

News FLOW

BY PESMEL

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TO SECURE TOP QUALITY SLABS

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Editorial*

Under the kind circumstances we all are experiencing right now it would be an easy approach to start complaining and refer to the economical crisis, and all the bad and ugly that is met because of it. I, however, take the opportunity to look a bit further to the future and would especially like to tell about the positive events we have gone through lately.

One of the highlights in the near past has naturally been the break-through to the tough Taiwanese steel markets with the China Steel project. It is encouraging to see that there are industries in which the management is able and willing to look past the low conjunction and prepare their business for the better times ahead. This used to be the tendency in e.g. paper industry in the past. The periods of lower economical activities were the time to brush up the production process and build competitive advantages. Accordingly for us at Pesimal the first significant project to news printing is promising. Our products which have been developed for other types of applications have proven to be very competitive in hand-ling news print reels and serving the core printing process. In this respect we owe a lot to KBA in Germany for their confidence in our ability to deliver a high class project to their US customer New York Daily News.

For us working in Pesimal the year so far has been a very special, because internally there were significant changes in the structure of the company. AWA was merged to Pesimal and as result of the operation a stronger and skillful unit was formed. The organization has been put a real test in the current economical situation, and I am confident that we are able to widen our presence in the chosen key segments of business.

We have new members in our network, as IMC (USA), Metallica (Brazil), and Alpmak (Turkey) have started co-operation with Pesimal. The new partners cover various industries, like you can learn from other stories in this new letter. We have also expanded our former relationship with Plantool (Finland) to handling of steel cutting applications with a new concept.

Let's all start preparing for the better times ahead. One can already see some light glowing.



Running an advanced paper mill in **Indonesia**

- INTERVIEW WITH MILL MANAGER OF RIAU PAPER

We had the opportunity to hear the views of the mill manager of APRIL Group's Riau Andalan Pulp & Paper (RAPP) complex in Kerinci, Sumatra, Indonesia. The mill is one of the biggest uncoated fine paper mills in the world, for paper production. Kerinci mill is totally integrated. The pulp production reaches over 2 million tons, of which 25 % is used for paper production. The rest of the pulp is sold to non integrated mills all over the world. 75 % of the paper mill production is sheeted in the converting plant and rest is sold as customer rolls.

The entire paper mill is run by less than 800 people including logistics activities.

Mill Manager states that *"In terms of paper making operations and systems supporting the operations, this mill is one of the most, if not the most automated and advanced mill in the world"*.

The facts to support the statement is impressive. RAPP has a brand new PM2 paper machine, and there has not been any expertise or money spared in equipping it with the best available processes. Also 10 years old, PM1 has been frequently upgraded to increase its productivity. All the supporting machinery for the paper machines and converting plant has been carefully evaluated; cut-size and folio lines operate on state of the art technology. A brand new leading edge

AWA Warehouse is the link connecting paper machines, converting plant and finished goods warehouse.

The senior management's and the owner's vision is for sustainable operations in Indonesia, and therefore want to have the best people and best equipment available.

The biggest advantage that they get from automation, according to the Mill Manager, is consistency of quality and production. He has seen that *"the more automation there is, the better you can control your finished products, there will be less interruptions in operation, more paper can be produced, and automation also saves labor costs"*. The Kerinci mill uses a lot of resources on teaching and





training employees. They have a vision to maintain the workforce updated to the latest technology, because it also motivates the employees. The attractiveness of a modern process is also important while recruiting personnel.

He envisions that there will be even more automation in future. For survival in pulp and paper industry a company needs a competitive edge, which can be either in operations, in fiber supply, in energy, in labor and in the market where it operates. If the company is lucky it can start with a competitive edge in operation by having a brand new paper machine. He argues that a company in today's world must have at least three edges sharp.

In North America they have only one edge 'given', the markets. The ones that are surviving in States have a special edges; low cost energy from own hydro plants and some in fiber by using recycled paper. Generally production facilities are not very modern. He thinks that the European companies saw these matters ahead and started to improve their level of automation, which gives more efficient operation advantage in tight markets. Old mills in Europe were modernized years ago.

In Asia many mills are surrounded by fiber, energy and labor costs are typically low and the markets are nearby. RAPP is purely family owned, and according to him it's being managed differently than public company, and the company will continue investing to keep their five edges sharp. Additionally RAPP produces paper and pulp in an environmentally friendly way.

RAPP's Kerinci mill, according to its strategy has widened the utilization of automation also to materials handling, and the fully automated AWA Warehouse is the key in roll handling. He points out that they don't have 40 - 50 clamp trucks running around in a warehouse. Clamp trucks are associated with damages, mistakes and errors that can happen with all the people and manual activities with rolls.

"AWA was concluded to be most suitable for us" said the production manager of the new paper machine. They studied different cases and ended up ordering from AWA.

Whether the investment in automated warehousing was something they would do again becomes answered clearly by Mill Manager: "Yes it is". He has detected significant differences between companies regarding atti-

tude towards automation. There were some visitors from a major company in the industry during the start-up of the warehousing system asking, what was being built. He told that they are building automated warehouse that will take care customer rolls and be intermediate storage for converting plant rolls. The visitors didn't believe in automated roll handling and they don't support any automated roll handling facilities in their mills. There are different philosophies. Mill Manager comes from newsprint business where no automated warehouses in the business, but when entering this kind of business he realized the meaning of automated warehouse. This mill was the first one to him, which has an automated warehouse and there are no chances for human errors.

"I think that automated roll handling after the paper machine is the way to go, I'm sold on than one, no questions on that" he said. He continued "it's just more efficient than not doing it, when you evaluate costs with benefits, the benefits are way higher".

The biggest benefits are: Rolls are never damaged, labour required for logistic is much less and the right products are sent to the customer.

Controlling the production value with AS/RS systems in paper mills

ONE SPECIAL CHARACTERISTIC in gaining competitive advantages in today's paper and converting industry seems to be how to adjust the supply/delivery chain structure and logistical processes to be more and more effective – in a nutshell. However, we will consider only to the stages after the direct economical value for customers is created in production. As said, value is only created, not realized yet.

One excellent way to improve profit margins is to improve the processes inside the four walls of paper

mills, printing houses and converting plants. If the continuous improvement of core processes such as paper making and converting processes are left outside, the remaining part would basically consist of material handling and temporary storing.

Therefore, can we afford not to develop majority of the in-house processes to the same technology level as the production lines are?

Concentrate on the internal logistics in paper industry. At the most efficient paper and converting mills the

products are handled manually first time when they are loaded into transportation vehicles; however, this could be automated as well. Handling products manually costs especially in so called high labor cost countries about 5 Euros/ton handled added with such costs as unnecessary manual sorting and outsourced warehousing. It is easy to calculate the total amount by just adding the total tonnages going through a processing line annually. Biggest part of this number is dedicated only for trying to maintain the





product value created at core processes before reaching customers.

LESS VALUE DESTRUCTIVE PROCESSES

For example, when paper is sheeted or converted in certain ways, products remain in manufacturer's balance sheet exceptionally long period – not to mention the times products are handled and moved before reaching customers. Usually this is 7-8 times before even loading a transportation vehicle.

By automating most of the possibilities to damage products by manually handling them, the value created at production and converting processes could remain the same all the way to customers' hands. Depending on the source, the overall damages of manual handling could be worth of 0,05 - 2,0 % of the products' monetary value, which is even 5 Euros / reel.

Even though almost all damaged non-converted papers can be re-pulped, the value created from pulping is rarely as much as the sales prices would be.

Automated handling and warehousing systems should be extremely reliable and gentle for products, and preferably designed for horizontal handling all the way from paper machine as well.

we can pose two questions: Who does not want to sell all the value created to own customers? secondly about; what is the point in investing in systems that cause damages and imprints on products or unnecessary rotations and up-endings of reels?

REDUCING THE WASTE LOAD OF SUPPORTING PROCESSES

For optimal deduction in waste load in recycling cost and in product val-

ue, the automated systems should be able to handle the "secondary material flows" efficiently as well. This topic contains smooth handling of reels for re-winding, smaller converting reels and the reels left over from the next process stage. Avoidance of recycling costs is especially emphasized when more capital is tied into products by converting them in various stages. It would be quite difficult to re-pulp products converted for 3-4 times - in separated facilities.

Same issues apply in automated packing as well. Demands for better protection against damages and preserving the quality from the end of production line all the way to customer's assets has influenced on developing more environmentally friendly packing methods. Today's concept in packing seems to be use of recyclable packing materials, but still giving sensible protection at the same time as decreasing packing costs.

CONTROLLING THE VALUE CREATED AT CORE PROCESSES

Nevertheless, for efficient material flow, products have to be sorted according to certain order such as delivery locations or product qualities and dimensions. By today's automated equipment customer specified sorting could be done, for example, immediately after winder by roll inspection, sorting and packing systems. If the specified order is composed of multiple winder sets, the sorting could be beneficial to do after packing with an (AS/RS) automated storage and retrieval system, which can be considered even as an "automatic sorting and dispatch system", thus, we would more likely use a term (AS/DS).

If the savings in operational costs is not enough for using today's efficient sorting and dispatching methods in supporting processes, is helping the following legs and finally customers a matter of automation? When the production speed reaches even 140-180



reels / hour – which is a common phenomenon in today's paper and converting industry – the role of previously mentioned systems increases tremendously. The same issue applies in converting mills as well; the need for better service level for customers leads to vast number of different requirements for product qualities and finishing styles. Therefore, is the manageability of - not productivity, but production lead times as well worth of discretion?

It may not be exaggerated to say that using technologically advanced in-house sorting and dispatching methods at least at the recognized most crucial points in the value chain, material handling gets easily 20-50% more economical and faster than in conventional methods. This kind of assistance has a positive influence to later logistic legs as well.

BETTER SERVICE LEVEL AND FASTER DELIVERIES

More manual handling, uncontrolled packing and storing of products in uncertain methods cause tremendous

increases in tracking for correct reels to fulfill particular orders from internal and external customers. Nobody should waste valuable work time for just trying to seek products. What would happen to customer service level if the right reel is not in the right place at the right time?

It is difficult to see a point in developing competitive "delivery chain" strategies if the internal logistics in the production and converting plants, as well as in DC's (delivery centers) does not fully support it. Hence, by making the products path inside the production facility as automatic as possible, the traceability of the products gets lots more controlled. As it is easier to trace the material flow, production lead times gets shorter and customer service level increases.

Progressive automatic handling and AS/DS systems easily stores, memorizes and dispatches products differentiated by variable parameters – manufacturing batches, dimensions and qualities - when ever needed, preferably anticipated well ahead a certain delivery. Improvement of service level includes the unbounded filling of

incomplete deliveries, mixing orders and economical way of reserve stocking – buffering products.

MORE FOCUS TO THE CORE BUSINESS

Eventually automated supporting process modules helps to focus on critical production processes. It is unnecessary to concentrate on the processes which do not have a positive effect on product value, but it is necessary to keep mind on product quality.

To conclude, the concepts of automated packing, handling and AS/DS systems have to be considered as a part of full delivery chain. As brought up earlier, the automation, for instance, in storing and dispatching operations is most efficient in a handful of points – if used separately. Nevertheless, getting the full advantage of automation and AS/DS modules requires an overall control of material flows inside the plants and in the delivery chain.

Maintenance, Investment in the future

THE FINANCIAL crisis has affected negatively most of the companies world-widely. There are only few companies that has benefited the situation; most of the companies have suffered lack of orders. In order to survive over crisis some companies have cut costs and looked after all the possible ways to find savings. There are also companies that have looked forward and are improving the efficiency of production.

It is important to serve customers reliably during boom and even more important during recession. Customers can never accept failed delivery. In order to satisfy customers suppliers has to have reliable production, which must be maintained in top shape. Preventive maintenance is a base-ment of high quality maintenance that guarantees high level of reliability. By investing preventive maintenance it is possible to minimize repairing maintenance actions, cost and most importantly unexpected production stops. As times are hard, some may look for savings on preventive maintenance but not taking into the consideration that it is raising remarkably lifecycle cost of the systems and risking the production reliability.

Maintenance is an investment in the future. Good

maintenance saves costs enormously on the long-term and keep customers happy. If companies are not trusting in the future and neglect the maintenance maybe those should consider closing business as soon as possible. No business is no costs! Now it is perfect timing to invest in the future: improve production method, upgrading production, training etc... It is sure that the boom is following the recession!

To guarantee high reliability of production Pesimal offers full range of After Sales Services for its customers. As an addition for normal 24/7 HelpDesk, Regular Maintenance and Spare Part Service we have strengthened our modernization and upgrading projects service. Our Technology Experts are available for surveying the needs of your system and are ready to make proposals for your needs. Our modernization & upgrading team is ready to serve customers whenever systems has needs for modifications for new products, for more throughput, for improved safety level or upgrading of control systems.

The lifetime of Pesimal systems can be extended for years by using our after sales Services. Please contact Pesimal Service to find out more about our services, and we will prepare a proposal for high quality maintenance.



Success in tough markets

-M-REAL SIMPELE BOARD MILL

ALL THOSE WHO follow pulp and paper markets have read about difficult times in the Finnish mills. Mill shut downs, capacity cuttings, and cancelled or delayed investments due to the high uncertainty of the future are controlling the development of the industry. Still, there are mills that meet the same challenges and are able to overcome them. Nobody argues that it is easy but with a little help of technology, wise business model, and competent people mixing these ingredients you can find the success. M-real in

Simpele is a very good of such fighting spirit. We had a chance to talk with Sami Kerminen about their approach to meet the challenges of the markets.

Sami tells that location of the mill is controversial, it is both an advantage but also a weakness. During its history Simpele mill has been developed into an independent unit. It produces its own power and pulp, and as a consequence of this competences within the boundaries of the mill are high above normal. Decisions made by the mill have proven to be the right ones, and

focusing at improving the quality of the products and maintaining the high quality has been above the competition. The mill has always aimed at long relationships with customers instead of typical customer-supplier relationships. The same objective guides also their relationships with their suppliers.

Sami argues that their competitive advantage is related to the size of the mill. Simpele is big enough to utilize economy of scale but small enough and flexible to meet the changes in the markets. Their personnel have been

open to changes and to utilize new technologies. One good example of new technology is the AWA automated roll storage system supplied by Pesmél. The system has made controlling of production easy and resulted in higher productivity due to better process efficiency.

When Simpele board mill recently increased its production capacity the project team was looking for the best possible solution to handle the rolls, and their selection was an AWA storage system, which was able to convince the team with its simple and efficient solution compared with the other alternatives. The objective of the project team was to find a powerful and cost efficient solution that could handle the material flow between board machine and converting. The system was taken into use not so long time ago but the demands of the markets have already changed, and the system has proven an efficient tool while adapting to the turbulences in the markets. In case the future needs require increased storage volume expanding the system is easy.

The governing principles of the converting process in Simpele according to Sami Kerminen are efficiency and reliability. The sheeting process is designed to serve individual custom-



Photo: M-real image bank

ers, and they can order practically any types of sheets that are included in the mill's product range. Consequently every customer order is unique. To deliver a customer specific order based on any of the 2500 different combinations is challenging, and it cannot be profitable or efficient without a highly automated process.

For Simpele mill Pesmél and its AWA storage systems is an important partner that has been able to

find solutions to problems and to develop the process further once the markets change. The ability to work for a common goal is a prerequisite for a long term relationship. Maintaining the success factors also in the future requires continuous improvements in the process, and Sami believes that Pesmél will have in this respect a role in Simpele also ahead. He looks forward to the future co-operation possibilities.

M-real Corporation

M-real is the leading primary fibre paperboard producer and a major paper supplier in Europe. The company's customers include brand owners, carton printers, converters, publishers, printing houses, merchants and office product suppliers.

M-real Simpele produces folding boxboard for food packaging and graphical applications as well as one-side coated papers for food packaging and other flexible packaging, wet-glue labelling and self-adhesive laminates. The mill is located in Simpele, in southeast Finland.

M-real is the industry forerunner in developing lighter boards and papers with high visual properties. Our lightweight products provide superior printability, strength properties and production performance. Requiring less raw material, lower transport weights and producing less waste, our lightweight products decrease environmental impact and costs at all stages of the product life cycle.

ESTABLISHED	1896
NUMBER OF EMPLOYEES	450
PRODUCTION CAPACITY	215,000 T/A BOARD, 55,000 T/A PAPER
PRODUCTION LINES	1 BOARD MACHINE (WORKING WIDTH 4.03 M, SPEED 600 M/MIN, GRAMMAGE RANGE 200 - 400 G/M ²), ONE WINDER, FIVE SHEET CUTTERS
	1 PAPER MACHINE (WORKING WIDTH 2.50 M, SPEED 800 M/MIN, GRAMMAGE RANGE 40 - 110 G/M ²), TWO SUPERCALENDERS, TWO WINDERS

To Secure Top Quality Slabs

PROCESSES IN STEEL industry are coming more accurate and automated, but there is still room for improvement for economical and environmental reasons. Sometimes these issues are contradictory, but talking about casting of slabs they have same interest.

Having a good control for casting process is helping to get down the cost of steel making process and ultimately the cost of produced slab.

The environmental benefits are coming from letting out less CO₂ and savings from energy consumption due less remelt.

So how can we improve the process to get these benefits? Lets take a look what we do now and what could be done to improve the process.

TODAY'S SITUATION

Controlling a caster is a very challenging task in majority of steel mills because there is no "instant" feedback for casts produced.

What most mills do is that they periodically take a small sample of the cast steel, etch it, and then try to detect what is the quality of the steel. The sampling is severely lagging behind the actual casting process. In case there are quality problems, such as corner cracking, porosity, black spots, or other defects, it is practically impossible to know, at point the defects starting appearing in the line. In the worst case this may cause millions of tons of scrap across in the process since there is no way of "repairing" what was cast - the only way to deal with it is to either sell it as lower grade or re-melt and try again.

One can imagine the magnitude of the problem by just thinking about the figures of a normal slab line producing

TABLE 1. SUMMARY OF MANUAL SAMPLING PROCESS

MANUAL SLAB INSPECTION	
Sample processing time	Max 2 days
Number of concurrent samples	One
Relaying lead time to caster	Max 3 days
Worst case scrap production	16500T

2 MT/a, or 5500 T/day.

The costs are huge from wear on equipment, labour costs, internal and external transportation costs, energy consumption and lower yield in the process.

WHAT CAN BE DONE TO GET A FASTER FEEDBACK FROM CASTER?

There are challenges like very hot and dangerous environment around the caster, and the time to get the samples cooled controlled and suitable for the steel grade in casting to be able to do the inspection possible.

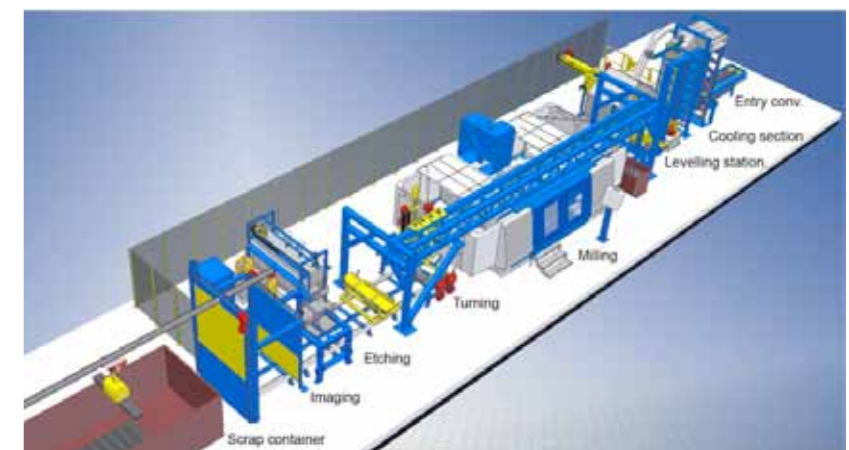
The answer is found from understanding the processing tasks and have under laying understanding of automated handling processes.

Pesmél Oy from Finland has developed a new concept where a piece of steel can be analyzed practically on line and results can be used to control and track the performance of the caster.

AUTOMATED FUNCTIONS

A piece of cast metal (sample) is cut off from slab as soon as it exits the caster with torch cutter and lifted onto input conveyor of the inspection line. It is possible to transfer the heat number and at time all relevant data related to heat number from the mill computer system to the "brain" of the sample analyzer or simply key it in to the terminal.

Automatically, based on the inserted information the system knows if the sample has to be air cooled (to avoid cracking) first or if it can imme-





- Reduces the output of scrap and increases yield up to 98%.
- Production of higher quality steel without adding any resources to the process.
- Reduction of the cost of quality sampling while significantly increasing the sampling as practically every heat can be etched - even multiple times.
- Provides steel producer a "Strategic Competitive Edge" by a possibility to send a picture of slab quality together with the slab.
- Provides outstanding tool to optimize the caster maintenance cycles as SPC can be fully implemented.

In Summary: The old way involved a manual sampling process that had taken considerably longer and produced inferior results as can be seen in Table 1. In Table 2 here we can see the comparison with the new and old way.

Automatic inspection process has no limitations in the amount of stored data, like used to be the case earlier. The new way is unmanned and produces complete results that can be easily stored and utilized both in the quality management and customer service. It provides a significant reduction in downtime when changes are needed and reduces the amount of scrap.

REFERENCES

Pesmel Automatic Slab Inspection line is successfully installed and in operation in Arcelor Mittal mill in Canada.

diately be deposited to water quench tank. »

After cooling the system automatically moves the sample to a Machining Center, which removes the heat affected zone of the sample. The sample is ready continue to the next step in the line.

After the sample's machined surface is automatically washed, etched and dried, a high resolution picture is automatically taken from the sample. The picture is then saved under the heat number and sent directly to the caster pulpit for the caster operator.

The operator analyzes the quality of the product and then adjust the

casting process in case needed.

In the analyzing software the Operator can zoom in and has some standard rulers and triangles available in this PC based system. Each and every picture is automatically stored and, if needed, can be sent to the end customer as proof of the quality of the steel as it exited the caster. The sampling is - including the chemical handling - an unmanned process with zero operators required.

BENEFITS

Clear benefits of the automatic slab inspection line are:

TABLE 2

	Automatic slab inspection	Manual slab inspection
Sample processing time	Max 90 minutes	Max 2 days
Number of concurrent samples	Multiple (design parameter)	One
Relaying lead time to caster	Max 1 hour	Max 3 days
Worst case scrab production	345 T	16500T



Fully automated Slab tester

Fully automated Slab tester

The system provides significant competitive edge to steel producers as they can easily step to the next level in quality management.

- Easier to produce higher quality steel
- Significant reduction of quality sampling costs
- Lean way for steel producers to create competitive edge



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New representatives:

IMC AMERICA IS the new sales and marketing distributor for Pesmel Oy covering the U.S. and Canada. IMC has over twenty years of experience marketing automated paper roll handling equipment for the newspaper, gravure and commercial printing industries. IMC has sold automatic storage and retrieval systems (ASRS), floor track conveying equipment along with au-

tomatic roll loading, stripping and down ending machines.

IMC is located in York, Pennsylvania and has a full time staff for sales and service of many different types of automation machines. Specializing in the printing industry, gives Pesmel excellent coverage of these important markets.

Our strong reputation has been built around distribution of a select few high quality vendors in the printing and publishing industry.

*Contact Ric Mayle,
Vice President/Sales & Marketing
for more information.*

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