

TEKNOSAVO

WOODCHIP

Teknosavo's customer magazine

CASE METSÄ FIBRE / JOUTSENO MILL

OPTIMIZED DEBARKING LEADS TO HIGHER TURNOUT AND QUALITY

One of the world's most efficient pulp production mill uses modern technology in its wood debarking process. Teknosavo's smart devices create advantages in many aspects. Moreover, debarking usability rate is over 90%, while the pulp reaches the next level in cleanliness.

Pulp mill Metsä Board is located in Joutseno, 20 km north of Lappeenranta in southeast Finland. With annual capacity of 670 000 tonnes it is world's largest single-line softwood pulp mill. Joutseno is the leader in efficiency and environmental management, as well as a pioneer in renewable energy utilization. During normal operation, with new bark gasification plant, Joutseno is completely carbon dioxide neutral. Moreover, the energy self-sufficiency rate is 133%.

ADVANCED TECHNOLOGY BEHIND THE SUCCESS

The Joutseno mill has a long history. Pulp has been produced on the banks of Lake Saimaa for more than a hundred years. The mill was completely modernised at the turn of the 21st century when the company started the business in location. For instance the double-line debarking and dry debarking units were set at place. Further investments were conducted in 2009 and 2011 when the wood debarking optimization systems of the two lines were modernised with Teknosavo's smart devices. "The short fibre hardwood pulp demand for quality has increased. All pulp needs to be free from bark because otherwise it can be seen in end product and client from paper side will be dissatisfied with the result", says Master of wood processing department, Harri Lautala. To maintain high quality, we have invested heavily in improving the efficiency of our mill. Long-term life cycle planning seeks optimal application of technologies, processes and operating policies.

JOUTSAMO MILL IS DEBARKING UNDER SMART CONTROL

"With Teknosavo's real time measurement devices, the wood debarking process can be monitored and controlled precisely to produce the highest quality end product", Mr Lautala tells. The Woodsmart™ is an optimizing system which calculates the best control variables for debarking and maintains the wood flow stable. It provides on-line measures on different process parameters from debarking to bark content of logs to chip quality. According to Harri Lautala, this is an essential and precise device; "It definitely makes a big difference compared if we would change parameters manually, as we used to do before. With WoodSmart™, the process remains

efficient and we are able to maintain desired optimum standards."

OPTIMIZED DEBARKING PROCESS BRINGS SAVINGS AND QUALITY

There are many advantages by using Teknosavo's smart devices because each of them has a different purpose even if they targeting to the same goals. "For example the BarkSmart™ device continuously measures the percentage of bark in relation to the wood surface on logs", Mr Lautala tells. The system provides real-time analyses of the measurement data and sends the cleanliness data to the control room for operators. The data is used in debarking control so that the logs will be debarked to the desired optimum standard of cleanliness. In other words, the system enables automatic control of debarking. "The BarkSmart™ system brings extra resource and homogenous stability to the wood processing", Mr Lautala adds. "We also have the Soundsmart™ which secures safe processing as detects foreign particles such as stones, metal pieces and ice lumps in purchased chips. With this device, we can reduce machine injuries in chip handling" Mr Lautala continues.

Significant savings can be acquired even with small reductions in use of chemicals and wood loss. The Profismart™ measures the share of wood in relation to bark on the bark conveyor. The system provides real-time analyses of the measurement data for operators. This information is used to control debarking to minimize unnecessary wood loss. Besides enhanced profitability, there has been a side impact on usability. "Our WoodSmart system™ usability rate is over 90% in both processing lines. The rest percentages include woods with challenging bark, which are manually processed. An automatic system is easy to use, it serves as a quality control and it definitely enhances the efficiency of the process", Mr Lautala describes.

TEKNOSAVO IS A TRUSTWORTHY BUSINESS PARTNER

"We at Joutseno mills have been very pleased with our business partner Teknosavo and company's smart devices.



Moreover, all devices work properly and as promised. Therefore return of investment has been successful; by decreasing wood loss we have achieved great savings.

Co-operation with Teknosavo could be described as deep business companionship. Teknosavo provides us agreement-based service for the devices, which makes the device maintenance easy for us. We also communicate openly in both ways about the operating systems and help each other to develop better solutions. On going collaborative product development is also an advantage for us. Based on our experience, I warmly recommend that every pulp mill should consider investing for Teknosavo's optimizing systems", Mr Lautala concludes.

ABOUT METSÄ FIBRE

Metsä Fibre is a world-leading producer of softwood pulp for high-quality paper, board and tissue producers in Europe and Far East. Metsä Fibre is part of Metsä Group. The company is owned by Metsäliitto Co-operative, Metsä Board and the Japanese trading house Itochu Corporation.

The company manufactures market pulp at four mills in Finland with mill capacity reaching 2,3 million tonnes annually. Metsä Fibre has earned their status as one of the most efficient pulp manufacturers in the world through continuously investing in innovative technologies, operating policies and in capable people.

JOUTSENO MILL KEY FACTS

- Capacity: 690 000 t/a of ECF bleached softwood pulp
- Grade specialization: Specializes in manufacturing pulp for wood-fiber printing papers
- Share of exports: 70%
- Personnel: 133
- Wood consumption: 3,5 million m³ annually
- Energy self-sufficiency: 175 % electricity, PEFC: approx. 72%

TRUSTED PARTNER CREATES RELIABLE SOLUTIONS

PROCESS FROM INQUIRY TO ORDER WITH TEKNOSAVO

Teknosavo is providing a lot more than smart devices. "Actually we offer our customers extensive services in automation, mechanical, electrical and software engineering, as well as specialist wood handling services", says Teknosavo's CEO Hannu Hämäläinen. Business partnership begins from inquiry of a client. Mr Hämäläinen describes that their process is quite simple; after the first contact, most of the clients make an independent visit to other pulp mill, which has our process optimizing systems already in use. By visiting an actual mill, all devices can be seen in operation, besides it is possible to talk about user experience and customer satisfaction while observing.

After becoming acquainted with Teknosavo's philosophy, our engineers are invited to make a pre-study in client's operational environment in order to estimate how our solutions

could improve their processes. This pre-study is conducted thorough assessment of needs and technical specifications in close co-operation with the customer. "As a final result we can calculate the annual saving to a client, based on increases in capacity as well as savings in raw materials. An accurate estimate of savings and costs help clients to decide whether they wish to place an order for our systems", says Mr Hämäläinen.

DELIVERY AND INSTALLATION ARE PART OF TEKNOSAVO SERVICES

Next step is the order and delivery process, which takes approximately four to six months. "We co-operate closely with the mill to choose the best solutions and if needed, customize the products to fit in perfectly. We are committed to realize all projects to full extent. Our services range from system testing, customer training and installation supervision to inauguration and start-up", tells Mr Hämäläinen.

Our consulting services provide our clients with know-how gathered during many years of experience. Teknosavo's consultancy focuses on the critical issues and opportunities for improvement. We offer high-level resources and advice to improve our clients' operations and level of quality. Our aim is to be a reliable and long-term business partner to our clients.

"It is all about finding right parameters to the process; it is our work to help the client to succeed. In my opinion, we do not sell just technical smart devices but we offer tools to support customer in their processes and gain operative incomes. By combining several fields of engineering in one source, we deliver our globally operating customers the complete solution and consultation for their needs in wood processing optimization", Mr Hämäläinen concludes.

BUSINESS PARTNER FOR THE DEVICE'S LIFETIME AND EVEN BEYOND

As described above, our range of services cover the whole project lifecycle from start to finish, independent of system and main equipment suppliers. To ensure long lifecycle of our solutions, we are prepared to serve our customers in their needs also after start-up. We provide system maintenance and support services such as software update, device maintenance and system calibration. In other words, business

ENCE NAVIA IS EUROPE'S LEADER IN EUCALYPTUS PROCESSING

"One of the leaders in the field is investing strongly in sustainability. Forestry, production and power generation activities are all integrated in criteria of economic, social and environmental sustainability. With simple actions, such as saving raw material and natural resources, we create business with positive side effects."



Pontevedra mill. Image: Ence

Ence, Energía y Celulosa, is the leading European producer of eucalyptus pulp at its mills in Navia (Asturias) and Pontevedra in Spain. Its pulp production capacity stands at over 930 000 tonnes annually and pulp production sales amounted to 1,12 million tonnes in year 2014. In addition, the company held the second place in terms of market share in producing eucalyptus tree pulp. Currently the trend appears to continue positive. Ence exports over 85% of its pulp production to Europe, the main customer being Germany, which buys 23% of the pulp. The company is listed in Madrid stock exchange.

EFFICIENT AND EFFECTIVE

Furthermore, Ence is not only producing pulp but it is also the most important Spanish company in the production of renewable energy using forest biomass. At the same Ence is the leader in Spain for the comprehensive and responsible management of forest areas and resources. In short, the

company makes of sustainability the backbone of its business. Currently, Ence has over 1 400 employees and generates approximately 11 000 jobs around Spain, many of them related to forest management.

SMART DEVICES WORKING UNDER THE SPANISH SUN

Automatized system enables significant savings in energy and raw material costs yet with high efficiency, which supports the company policy more than well. Therefore Navia mill pulp production process has lately been optimized with Teknosavo's smart devices. Along with the WoodSmart™, there have been installed four different on-line measurement systems (FillSmart™, BarkSmart™, LogSmart™, ProfiSmart™) and one volume measurement system, the FeedSmart™. Scanners provide real time measurement information and the WoodSmart™ optimization system makes control decisions based on this information.

In other words, the whole wood embarking process is automatized from feeding to chipping.

TEKNOSAVO'S CUSTOMIZED SOLUTIONS AND CO-OPERATION

When the company decided to invest to the smart devices, there was one important thing to be taken into account before delivery - sun. In Spain, the sunlight and high temperatures produce challenging circumstances. Therefore Teknosavo needed to plan and build special sun shields in order to protect the devices, which are working under the sun. Measurement has to be accurate, and thus it is better if sun does not distract and warm up the devices all day long.

Teknosavo devices are durable and long lasting investment but accurate sensors could be distracted due to rough conditions. Therefore all factors are taken into account when consulting and developing solutions to clients. Based on the

UPM Kymmene invested heavily in the expansion of Kymi pulp mill

partnership with us diminishes client's concerns, gives our clients stability and continuance in their processes.

Furthermore, besides new product installations and full maintenance service, we also provide consulting in modernization according to customer's needs. This can result for example gradual rebuild and process upgrades. Our service is to advice on the profitability of the project, evaluation of production process design and optimization options for high quality end-results. As a company we have a lot of comprehensive know-how and it can realize even the most challenging modernization projects.

Teknosavo is currently a fast growing company. "We are focusing in expanding next in Latin America where there is a lot of capacity with different woods. Moreover, saving raw material is one of the company's key points – high efficiency provides not only monetary value, but preserves precious natural resources", concludes CEO Hannu Hämäläinen.



Ence is the leading European eucalyptus pulp producer. Image: Ence

fact, every client can be verified with the devices functionality in company's environment of operations. Teknosavo is always taking good care of the device's functionality and also further maintenance, when the business partner makes a service agreement. With close co-operation with the client as well as precise and detailed design, Teknosavo can develop it's processes and guarantee ideal optimization also in long period.

ABOUT ENCE NAVIA

The pulp mill in Navia is located on the right bank of the Navia river. With the recent expansion and improvement of its facilities, Ence Navia became the largest and most efficient pulp mill on the eucalyptus market in Europe. The current production capacity of the mill is 500 000 tonnes a year of high-quality ECF (Elementary Chlorine Free) pulp. Navia mill has the largest production capacity belonging to Ence Group.

The Kymi mill is going through a modernisation that will boost its annual production capacity by 170,000 tonnes to 700,000 tonnes of bleached northern softwood and birch pulp. By beginning of 2016 Kymi will be one of the most efficient pulp mills in the world.

The UPM Kymi mill is located along the Kymi river in Kouvola, Southeastern Finland. The integrated Kymi mill includes a pulp and fine paper mill. Kymi mill has seen several investments during past years. The recovery boiler of the mill started operating in 2008, and oxygen delignification for the hardwood production line was built in 2012.

In order to increase the mill's pulp production capacity by almost 7 times, UPM initiated another large construction project in the spring of 2014. This investment worth of 160 million euros included a new pulp drying machine, modernisation of the softwood fiber line and a new debarking plant.

Kymi mill's capacity enhancement is part of UPM's target to grow the company's 3,3 million tonnes pulp production capacity with 10 per cent during next three years.

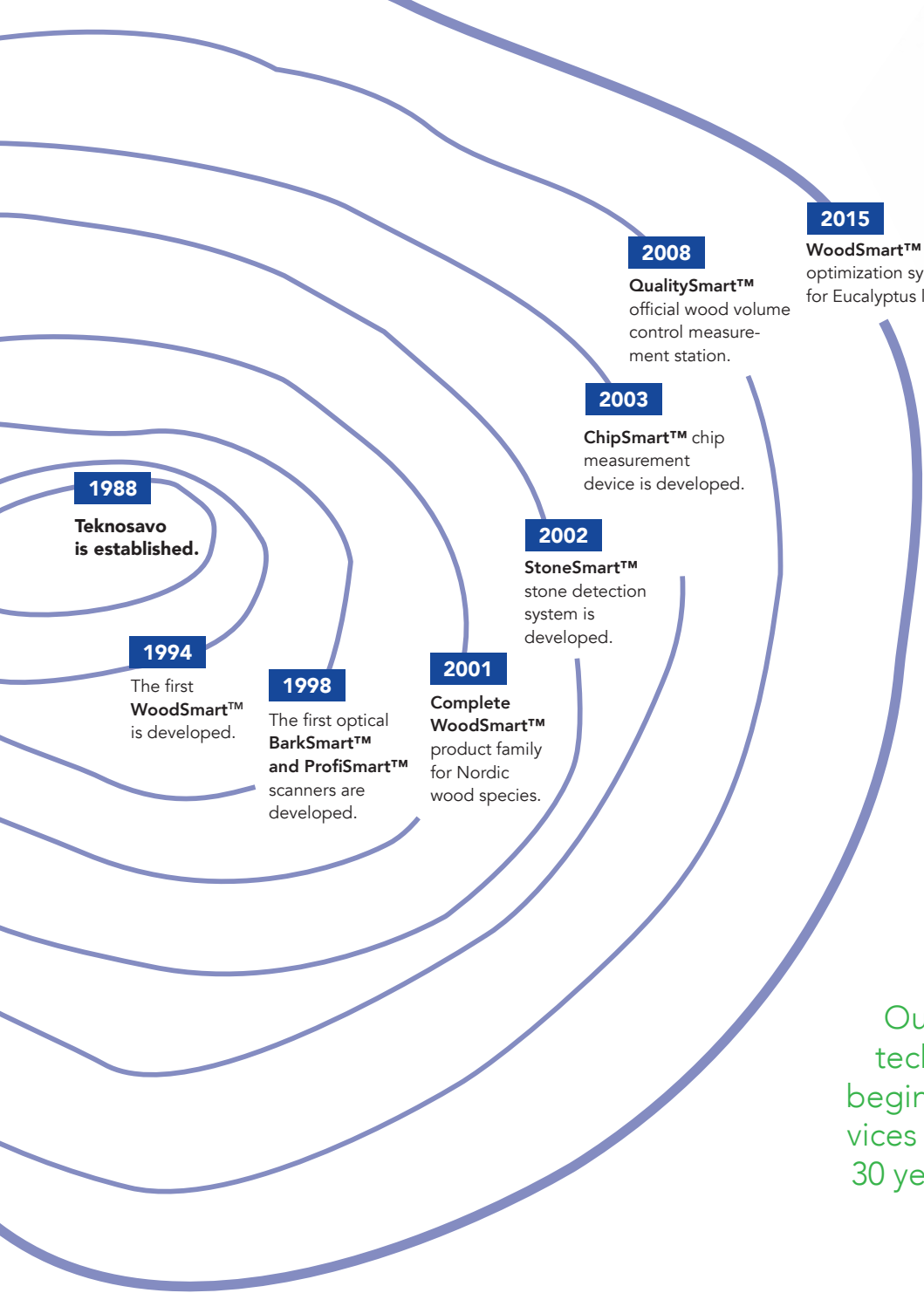
EXPANSION PROJECT SUCCEEDING ACCORDING TO PLAN

The construction work is proceeding successfully. There are many agents who are responsible of product deliveries and installations. These companies have a common factor - all of them masters of their field of operations. For example Finnish Raumaster Oy is supplying the new debarking line. Furthermore, Teknosavo is a supplier for the WoodSmart™ device, which controls the entire debarking process, in order to stabilize production and optimize the degree of cleaning and yield.

The expansion is scheduled to be complete by the end of 2015 with only minor finishing work left. Furthermore, the pulp-drying machine has been ready for activation a month in advance. The activation of the new pulp production exceeded all expectations during the summer. This new expansion will transform Kymi mill into one of the most efficient pulp mills in the world. Hence, Teknosavo is proud to be a key business partner for UPM Kymi mills.

Kymi mill's expansion project is scheduled to be completed in 2015. Image: UPM





FROM RESEARCH TO PRODUCT DEVELOPMENT –

OVERVIEW TO TEKNOSAVO'S HISTORY

Our philosophy is to develop and serve highly sophisticated technical know-how in wood processing industries. Since the beginning, we have committed to provide next generation devices and consulting services with certified quality. With almost 30 years of experience in processing industry, Teknosavo leads the markets in optimization technology in Scandinavia.

1-4%

Wood loss decrease with optimized debarking process equals up to 1 million euros* in annual savings.

* Pulp mill, capacity 600 000 tons / year, woodloss decrease 1-4%

WOOD PROCESSING TO THE NEXT LEVEL

In wood processing, the level of automation has been low, although pulp mills have been automated for decades. Probably nobody before taught that raw wood process optimization could bring significant savings in energy and raw material costs in yearly basis. This was the golden point to start developing patented analyzers for efficient automation of wood processing development work.

WoodSmart™ controls the entire debarking process in order to stabilize production and optimize the degree of cleaning and yield. The on-line measurement of several process parameters enables total optimization of the debarking process from the drum filling degree and the bark content of logs to measuring chip quality. Optimization technology creates savings in steady, high-quality production with minimized idle time, maintenance costs and raw material loss.

ACTIVE PRODUCT DEVELOPMENT BRINGS SUCCESS FOR ALL PARTIES

As a company Teknosavo is innovative and invests actively to product development in close cooperation with customer organizations. To ensure the highest quality, we have developed an internal quality system for our operations, which has been credited with the ISO 9001 certificate.

The business evolves constantly due to advancing technology such as measurement systems. Optimizing system with the most modern laser and camera technology takes global wood processing industry to the next level. Savings created by WoodSmart™ are significant - as much as 1 million euros annually for a single debarking line. WoodSmart™ pays back the investment in one year. The best thing is that technologies can be widely used in the global markets as they can be modified to suit different types of wood. Our products can be installed in new as well as existing wood processing lines.

STRONG KNOWLEDGE IN LEADING WOOD PROCESSING COUNTRY

Finland is the leading country in wood processing with highest level of wood processing technology. Currently 80% of the pulp wood drum debarking is controlled with systems delivered by Teknosavo. On a yearly level in Finnish circumstances, 25 million cubic meters of pulp wood go through the system. During these years of operation, we have gained thorough knowledge of our large-scale clients' target processes also in the global markets. It is justifiable to say that technology know-how modified into WoodSmart™-products is profitable for every wood processing company.

MEET TEKNOSAVO

TRADE FAIRS

EXPOCORMA, CHILE

18th - 20th November 2015

Meet Teknosavo in Latin America's biggest forest industry event Expocorma, in Coronel, Concepción Province, Chile. The fair is organised by The Chilean Wood Corporation AG –CORMA.

RENSERIKONFERENS, SWEDEN

12th - 14th April 2016

The bi-annual wood room conference, held in Piteå, Sweden, is an excellent opportunity for networking and sharing experiences, exchanging thoughts and ideas about the future of forest raw materials and forest industry products.

11/2015

TEKNOSAVO

TEKNOSAVO OY

Olavinkatu 46 A
FI-57100, Savonlinna, Finland

Tel. +358 15 477 0700
Fax +358 15 477 0744

CONTACT SALES:
smart@teknosavo.fi

www.teknosavo.fi