– ICA's varied product flows make it necessary to output relevant and reliable information quickly, information capable of explaining why the facility



is not utilized to capacity in different situation, says Måns Forsberg of Prevas.

CLEAR REPORTS

Currently, the system manages approximately 50,000 updates a day. The operations managers of ICA have much use for the crisp reports and the simple interface in their efforts to involve all staff members in their endeavors for continual improvements. – At long last, I am able to show operations management, easily and understandably, how we could improve utilization of the warehouse, says Desmond Currivan, technical manager at the Helsingborg establishment. As another step in the direction of higher efficiency, ICA has reviewed their machinery maintenance. Here too, the new system is able to assist with better bases for decisions, partly by indicating the real reasons for downtime and partly by reporting real uptimes (as opposed to the estimated ones they worked with previously).

FACTS-BASED IMPROVEMENTS

An issue, which ICA wanted answered by means of actual measurements, was whether or not there is unutilized capacity in the various departments.

By means of the new data acquisition system, management was soon able to note that there indeed was. This new tool now gives ICA better opportunities to choose among different alternatives, e.g. to increase production, shorten working time or move maintenance measures to regular working hours. Better information makes ICA better equipped to face the future, regardless of the directions they choose.

– The most time-consuming part was the preliminary study. We had many discussions about non-functional requirements, e.g. safety. These discussions took a lot of time but it was still good that we tackled them early. The easiest part was probably to identify which variables to measure. In that area, we got a lot of help from Prevas who are knowledgeable in that area, says Fredrik Lessig, development manager at ICA, Helsingborg.

– A project of this nature spawns great involvement in us as supplier. One is easily awed by the vast amount of raw data which is turned into useful knowledge at ICA, every day, concludes Måns Forsberg. ✱

MINI-DICTIONARY

OEE: Overall Equipment Effectiveness, a measure of the extent to which an entire facility measures up to its intended purpose.

SCADA: Supervisory Control and Data Acquisition, a kind of system for supervision and control of industrial processes.

TAK: The Swedish equivalent of OEE, where 'T' represents 'Tillgänglighet' (Availability), 'A' 'Anläggningseffektivitet' (Facility Effectiveness) and 'K' 'Kvalitetsutbyte' (Quality Yield).

FACTS ON THE ICA NETWORK

ICA consists of approximately 2,150 independent but cooperating shopkeepers in Sweden, Norway, Estonia, Latvia and Lithuania. The ICA group of companies includes ICA Sweden, ICA Norway, Rimi Baltic, ICA Properties, ICA Bank, and the pharmacy chain Cura.



PREVA'S MIKON SYSTEM GIVES GDF SUEZ FULL CONTROL OVER ITS PRODUCTION OPERATIONS

GDF SUEZ E&P UK LTD USED TO HAVE A PROPRIETARY SYSTEM WITH **50 INTEGRATED SPREADSHEETS** IN ORDER TO KEEP TRACK OF PRODUCTION OPERATIONS. AFTER **GDF SUEZ SWITCHED TO PREVAS'S MIKON SYSTEM**, OPERATIONS BECAME **MORE EFFICIENT** AND **SEVERAL FAULTS WERE DETECTED** IN THE FORMER SYSTEM.

TECHNOLOGY

Alan Bibb,
Production Systems
Engineer, manages

the systems that enable the company to function in the British Exploration & Production part of GDF SUEZ. Alan described the change to Mikon for Tech Trends:

“We considered the former system to be a major business risk. At the same time, we were planning to grow the company and needed something better. We needed a system for our internal procedures and to report to our business partners and the regulatory bodies that supervise our industry,” says Alan Bibb.

“The Mikon system we purchased from Prevas is part of this big puzzle. We intend to interconnect our financial data, which is mainly in our SAP system, with our production data, which is located primarily in our Mikon system from Prevas.”

*Alan Bibb, Production System Engineer,
GDF Suez*

GDF SUEZ is headquartered in Paris. The head office requests reports

once a week and a more comprehensive report once a month. The former system, in which spreadsheets were manually updated, was both difficult to use and hard to develop further for the company's British operations.

“We purchased the Mikon system from Prevas around July-August 2010. The former system and the new system were run in parallel during November and for a short while in December. Among other objectives, we wanted to see how the new system would manage the shift from one month to another. Prevas paid close attention to our needs. It was the first time that we were a Prevas customer” says Alan Bibb.



THE INDUSTRIAL COMPANY TRANTER HAD PROBLEMS KEEPING THEIR WAREHOUSE, MATERIALS AND DELIVERIES UNDER CONTROL. AFTER HAVING INSTALLED A PREVAS SYSTEM, EQUIPPED WITH **HAND-HELD COMPUTERS**, THE PROBLEMS HAVE SUBSIDED CONSIDERABLY.



NEW SYSTEM GIVES TRANTER A BOOST

Why did you choose Prevas?

- "We presented quite a few technical specifications that Prevas could meet. Our main requirement was that the system would have to be built on a recognized database. The system also had to be flexible and capable of maintaining and making the changes we wanted. A third requirement was that the system should be possible to expand and configure. We have already complemented the system with several other features. However, Prevas helped us with the major system changes that affected security", says Alan Bibb.

What have you achieved?

- "Everything we wanted to accomplish, plus more. Now we have better visibility and improved business processes. Decisions are also better grounded and we can make them faster. Processing all the data we received used to take so long that we didn't have enough time to actually act on the information to make the type of decisions that would add value to our business."

What is the next step?

- "We are going to consolidate the success we have already achieved and prepare the system for expanding the business as planned. We are going to manage more of the infrastructure for oil, gas and pipelines ourselves. This will place heavy demands on our internal processes and our procedures for reporting to the authorities that regulate our industry. In the future, we will need to report more formally.

"That's why we will integrate other parts of our operations into the system developed by Prevas. Security, maintenance and certain financial aspects will be interconnected. The Mikon system we purchased from Prevas is part of this big puzzle. We are planning to connect our financial data, which is mainly in our SAP system, with our production data, which is located primarily in our Mikon system from Prevas." *

KNOWLEDGE

TRANTER IN VÄNERSBORG MAKES PLATE HEAT EXCHANGERS FOR INDUSTRY AND LARGE SHIPS. Previously, the company had too many problems with deliveries going wrong, one way

or the other. In addition to customer dissatisfaction, these problems also led to delays and to substantial additional costs. The lack of control also manifested itself as Tranter staff's having to spend time on looking for pallets and materials that were not where they should have been. Recently, an internal audit showed that the staff used time corresponding to US\$ 186,000 a year on looking around for things. But those problems are now things of the past.

- A big advantage of the new system is that it has enabled us to reduce our materials and product storage requirements. Previously, our entire factory was little more than a big warehouse! So, looking for stuff was a big part of our job, says Claes-Göran Yngve, Tranter's Supply-chain Manager, a title appropriately suggesting that he is not only concerned with the movements of materials from stores through the factory to the outloading platforms, but also with purchasing and delivery management. The latter additions to his job description have arisen as a consequence of the new technology employed.

"We haven't stopped looking for stuff entirely, yet, but things are improving steadily and the time we save makes us project that we will get our money back from our investment in Prevas' system in 1,4 years. So, the decision to invest was easy for top management to make." The new system is based on Tranter's own database system, which, in other words, is retained as a basic system component. The Prevas system features hand-held computers with barcode readers, which all truck drivers and order pickers are equipped with. These days, Tranter has a proper overview of which pallets are loaded onto which trucks, what they contain, when they were loaded and where they are destined.

- We have also got a better overview of our stores balances and managed to reduce errors in those figures, adds Claes-Göran.

"The system depends heavily on the staff members' really scanning those barcodes, which initially provoked growls of protest. Another initial problem was associated with our administrative system, but Prevas solved that one for us. They really have able-minded support and they suggested a number of improvements to our system which we have also implemented." *

FURNACE CONTROL AND OVERARCHING PROCESS ANALYSIS

Over a period of four and a half years, a research project has been run under the auspices of Jernkontoret (approx. Association of Iron & Steel Makers of Sweden) with the objective of improving product quality and reducing energy consumption in the steel industry along the heating, rolling and annealing processing chain.

RESEARCH

The overall project was split up into five subprojects, commissioned to develop improved solutions to the control of heating and annealing furnaces and to the identification of process deviations along the entire processing chain. These subprojects have been carried out at four different facilities at the same number of places.



MAGNUS EVESTEDT, specialist in the optimization of reheating furnaces.

Specialist Magnus Evestedt has been Prevas' man in the project.

– I have participated in all parts of the project except the one where Swerea MEFOS worked to improve STEELTEMP@2D. Among other things, they have developed software that calculates the composition of flue gases from the furnaces, which facilitates more accurate temperature calculations, says Evestedt and continues:

“In subproject 2, charged with the task of improving the control of reheating furnaces, we achieved a significant upgrade of FOCS-RE. The number of calculation points was expanded from five, aligned along the centerline of the steel slab, to 81, distributed around the entire cross section of the slab. As a result, energy savings in the 3-9 % range were noted.”

Subproject 3 was commissioned to improve the control of soaking pits, which traditionally have been controlled by so-called ‘recipes’. In these furnaces the steel ingots are standing upright, not lying down, which makes the conditions for in-metal temperature control significantly different.

– We developed a variant of FOCS, called FOCS-PF, which has been installed at Outokumpu in Degerfors. Tests so far indicate energy savings in the 7 % range, says Evestedt.

In subproject four, the goal was to develop a multivariate control system for annealing furnaces. The system was to be based on a combination of physical and statistical models. The goal was to reduce the number of reheating cycles and to reduce energy consumption by 5 %.

This subproject resulted in a preliminary study and a subsequent market study. Based on these, Outokumpu Stainless in Avesta and Prevas are now proceeding to upgrade the existing control system to improve functionality and user friendliness.

The fifth and last subproject was about overarching process analysis, i.e., the extent to which process parameters interact along the processing chain and affect properties of the final product.

“We wanted to classify plates as normal and substandard by means of principal component analysis. The idea was to be able to trace the causes e.g. of cracks in plates, back to their causes upstream of the processing chain. However, it proved to be difficult to cover the entire chain, which is why the project was cut down to the study of a segment of the chain only. A system, TESS (Temperature Estimation and Control System) was developed to detect failed temperature sensors. Better temperature measurements lead to better product quality and better energy economy; estimates indicate an energy savings potential of 4 GWh/year.” The system is being installed at SSAB (Swedish Steel) and at Outokumpu in both Avesta and Degerfors.

– The project has yielded useful results and given Prevas valuable contacts in the steel industry, an important one to us, concludes Evestedt. ✨

PROJECT FACTS

Time Period: Oct 1, 2006 to June 30, 2011.

Researchers: Swerea MEFOS: Bo Ledén & Patrik Sidestam; Prevas: Per-Olof Norberg & Magnus Evestedt.

Participants: Outokumpu Stainless, SSAB Strip Products & Ovako Steel.

Part of: Energy Research Program, Jernkontoret's Technology Area No. 51.

Financed by: STEM (The Energy Authority of Sweden) and participating companies.