



PROMOTIONAL

MAGAZINE

34/2019

Paper | Tissue | Subcontracting | Services | Specialty Products



WE ARE STRONGER
TOGETHER
CAMPAIGN 2019

FORWARD THINKING
CONCEPTS ON HOW
TO BUILD A PM
FOR THE FUTURE

HEADBOX, SHOE PRESS
AND SIZING TECHNOLOGY
IN YOUR TOOLBOX



Dear Readers,

The reality is changing every day, it provides us challenges, but luckily many opportunities as well. We can observe that P&P Industry is becoming more demanding and agile. The change is always inevitable but also developmental, that is why we are looking at current market situation with courage and enthusiasm.

All of us, no matter which chain element we represent, should adjust to fulfill the needs of final consumers, who will decide to take the best paper product from the shelf, and will come back for it again and again...

We believe that reaching this success is possible only as one team, therefore our campaign for 2019 is entitled "We are stronger together"...

This magazine will show you who we are, what we have done and what we are willing to achieve in the nearest future. Hopefully it will become your source of inspiration and motivation to aim higher.

We are ready to join you because... We are stronger together!

Wishing you a great read,

Wioleta Piątkowska

Wioleta Piątkowska - Marketing Manager



CONTENT

5

NEWS

8

WHO WE ARE

9

OUR VALUES

10

PMP DIVISIONS
AND AGENTS OFFICES

12

WE ARE STRONGER TOGETHER
- CAMPAIGN 2019

14

PMP DIVISIONS

22

PMP PLATFORM CONCEPT
FOR PAPERMAKERS

24

PMP PLATFORM CONCEPT
FOR TISSUEMAKERS

26

REBUILDS

27

ENERGY SAVING
SOLUTIONS

28

ENGINEERING SERVICES

29

MILL SERVICES

30

NECESSITY IS THE MOTHER OF INVENTION
- FORWARD THINKING CONCEPTS ON HOW
TO BUILD A PM FOR THE FUTURE

36

SAVE YOUR FIBERS, KEEP THE STRENGTH
- HEADBOX, SHOE PRESS AND SIZING TECHNOLOGY
IN YOUR TOOLBOX

44

TISSUE TRENDS - INTERVIEW

50

EVENTS 2019

51

FOLLOW US!

NEWS

pmp

ASIA



APRIL 2018

During CIDPEX 2018 in Nanjing (China) we had one technical presentation entitled "A Recovery Steam Generator System by PMP as a Key for Spectacular Energy Savings". Our team were also present at the booth to provide information about PMP's capabilities.



JUNE 2018

PMP's partnership with C&S - one of the leading tissue producers is boosting Chinese tissue market! C&S fleet grew already by (3) PMP Intelli-Tissue® EcoEc 1600 Premium Tissuemaking Lines. Future partnership between PMP and C&S looks bright!



OCTOBER 2018

We are proud to announce that after two years of fruitful cooperation in deliveries of tissue lines for C&S company (one of Chinese top tissue players). PMP has been recognized as a Silver Level Supplier. An official ceremony took place in Foshan, China on 24th October 2018 and was combined with 40th anniversary of C&S establishment.



DECEMBER 2018

In the second half of 2018, PMP has signed a contract with South India Paper Mills Ltd., for a delivery of two core technological items - Intelli-Jet V® Hydraulic Headbox and two Intelli-Nip® Shoe Presses in Tandem configuration. Both items will be implemented on PM6 in a mill in Nanjangud, India.





AUSTRALIA & NEW ZEALAND

SEPTEMBER 2018

It is a big pleasure to announce that PM4 with new PMP Intelli-Jet V® hydraulic headbox, fourdrinier and reel has started up smoothly on September 10th at 4:12 am of local time. First jumbo roll appeared on the reel at 4:54 am. Two days later, machine started to produce saleable paper.

NOVEMBER 2018

Our experts were present on APPITA conference, which took place in November 2018 in Rotorua, New Zealand! They had an opportunity to network and share ideas. PMP gave 2 presentations during the conference - "Innovation - An Added Value Or A Whim Only?" by Maja Mejsner and "Spray Applications for Paper and Board Surface Treatment - Closing in on Lean Manufacturing Principles" by Pemo Klimczak.

EUROPE

MAY 2018

In May 2018, we had pleasure to host all our representatives on PMP Agents Meeting. In total, there were more than 50 people from 15 countries from all around the globe! We are thankful to everyone for active participation. It was a great dose of energy and inspiration for our future and common partnership!

SEPTEMBER 2018

PMP was present on Tissue World Istanbul 2018! During the conference, Maja Mejsner has made the keynote speech entitled "Love life. Discover. The Science of Breaking out of a Comfort Zone".

OCTOBER 2018

In October, PMP has taken part in MIAC 2018 in Lucca, Italy. We would like to thank you for visiting our booth!

OCTOBER 2018

October 2018 - PMP was present at the PAP-FOR Exhibition in St. Petersburg, Russia. We shared booth with our Russian Representative - UNITSERVICE.

JANUARY 2019

We are pleased to announce that PMP has become a "Company of the year 2018" in our region. The award was handed by President of Jelenia Góra City - Mr. Jerzy Łuźniak during New Year's meeting. PMP was awarded for advanced technology development, promotion of its brand and whole city on the international arena, including cooperation with Changzhou City in China, and for the increase in the employment of people with higher education.

JANUARY 2019

We, as PMP, have had honour to be a part of vernisage in the Papermaking Museum in Duszniki-Zdrój. Exhibition will focus on the history of paper machine, that was patented exactly 220 years ago. It has also presented rich history of PMP, who already has 165 years of tradition in papermaking.

NORTH AMERICA

APRIL 2018

In April 2018 PMP has exhibited on PaperCon 2018 in Charlotte, NC, USA. We had 2 presentations entitled "Innovation - An Added Value Or A Whim Only?" and "Spray Applications for Paper and Board Surface Treatment".

SEPTEMBER 2018

We were honoured to participate in a Technical Seminar organized by our Mexican Agent - EYSMAR. Event was supported by PMP, IBS and Tecnopaper and has gathered around 70 papermakers from all around Mexico.

NOVEMBER 2018

We believe that we are stronger together, thus it is our pleasure to announce an opening of a new facility in USA! We are more than happy that our US division - PMP Americas is growing!

SOUTH AMERICA

FEBRUARY 2019

PMP has actively promoted its brand on main event in Latin America - ACOTEPAC 2019 Conference in February in Cali, Colombia. During the conference PMP experts gave 2 technical presentations - "A Concept For Premium Tissue Production With Ultra-low Media Consumption - case study - 9 PMP's Tissue Lines for one of the leading tissue producers in China!" and "Save your Fibers, Keep the Strength - Headbox, Shoe Press and Sizing Technology in your Toolbox".



WHO WE ARE



OUR MISSION IS...

With Passion & Pride We
Create Success Together
In The World Of Paper



OUR VISION IS...

To Be The Best Supplier
of Advanced
Technologies

pmp

PMP Paper Machinery Producer

A global provider of tissue,
paper & board
technology



OUR STRATEGIC MARKETS

- Europe
- North America
- Asia



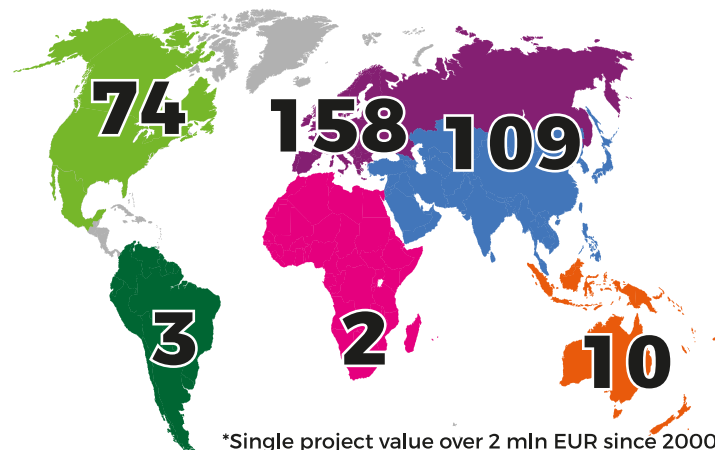
OUR DISTINGUISHING FEATURES

- Technology
- Excellent Quality
- On Time Delivery

OUR DIVISIONS

6 PMP Divisions
Poland, China
Italy, USA

WHERE WE OPERATE



OUR VALUES

TECHNOLOGY



intelli
TECHNOLOGY

intelli
TISSUE

intelli
PAPER

SATISFACTION

356 References in
33 Countries
Worldwide on **6** Continents



PROFESSIONALISM

9,5%
EBITDA

3A1
PMPoland
D&B rating



PMP Group Turnover FY 2017

72.2 mln
Euro

ETHICS

Code of
VALUES



Long Term
PARTNERSHIP

LISTENING
to Customers' Needs

PRIDE

Over
160
Years
of
Experience



RESPECT

Chosen
by Market
Leaders



TEAM WORK

630
Employees
English
as a Common
Language of Communication
Staff Development

Experienced
and
Dedicated
Team



PASSION

pmp
PASSION COMES FIRST

Fueling
Our Company
to Achieve Success

PMP DIVISIONS AND AGENTS OFFICES

ROLLMEISTER
Inc.
PMP ROLL SERVICE CENTER

pmp
AMERICAS

pmp
POWER

pmp

pmp
FINANCIAL CENTER

pmp
ROLLS & SERVICE

pmp
KONMET

pmp
IB

PMP Group Divisions:

- PMPoland S.A. **POLAND**
- PMP Group Sp. z o. o. (Financial Center) **POLAND**
- PMPKonmet Sp. z o.o. **POLAND**
- PMP Rolls & Service Sp. z o.o. **POLAND**
- PMPower Srl **ITALY**
- PMP IB (Changzhou) Machinery & Technology Co. Ltd **CHINA**
- PMP Americas INC. **USA**

- PMP Divisions
- PMP Agents Offices
- PMP Division & Agents Offices

We Are Stronger Together

THE HEART AND SOUL
OF YOUR MACHINE

TECHNOLOGY HIDDEN
IN EACH AND EVERY PART
THAT WE MAKE

BLEND OF TECHNOLOGY
& PASSION

OUR HERITAGE AND TRADITIONS IN DESIGNING
AND MANUFACTURING OF PAPER MACHINES
ARE OUR IDENTITY AND A SOURCE
OF NEVER-ENDING INSPIRATION

TEAM OF
DEDICATED PEOPLE

EXCELLENT
QUALITY

INTERNATIONAL

started in to plug N

pmp

WE ARE VISIONARIES
AND THERE IS
NO LIMIT TO OUR IDEAS

DELIVERY ON-TIME

WITH PASSION AND PRIDE, WE CREATE SUCCESS
TOGETHER IN THE WORLD OF PAPER

OVER 160 YEARS OF EXPERIENCE

ENGINEERS FOCUSED
ON EVERY
SINGLE
DETAIL

A COMPANY'S POWER IS ITS PEOPLE
- A NATURAL RIVER OF SUCCESS

BE READY TO EXPLORE THE NEW MARKETING CAMPAIGN FOR THE YEAR 2019,

ENTITLED "WE ARE
STRONGER TOGETHER"!

Exactly 220 years ago a paper machine was patented and brought to the market, changing the reality of every human being. We believe that our rich history that has started over 165 years ago, has a direct impact on who we are today... We are a big, worldwide family, who is eager to claim higher and higher... We are a dedicated, international team, powered by 7 divisions all around the globe.

We know that each one of us can make a difference, because the great things are never done by one person. They are done by a team! For us it is clear that only together we can make the real change.

OUR HISTORY, PASSION
AND VALUES DEFINES US...
WE ARE STRONGER TOGETHER!

Watch Campaign movie here:





pmp

DIVISIONS

PMP's DIVISION

PMPoland S.A.

Jelenia Góra, Poland,
PMP Group Headquarters

PMP Group President and
PMPoland General Manager:
Mirosław Pietraszek



Contact us:

+48 75 755 10 61

marketing@pmpgroup.com

pmp

Responsibilities:

- Technology Development,
- P&P Capital Project Execution,
- Marketing,
- Application/Sales,
- Designing,
- Engineering,
- Erection Services,
- Mill Services,
- Service Center for Europe.

PMP's DIVISION

PMP Financial Center

Jelenia Góra, Poland

General Manager:

Bogdan Łada



Credit
Gold

VISA

Contact us:

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✉ finance@pmpgroup.com

Responsibilities:

- Finances,
- IT Systems,
- Human Resources.

PMP's DIVISION

PMP Konmet Sp. z o.o.

Jelenia Góra, Poland

General Manager:

Jarosław Kuzioła



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✉ konmet@pmpkonmet.pl

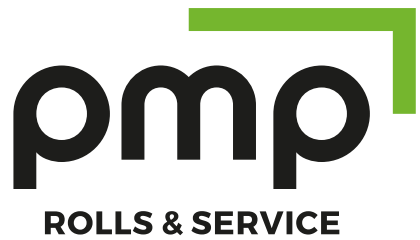
Responsibilities:

- Subcontracting Projects,
- Mild Steel Structures.

PMP's DIVISION

PMP Rolls & Service Sp. z o.o.
Świecie, Poland

General Manager:
Bogusław Dobrosielski



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✉ handlowy.pmprs@pmpgroup.com

Responsibilities:

- Rolls Manufacturing,
- Rolls Service,
- Refurbishment Services,
- Maintenance Services.

PMP's DIVISION

PMPower S.r.l.
Lucca, Italy

General Manager:
Adriano Lazzini



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✉ info@pmpower.it

Responsibilities:

- Energy Solutions for TMs and PMs,
- Hoods/Steam, Condensate,
- Ventilation; Air System,
- Transfer; Stabilizing Boxes,
- Runnability Systems,
- Plant Surveys, Upgrades,
- Engineering Services,
- Mill Services.

PMP's DIVISION
PMP IB (Changzhou)
Machinery & Technology Co. Ltd.
Changzhou, China

General Manager:
Frank Yu



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✉ marketing@pmpgroup.cn

Responsibilities:

- Center of Excellence for EcoEc Tissue Machines,
- Engineering, Manufacturing, Support for Capital Projects,
- Mill Services,
- Service Center for Asia.

PMP's DIVISION
PMP Americas Inc.
South Beloit, USA

General Manager:
Rocky Matuska

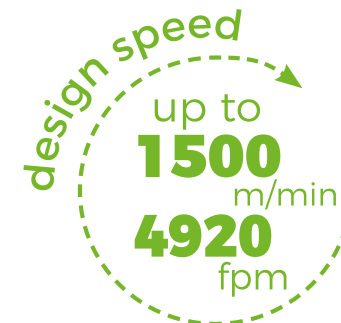
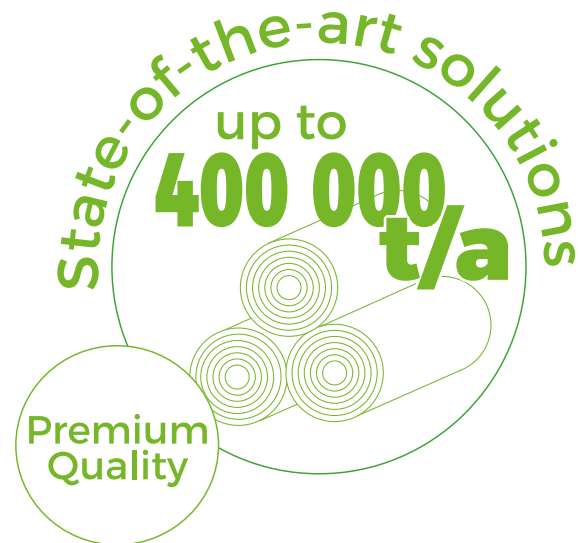


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✉ rmatuska@pmpamericas.com

Responsibilities:

- Liaison for PMP P&P Business,
- Gauging; Fixturing,
- Subcontract Manufacturing,
- Engineering Services,
- Mill Services,
- Service Center for North America.



Intelli-Sizer[®] Size Press

Sizing agent: starch, PVA, pigment
Solids content: up to 18% (starch)
Surface sizing weight: up to 8 gsm total
A structure made of high quality materials
(carbon fiber, composites)

intelli[®] SIZER

Press Section

Counter rolls: plain, Intelli-DCR[®]
Nip range: up to 1400 kN/m
Dryness after press: up to 53%

intelli[®] PRESS

intelli[®] TRI-NIP

intelli[®] NIP

intelli[®] DCR

Intelli-Former[®]

- Increase of wire section dewatering capabilities
- More efficient water removal enables shorting the wire table of fourdrinier

intelli[®] FORMER

intelli[®] TOP

Intelli-Jet V[®] Hydraulic Headbox

Type: hydraulic (with or without CP)
No. of channels: 2-12
No. of layers: single or multilayer

intelli[®] JET-V

Intelli-Shaker[®]

Location: Attached to the Breast Roll on the Drive Side of PM
Application options:
Fourdriniers & Hybrid Formers
Working conditions:
• 0-25 mm / 0-0.98 in
• 1-10 Hz (60-600 strokes/min)

intelli[®] SHAKER

Intelli-Reel[®]

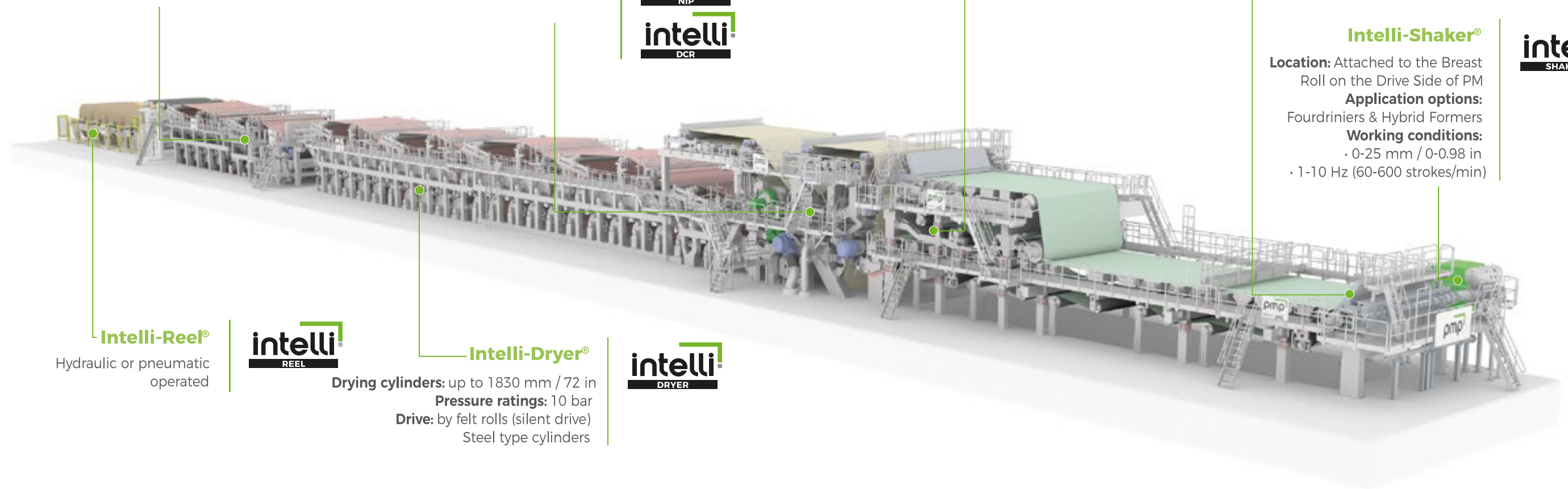
Hydraulic or pneumatic operated

intelli[®] REEL

Intelli-Dryer[®]

Drying cylinders: up to 1830 mm / 72 in
Pressure ratings: 10 bar
Drive: by felt rolls (silent drive)
Steel type cylinders

intelli[®] DRYER



State-of-the-art solutions
270 t/d
Premium Quality

reel trim
up to **5.6 m**
220 in

TM Efficiency
higher than

SYD dia
22'
SYD

95 %

DESIGN SPEED
up to **2100 m/min**
6890 fpm

Media Consumption
Steam as low as 1.9 T/T
Electricity 345 kWh/T average

basis weight
up to **42 g/m²**

**Intelli-YD®
Steel Yankee Dryer**

Steel Yankee Dryer combines high drying efficiency with ultra-low media consumption



Intelli-Hood®

Gas or steam heated hood to ensure high thermal efficiency and energy savings



**Intelli-SPR®
Suction Press Roll**

Dia up to 1400 mm / 55.1 in
SPR maximize the amount of water removed from the sheet (high dryness up to 48% after press)
Nip range: up to 120 kN/m



**Intelli-Jet V®
Hydraulic Headbox**

Single or multilayer headbox guarantees premium tissue quality



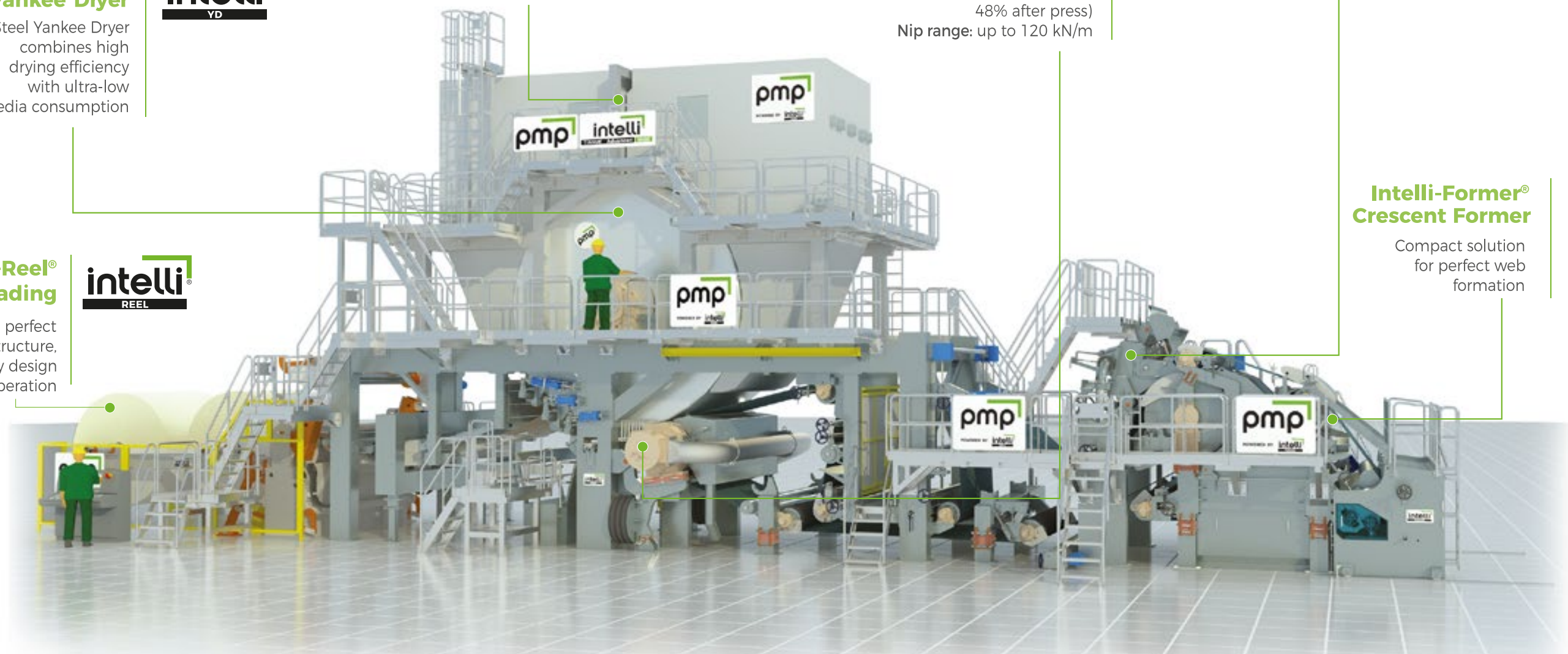
**Intelli-Reel®
& Tail Threading**

Provides perfect parent roll structure, user friendly design and automatic operation



**Intelli-Former®
Crescent Former**

Compact solution for perfect web formation



REBUILDS

A NEW VALUE FOR EXISTING MACHINERY



MAIN FEATURES:

- Precise calculation
- On site measurement
- Scheduling
- Design of the new equipment (tailor made solutions)
- Manufacturing of new core technological units
- Pre-Assembly at PMP facility
- All necessary tests
- Transportation to the mill site
- Adjustment
- Optical alignment and erection at site
- Engineering commissioning
- Technological start-up and post start-up assist
- PM/TM relocation
- PM/TM profile change

BENEFITS:

- **PM conversions opportunities** (newsprint into containerboard / tissue or heavy into lighter containerboard grades)
- **Capacity increase** up to 25%
- Paper property **improvement**
- **Up to 50%** investment cost savings
- **Relocation** possibilities

PHOENIX CONCEPT™

ENERGY SAVING SOLUTIONS

CREATING AN ADDED VALUE FOR YOUR BUSINESS



MAIN FEATURES:

- Drying Systems (hood, steel dryer, steam & condensate system)
- Energy Improvement Solutions (recovery system)
- Sheet Stabilizing System (transfer box, stabilizing box)
- Eco Friendly Solutions (runnability improvements, dust system, mist system, building ventilation)
- Energy Management (plant surveys, plant upgrades, turn-key solutions)

BENEFITS:

- Opportunity to reduce a **total energy** cost by 5 to 20%
- Improvement of **steam, fuel, electricity & cooling water** management process
- Improvement of **production effectiveness** due to increasing of drying capacity
- **Attractive ROI** when investing in modern technological solutions (average payback time under 1 year)
- Improvement of **working environment**
- Operator **friendly solutions**

ENGINEERING SERVICES

A GREAT PERFORMANCE IS OUR GOAL



MAIN FEATURES:

- Application/ Designing/ Detailing
- Product development
- Terminal points definition
- Approval meetings support
- In-house manufacturing with continuous supervision
- Technological Services (commissioning start-up, PM/TM optimization)
- Existing lines troubleshooting (dynamic stability / vibration analysis and more)
- Safety analysis

BENEFITS:

- Wide process knowledge for **efficient project execution**
- **Experienced & dedicated team**
- **Flexibility in action**
- Total annual engineering capacity up to **100,000 hours**
- **Modern engineering software**
SolidWorks, CosmosWorks, CADSIM Plus, E-plan, DBWokrs) – shorter execution cycles
- Cooperation with industry **Experts/advisors**
- **Metric & imperial** designs
- English as a **common language** of communication

MILL SERVICES

KEEPING YOUR MACHINES IN A GREAT SHAPE!



MAIN FEATURES:

- PM/TM pre-erection & erection at site
- PM units routine check-outs
- Emergency repairs
- Optical measurements
- Refurbishment services
- Disassembly & relocation of existing PMs

BENEFITS:

- **Complex** approach
- Wide scope of **activities from A to Z**
- Incorporation of refurbished machinery into **existing papermaking lines**
- **Highly skilled specialists** with vast experience collected worldwide
- Paper mills can be reached by a PMP specialist within **24 hours in Europe, Asia & North America**
- Being in line with **EU regulations & recommendations (CE)**



NECESSITY IS THE MOTHER OF INVENTION

- FORWARD THINKING CONCEPTS ON HOW TO BUILD A PM FOR THE FUTURE

MAJA MEJSNER

Vice President
Business Development
& Marketing - PMP Group

ABSTRACT:

During Papercon 2015, I had an opportunity to present a case study: a paper machine conversion project that we completed in Germany (turning a newsprint PM into a fluting one, based on a relocated line). It was, I believe, the most challenging speech in my whole career as the audience had its doubts and a lively discussion ensued. In 2019, so far, a couple of PM conversion projects in North America have been recorded. There are also many untapped resources available from the shutting down of PMs that can be relocated, refurbished and reconfigured to produce different paper grades that have growth potential. We might be resistant, however, the world is in a permanent move and we need to adjust and stay flexible to keep our business running. The main idea of this talk is to share our experience from projects regarding alternative PM rebuilds (PMP Phoenix Concept™) in Europe and North America (the re-purposing of assets that are no longer attractive – such as newsprint or heavy containerboard grades). The talk will share an alternative investment strategy in papermaking machinery that have become present in the pulp and paper industry within last couple of years and share hard facts and figures that will be useful to attendees when considering where to spend their capital dollars. PM conversion projects are sophisticated rebuild projects, pretty demanding in the area of a proper risk

assessment and logistics - however possible. Prior launching an investment, it is essential to conduct deep analysis.

The driver will be to achieve a blend of the reasonable investment & technological flexibility understanding that there is a huge push for lightweighting and maintaining a high performance of the final product. Modern hydraulic headboxes, shoe presses and size presses are key technologies to succeed. This talk will give examples of how other companies have navigated this strategy and have proven results.

INTRODUCTION:

Global market trends - the only thing that is constant is change.

The landscape of the pulp and paper industry has changed significantly within the last decade. Tissue and containerboard sectors are pretty healthy whereas newsprint and writing & printing papers are in a steady and serious decline. At present there are around 1300 paper machines that produce grades in decline. That represents, according to Fisher International, approximately 27% of the world's papermaking capacity. More efficient machines will possible survive easily however what can we do with those that are not able to bring profit any longer? The good news is, the paper industry is still growing. Only within last decade, according to Fisher International, about 100 million tons of new capacity has been added. It means our industry has responded pretty well to new business challenges by becoming more efficient. There is a new, more visible trend of reconfiguration and re-profiling old newsprint or heavy grade containerboard machines, especially in Europe. Several cases even include total relocation of the machine asset from one country to another. There are also a couple of those project types happening in North American paper mills.

The use of highly advanced technological solutions such as multi-layer hydraulic headboxes, shoe presses and film sizers is getting to be more and more of a requirement to stay successful. Today papermakers are ready to accept a higher risk and follow alternative investment paths – simply finding new business opportunities and focusing on machine rebuilds in different scenarios.

Flexibility as a key for success - PM re-profiling/conversion ideas.

The main idea of a Phoenix Concept™ rebuild is to

combine new key core technology items such as an advanced hydraulic headbox, hi-tech press section and metering size-press with refurbished parts from the existing machine. The project might be based on a relocated machine or it might be a blend of even two or three existing lines with new technology elements. The main target is to significantly lower the investment costs (by even 40-50%) when comparing to installation of a brand new paper machine. The process might include conversion of an existing machine to a different paper grade (i.e newsprint into containerboard/tissue or heavy containerboard grades into lighter applications). The project typically covers: understanding the goals of the rebuild, precise calculations, on-site measurements and equipment condition assessments, machine relocation (if applicable), conceptualizing of the new line, scheduling, design and manufacturing of new equipment, refurbishment of existing equipment, pre-assembly (combining new machinery and refurbished parts), all necessary tests, transportation to the mill site, erection and optical alignment at site, engineering commissioning, technological start-up and post-start up assistance.

Get ready for challenges.

North American assets are the oldest in technical age compared to other areas of the world. The average age of PM in North America is about 30+ years old. On the one hand, American producers struggle with keeping their machines competitive and they need to invest in rebuilds to keep their lines running. On the other hand, there is pressure from the rest of the world to become more efficient and the keep the expected quality requirements.

When we realize that, within last couple of years, there have been only few significant green field investments in USA, there is a big question mark where the destination port is. Don't forget about a challenging situation with newsprint and printing and writing grades. Is it a solution to reuse assets? Can we potentially convert all existing newsprint or printing and writing grades lines? The answer is – unfortunately not. There are limits connected with technology as well as product logistics and finally business profitability. Let me explain.

First of all technology. A conversion candidate should correspond effectively with corrugators it will serve. Newsprint machines and printing and writing machines are more attractive to convert if they are

with hydraulic headboxes with a consistency profiling system, shoe press technology and size press technology. Those technologies are essential to build an attractive new containerboard machine. Some investments might be required within a stock preparation system. So far access to recycled fibers is an added value for the process. Pay attention to auxiliary systems as well. It is relatively easy to re-profile a newsprint machine into a fluting/liner. There are basically three areas to pay attention to. Firstly – a wet end – generally it will be necessary to at least add one more layer of paper, making a hydraulic headbox and a top wire unit recommended. This allows the machine to reach the higher basis weight range a board machine requires as well as to improve paper properties. Secondly – checking the expected dryness after the press as the web is thicker – shoe press technology helps a lot in this case and will allow you to significantly increase the dryness (4-10% more compared to previous technologies) resulting in steam consumption reduction as well as paper properties (bulk and stiffness). Finally, it might be reasonable to apply a size press (especially for lighter containerboard grades) to improve paper properties depending on the anticipated furnish of the rebuilt machine. During the re-design process it is very important to make lines more energy efficient, more environmentally friendly and easier to operate and maintain. Flexibility, efficiency and adaptation to dynamic market trends become crucial.

Secondly - logistics. A geographical location itself is crucial. Proper access to raw materials and consumers is required to run a mill in an effective way. Ask yourself a question – who will buy my products?

Finally – business profitability. Two stages should be considered – an investment phase itself and then running the new line. Definitely permitting for green field investments are much more demanding than brown field. We may avoid a tiring and complicated process of getting permissions, to build a mill infrastructure, to build a team to run the business etc. So here is a big plus to go ahead with conversions. A pre-viability study is extremely important to make sure the line will meet technical parameters and what investments are required to convert the line. Precise calculations of a business model of a new line are recommended as well.

Machine conversion projects are possible and they can be very successful when they are planned well. It is pretty similar to any capital investment project in our industry. There are more and more examples worldwide of machine conversions including the North American region. Within the last couple of years there have been several conversion projects announced or completed in the USA and Canada including PCA in DeRidder, LA, SP Fibres in Dublin, GA,

and Newberg, OR as well as Atlantic Packaging in Whitby, ON, Alsip (IL), PCA Deridder (LA), and Kruger Packaging at Trois-Riviers, Quebec. There are also some examples in Mexico.

Yes – you can! – case studies.

As a company, we have provided couple of conversion projects. Giving below examples, I want to underline and describe different scenarios that can be applied when conversion projects are taken into consideration.

Case one – a newsprint machine conversion into white top testliner. Location: Europe. A project time frame: 13 months (from paper to paper). A PM base: a newsprint machine located in Switzerland. The 212 inch (5400 mm) reel trim machine produced 128 000 t/a of 18 - lbs / 3000 ft² (30-55 gsm) paper at operating speeds of 3,940 fpm (1200 m/min) before it was idled. After transforming the machine to a new configuration the PM today produces 195,000 t/a of white top testliner from recycled fiber with a basis weight range of 25-37 lbs / 1000 ft² (120-180 gsm) and an operating speed of 2,460-2,625 fpm (750-800 m/min), with a 210 inch (5350 mm) trim at the reel. This transformation included redesigning, disassembly, incorporating of core technological items, and full integration at the German mill. The scope of supply covered the design and delivery of new key elements – such as an Intelli-Jet V[®] hydraulic headbox, a top wire unit, 4th and 5th dryer groups, an Intelli-Reel[®] and mechanical drives. It was also necessary to extend the existing bottom wire section and rebuild the press section (including incorporation of the existing Shoe Press). For the factory acceptance test, all elements (new and refurbished) were put together. The last stage – assembly and integration of all elements in the mill was executed by us in cooperation with the customer's project management team as well as external companies. Thanks to just-in-time philosophy and precise planning of storage capacity, the project was executed efficiently and on time.

Case two – a heavy containerboard machine conversion into light containerboard. Location: Europe. A project time frame: 26 months. The heavy grade containerboard machine customer targeted was found in a one of European countries different than a mill location. Originally built in 1994, the 200 inch (5,070 mm) reel trim machine produced 350,000 tpy of 22-62 lbs/ 1000 ft² (105-300 gsm) paper at operating speeds of 3,450 fpm (1,050 m/min) before it was idled. It was then disassembled and stored in containers for two years. After transforming the machine to

the new configuration the machine today produces 250,000 tpy of 100% recycled lightweight liner and fluting with a basis weight range of 17-25 lbs / 1000 ft² (80-120 gsm) and a maximum operating speed of 4,000 fpm (1,200 m/min), with a 200 inch (5,070 mm) trim at the reel. This transformation included redesigning, disassembly, incorporation of core technology items, and full integration at the mill. A converted machine replaced two old machines that were demolished. For better project effectiveness, the scope was split between us and the customer. We took care of new core technology units such as a new press section, Intelli-TriNip[®] with an Intelli-Nip[®] Shoe Press, 1st dryer group, a new Intelli-Sizer[®] Metering Size Press, a new hood, mechanical drives, base-plates, mechanical drives, lubrication system, controls and conveyors in the stock prep area. In addition, the following elements were refurbished by us: the headbox, wire section, dryer section and reel. Our customer took care of the stock prep system, electrical drives, steam & condensate system, dust removal system and other mill auxiliary systems. The scope of our services covered: second-hand machine relocation & refurbishment, pre-assembly at our facility in Poland, erection at site and integration of all elements in the mill. This scope was executed by us in cooperation with the customer's project management team as well as external companies. Our team took care of engineering commissioning, startup supervision and post-start up assistance.

Case three – creating a new line based on two old paper machines located in two European countries. Location: North America. A project time frame: 24 months. The main goal of the project was to boost mill capacity by adding approx. 100,000 t/a tones of high-strength corrugating medium (100% OCC) to be converted in packaging boxes for various industrial uses. A new paper machine (operating speed 2600 fpm - 800 mpm, reel trim 100 inch - 2450 mm) is a blend of repurposed and refurbished assets (originally installed on paper machines in two European countries) and world class new technological items provided by us. The paper machine (a project base) originally produced 70,000 t/a of 26 lbs / 1000 ft² (130 gsm) corrugating medium and liner at 1800 fpm (550 mpm). As far as new technology is concerned a new hydraulic Intelli-Jet V[®] headbox with a consistence profiling system was delivered. The press section is equipped with a reused shoe press (module dia 1500) that was significantly rebuilt by us to work in inverted position with the design nip load of 1050 kN/m. Shoe press technology ensures reliable performance, top sheet dryness level resulting in significant steam



steam consumption savings and user-friendliness of equipment. A new Intelli-Dryer® after dryer section included 10 new, steel dryers allowing further energy as well as space in the mill savings. We provided also fourdrinier extension, tail threading system upgrade, a reel rebuild (relocated from Germany), new mechanical drives and essential replacement parts. In addition vast scope of services including refurbishment, preassembly, assembly at site and technological start-up supervision as well as PM optimization were provided.

To sum up – there are several scenarios that can be applied. An existing paper machine in the mill that can be converted – a simple case. An existing machine somewhere else that can be relocated and converted – a more demanding scenario. An existing paper machine that sits in containers that can be relocated and converted – a challenging scenario. Or finally a new line that can be created basing on existing assets from two lines – another challenging scenario. In all cases technological improvements are required especially in the area of a headbox, press section and size press (if required).

Tips for a successful PM conversion project

Coming back for a moment to the possible challenges connected with paper machine conversion projects let's discuss key tips for success. The decision has been made – your team is ready to start the project. And what's next? First of all, success requires a non-standard approach with a great response to changes during the process. A flexible approach is the key – when second hand/refurbished equipment is involved, being able to identify and implement required changes from the original plan is essential. The risk can be reduced at the beginning by precise judgment of the available resources. For sure it is relatively easier, when there is a chance to see the machine fully assembled. If that is the case, and a detailed review can be done prior to disassembly of PM, refurbishment costs might be reduced within the range of 5-10% of the original estimate. In the case of machinery that is already disassembled and sits in containers, it is crucial to make the assessment as soon as possible to avoid surprises. Make sure to open each container, take photographs, label equipment properly and decide if the equipment can be reused or not. In both cases, the more you know at the beginning the more accurate you can be with budget calculations. Experience in refurbishment services is important – so choose your partners carefully.

When those services are performed well, it should be hard to tell the difference between new and refurbished elements installed on the machine. It is always challenging to combine new and refurbished parts. Do not neglect pre-erection and erection stage of the project.

Success also requires very good coordination skills and a high focus on the final goal. This type of project has a wider than typical scope of activity when compared to a new machine project. It requires more effort in process integration including technology, logistics and on time delivery. It is crucial to build a strong team of open-minded and agile individuals. Proper team interaction during the entire project span is essential and needs to drive the process actively forward. Don't hesitate to invest your project money in review meetings – it will come back. Simultaneous schedules for new and refurbished parts are helpful. In case of massive projects nominating two projects managers might be smart. From a time frame perspective probably the reasonable project timing should last around 18 - 24 months to keep people focused. Constant risk assessment is a must. Without it the track can be lost having in mind those type of projects are pretty dynamic. I am thinking about various types of risk: technological, budget, safety etc. Making decisions as soon as you can is highly required within the entire project frame. Before you start-up a new line make sure your personnel has been trained. Even if they have run a newsprint machine before there are different requirements of a new, reborn line. People need to adapt and accept a new situation.



CONCLUSIONS:

Is a "Phoenix" style machine conversion something that adds value or only a fad that will fade away? Today's business climate forces companies to change the way they spend their dollars and look at assets that were once considered obsolete and find new ways to re-purpose them. The goal of this kind of project is to optimize investment cost allowing you to achieve the best return. Now, we are coming to a fundamental question: how much money can be saved by adopting this approach? Based on information from industry experts, to get additional capacity from a new machine requires to invest approx. \$1,000 - \$1,200 USD per ton of paper (in the container-board sector). The investment per ton depends on the concept. The Phoenix Concept approach used above, might result in savings of even 50% of this investment cost. Reborn machines are smart solutions, where technology is tailor made – key elements are new, less important parts – refurbished. Skills, team experience and modern technology make changing the production profile of a machine possible and a sound business decision.





May 5-8
PaperCon 2019
Indianapolis, IN

SAVE YOUR FIBERS, KEEP THE STRENGTH

- HEADBOX, SHOE PRESS AND SIZING TECHNOLOGY
IN YOUR TOOLBOX

PEMO KLIMCZAK
Vice President, Technology
- PMP Group

The Pulp & Paper industry is directly impacted by global megatrends nowadays. Papermakers have responded pretty well to these business challenges by becoming more efficient. The use of highly advanced technological solutions such as multi-layer hydraulic headboxes, shoe presses and film presses are getting to be more and more of a requirement especially for containerboard producers. My goal is to share with you some ideas connected with achieving premium paper properties while at the same time maintaining optimum energy consumption and saving fiber by applying modern hydraulic headboxes, shoe presses and size presses.

GLOBAL MARKET TRENDS

Our industry is directly impacted by global megatrends. On one hand, some of them, such as the increase in e-commerce (more shopping on line and the need to protect the goods during transportation), fast-paced lifestyles (eating out, ready-to-cook products etc.), an increase in single person households (single portion packages), the aging of the population (higher demand for healthcare products) and higher sensitivity to sustainability (eco trend), fuel the growth.

This is especially true for the tissue and containerboard sectors. On the other hand, as a consequence of digital media trends (e-technology), we have observed a drastic fall in the demand of newsprint & fine paper grades globally. In addition, containerboard producers are forced to fight with reducing basis weight while still trying to maintain product strength and production costs. Energy consumption is becoming crucial. There is also more dynamic competition (import of paper from low cost regions) and more demanding retailer requirements, wanting to be able to pack more products on one pallet and make them stronger as transportation distances are becoming longer. Based on these trends, the growth for packaging should continue smoothly. Perhaps we will see less consumption per capita due to basis weight reductions, however, we should also see more volume of product sold.

The paper industry has responded pretty well to the business challenges by becoming more efficient. The use of highly advanced technological solutions such as multi-layer hydraulic headboxes, shoe presses and film presses are getting to be more and more of a requirement.

MARKET REQUIREMENTS WITH REFERENCE TO PAPER QUALITY

How do global market trends influence the development of paper machines? To help to illustrate this point, let's take three big countries with a range of customer demands: USA, China and Russia.

Unlike the maturing graphic paper, the containerboard sector has been developing and increasing step by step on all continents without exceptions. Basis weight of containerboard is decreasing from year to year by 1-2 gsm, especially in Western Europe and also in the USA. While this lower basis weight trend is observed, in many cases the expectations for the same or even higher sheet strength is expected. A key driver for this trend is Fast Moving Consumer Goods (FMCG) Producers that are pushing to optimize distribution and handling costs of ready-made products. The whole supply chain must be optimized and the container box cost to performance ratio is their object of intense focus. The expectation is clear - the cost of packaging in the entire supply chain must be reduced (the cost of the box, how to pack more in one common pallet, maximizing the number of pallets per truck and disposal issues). Additionally, an attractive appearance of the box is now becoming more

and more important as more and more boxes are used as shelf-ready display in retail stores. High printing quality is critical in influencing the end consumer's choice. For papermakers, the challenges are clear: lower containerboard production costs by reducing fiber use while providing high containerboard performance and improved printability.

In Europe, this trend is fueling the strong growth of Kraft Top liners. These containerboard grades are typically made with a duplex structure where the top is made with virgin Kraft fiber and the bottom is made with recycled fiber. It offers the box converter a paper with the appearance of stronger Kraftliner grades but with a cost profile closer to Testliner. Higher printability on these new Kraft Top liner grades are typically made with hydraulic headboxes on a two-layer Fourdriner machine, however, even Gap forming is beginning to be used more often. Hydraulic headboxes that offer superior sheet uniformity and formation are a requirement. Today's modern technology allows the papermaker to reduce the top Kraft fiber while maintaining the same layer purity. Further down the line, the Shoe Press Technology offers a very efficient way to remove the water from the paper web with a gentle touch, securing paper stiffness. At the end, the Size Press, with its unique ability to deliver strength and stiffness by pressing starch cells into the paper fiber mesh, allows the reduction of fiber volume per functional surface. One additional, modern technology is spray coating of the kraftliner surface. All these tools currently available give the papermaker the ability to produce the required strength and stiffness with better printability and at the same time, to do it with less energy, less fiber and more Eco Friendly.



PROJECT CHALLENGES AND EXPECTATIONS REGARDING TECHNOLOGY

Today papermakers are forced to combine several goals while they consider investment projects. The five key ones are: PM capacity increase, improvement of paper properties, optimizing energy consumption, fiber utilization improvement and PM runnability improvement.

The best suited tools to support these projects are state-of-the art hydraulic headboxes, shoe presses and size presses.

A well designed hydraulic headbox brings better paper quality. Mills have seen a basis weight profile improvement of up to 80% over older headboxes with excellent formation & fiber orientation. A well-made headbox will also improve PM uptime due to the high quality of the interior surfaces. High quality surfaces allow the headbox to run clean, eliminating the need for frequent maintenance or boil outs. A modern headbox should also offer a wide range of adjustment which will ensure flexibility of production. It is the heart of the paper machine and plays a key role in the papermaking process.

Shoe press technology is an excellent response for today's demands. It brings the chance to produce a bulky and strong paper with a smooth and bright surface prepared well for printing. It helps to significantly lower the cost of production when compared to previous technologies as a dryness is increased by 4-10%. Production costs are significantly reduced as a result of lower steam consumption. It is well known that about 1% dryness saving in press section helps to save 4% of steam in a dryer section. With a stronger web, PM runnability grows – you immediately observe less breaks. This solution becomes “a must have” especially for containerboard makers who need to keep a high uptime of the machine, good quality of paper and low production costs.

A good operating film press is a crucial element of stable PM – specialists say that 50% of breaks are caused by poorly operating size presses. The main goal with the installation of film presses is to achieve a good printing surface and to increase the paper strength properties. It becomes possible due to the proper coating solutions application (surface sizing weight is to 8 gsm total – up to 4 gsm for one side of paper). With the optimal configuration and design of the size press you can also achieve better dryness – by 15%, which brings savings in energy consumption and machine operation as well.

EXPERIENCE THAT COUNTS

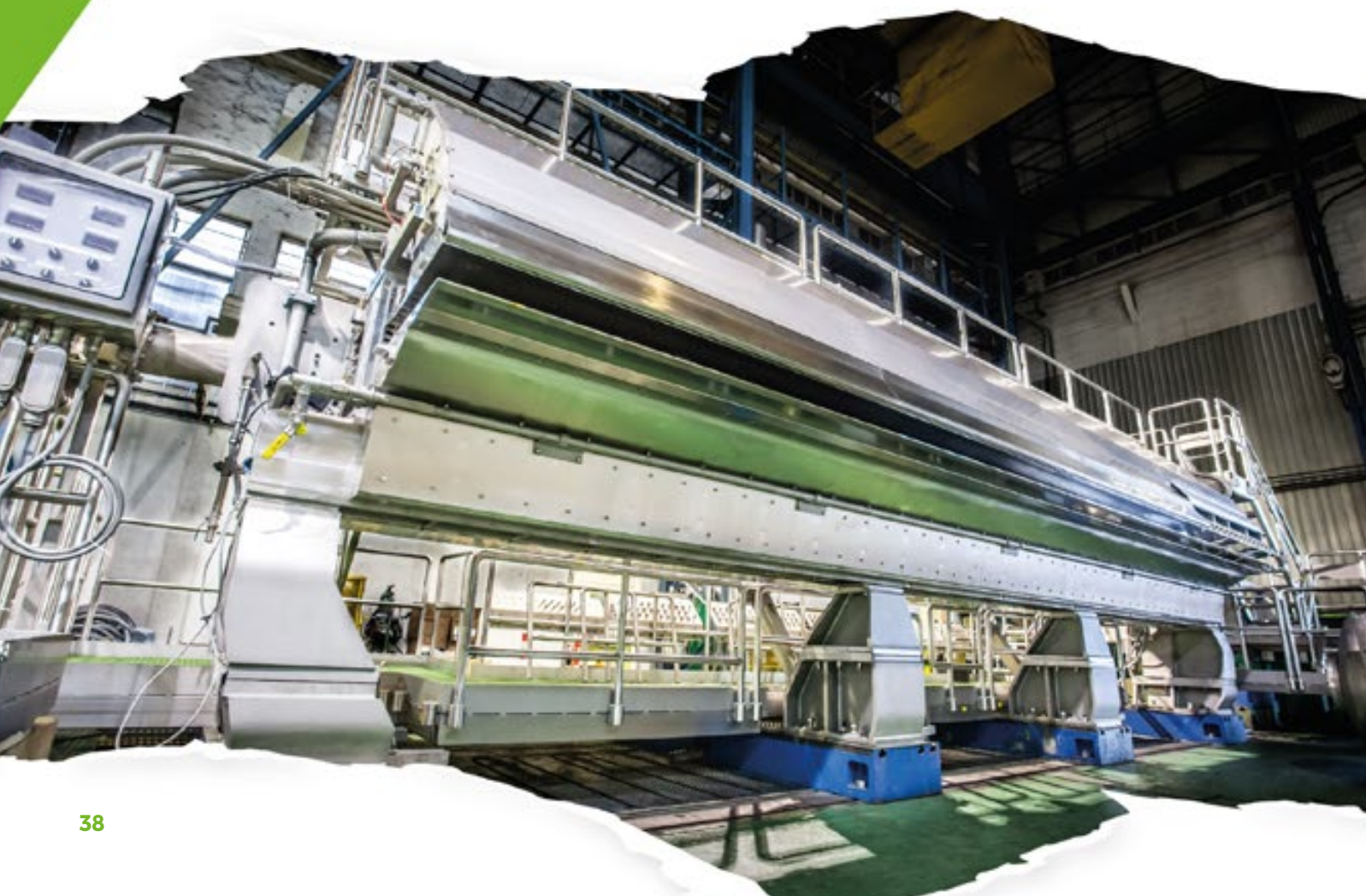
Our experience has been collected on 6 continents, 34 countries on both well-developed and emerging markets, in paper mills that produce almost all grades, including tissue, packaging, fine and specialty papers.

We have been working actively with market leaders including International Paper, Ilmim, Smurfit Kappa, APP and others.

Complex control of the headbox process, from the concept, through the design, manufacturing, quality control up to optimization, has been our core expertise in providing optimum solutions to papermakers. For over 160 years of activity, almost 760 headboxes of different technologies have been built in our factory in Jelenia Góra, Poland, including rectifier roll headboxes, as well as hydraulic. Since 1990 our company was a part of Beloit Corporation and was named the Center of Excellence for producing hydraulic headboxes. This tradition continues today.

Shoe press technology designed and made by PMP was introduced a several years ago with the first successful installation in Ukraine (for RKTU). The Intelli-Nip® Shoe Press technology is great hybrid of energy saving solution & impressive paper properties and is recently a desired solution worldwide. Today you may find Intelli-Nip® shoe press in paper mills in Asia, Europe, North and South America.

The PMP Intelli-Sizer® film press is a relatively new product in the PMP Intelli-Paper® platform. PMP provides mainly metering size presses, however the company is also able to supply puddle size presses and Spray Sizers. Recently, as an answer to our customer's needs, PMP has implemented a solution where the Size Press works in a metering and puddle configuration (Hybrid). PMP's Intelli-Sizer® size press is adjusted to apply starch, PVA as well as pigments. It depends on what kind of result the customer would like to achieve. Right now, PMP has references of film presses in Asia, Europe and South America. Size presses are getting more popular as customers' needs are growing.



PROJECT SCENARIOS - CASE STUDIES

To better illustrate all the points above, below you will find three examples of such projects delivered by PMP. Case study number 1 is a paper machine line wet end rebuild for a leading paper producer in USA producing twin ply linerboard and corrugated medium.

The main goals of the rebuild were: to improve paper quality (dealing with a poor CD profile), to take care of layer purity and to allow production of a relatively thin top layer.

The scope of the delivery executed by us covered two hydraulic headboxes (primary and secondary), a Consistency Profiling System for the primary headbox, essential wire section modifications, as well as pre-assembly, erection supervision and start-up services. The customer took care of the stock approach system for both units.

Both headboxes were designed and calculated carefully to meet specified basis weight splits between the top and bottom plies. There were several challenges at the beginning of the project. From the design perspective, taking into consideration an extreme pondside width (close to 9 meters - 350 inch), two factors were critical: understanding the process of papermaking and the mechanical design to control deflection. As a company we have a rich experience in deliveries of these type of units including both primary and secondary positions. To make sure the deflection would be controlled, we followed a tailored-made design path including thermal and hydraulic calculations. Each stage was thoroughly checked due to the demanding nature of the project. To achieve the proper quality of the top ply and to ensure proper layer purity, the equipment was designed to minimize the jet impingement angle from the secondary headbox. Erection and start-up process were completed within 19 days. As a result of the rebuild, paper quality was improved significantly (CD 2 sigma less than 0.6%) and the expected layer purity was achieved. This installation helped us to obtain similar applications for other customers in the US.

Case study no 2 is focused on a press section rebuild. In January 2016, we signed a contract with one of the market leaders for a press rebuild of PM in its Mill in Colombia. Before the rebuild, the machine produced Testliner & Fluting with a daily capacity of 270 t/d. The machine was supplied with state-of-the-art new technological items provided by PMP. The

project's driving force was modern technology that ensures energy savings solutions following global trends. Significant improvement of paper properties were also expected.

Project goals were focused on generating energy savings, improving the machine's runnability, and increasing paper properties as well as its annual capacity by 31%. The main idea was to apply a state-of-the-art Intelli-Tri-Nip® Press Section with an Intelli Nip® Shoe Press. The shoe press technology was going to play a key role in the final success, bringing ultra-high dryness after press (from 44% before rebuild, up to 52% after rebuild). The shoe press technology enabled significant improvement of paper properties (especially bulk & burst strength) and significantly supported the machine's runnability increase.

PMP's scope of delivery included the Intelli-TriNip® Press section with the Intelli-Nip® Shoe Module (design nip load 1400 kN/m, shoe press module type 1300). The compact design of the new Intelli-TriNip® press section ensured the reduction of open draws and significantly increased PM's runnability. The scope of delivery also included an Intelli-DCR® (Deflection-Compensation Roll), PM auxiliary systems such as PM controls, mechanical drives, machine pulper, as well as base plates and spare parts. Structural machine components were designed for a design speed of (1000 m/min) 3280 fpm. PM has started-up successfully on 18th July 2017.



This particular project is an example where PMP's technological knowledge combined with high-tech equipment became a key factor to achieve common success. The last three years have brought a couple of projects of that type, confirming a growing trend and interest in this technology.

Case study no 3 is focused on a PM grade change. The scope of supply covered various sections including a new Intelli-Sizer® metering size press. The customer expectation was to significantly improve this area.

The PM is currently producing fluting & testliner with an annual capacity of 250,000 t/a and an operating speed of 3937 fm (1,200 m/min). The main goals of the project in the size press section were to improve PM runnability and paper stiffness improvement. Stable size press run was necessary to achieve runnability. Increasing paper strength properties by sizing were also in the interest of the customer.

PMP Intelli-Sizer® metering size press was designed to achieve surface sizing weight up to 7 gsm total – up to 3.5 gsm for one side of paper. The starch solids from 12-16% brings significant advantage to get better dryness after the size press. It is worth mentioning that it is able to apply the starch with a temperature of 80°C (conventionally 60°C). The design nip of 80 kN/m (operating 60 kN/m) was possible thanks to a special design – there were major changes in the size press construction and nip loading. A Smart-Nip system was also applied. It controls the nip rolls in real time. It brings optimum starch application and effectiveness of the whole machine operation.

Basis Weight 110 GSM	CMT0	SCT CD	SCT MD	TS CD	TS MD
	[N]	[kN/m]	[kN/M]	[kN/M]	[kN/M]
Without SizePress	205	1.7	2.9	2.7	6.1
With Size Press	236	2.1	3.3	3.2	8.0
Increment	15%	24%	14%	18%	31%
Basis Weight 120 GSM					
Without SizePress	231	1.8	3.1	3.0	6.6
With Size Press	285	2.5	3.7	3.7	8.5
Increment	23%	37%	21%	23%	29%

The Intelli-Sizer® metering size press for this project is one of the most advanced solution delivered by PMP. Achieving on time technological guarantees (equal starch film at the first time) is a reason to choose PMP's solutions as reliable ones.

ONE STEP AHEAD - SPRAY COATING

Paper and board making is a multi-dimensional process. In general, the functionality of most paper and board products is a balance between the following criteria:

- functional properties of the surface; i.e the look of the printed image, the strength of the surface and the barrier properties,
- the stiffness, bulk and feel of the product,
- the specific surface area measured by m²/ton of product.

The product is a result of compromises and vicious circles. For example, improving the printability of the product with additional coating and calendering will lead to reduced stiffness and bulk, which has to be compensated for by increasing the basis weight of the web, which has a negative impact on the specific surface area.

In this process, surface treatment plays a significant role. For example, achieving the required surface functional properties with less coating applied makes it possible to reduce basis weight and to increase the yield.

The challenge is to apply each required layer with the minimum amount of chemicals and coating required. Such requirements add pressure to developing machinery and equipment to accomplish these goals.

Currently available processes of surface treatment have significant weaknesses.

Blade Coating

As well known in the art of coating, one of the basic issues in surface treatment is the penetration of water into the web. Water penetration negatively affects fiber bonding which in turn reduces the strength of the paper during the surface treatment process. Furthermore, water penetration causes fiber swelling which has a negative effect on the surface's capability to carry high quality images.

The widely used blade coating method, which produces surface properties suitable for high quality images on paper and board, is also very efficient in rewetting the web. In the conventional blade metering system, a massive amount of coating is applied on the web and thereafter the coating is pressed into the web structure by a blade with high pressure. The excess coating is removed and fed back into the supply tank. A substantial amount of energy is used for just pumping of the coating, as roughly 90% of the coating applied before the doctor blade is removed and re-circulated back. Furthermore, application of several coating layers requires huge multilayer surface treatment units and requires high investment where installed. Due to these issues, significant efforts and research have been spent on ways to increase water retention and solids content in coating.

Film Coating

The film metering coater was developed in the end of the 80's and represented a breakthrough in coating. This method is limited to printing papers where the demand

on quality of the printed surface is lower. The film splitting effect is a well-known phenomenon. The operating window of the film coater is relatively narrow. The amount of coating that can be applied is limited to around 10 g/m².

The solid content of the coating is on the level of 60%. Controlling the amount of coating to be applied is not very accurate and is based on changing the applicator rod and possibly the coating solids content. In addition, over time, the amount of coating varies as the applicator rod wears.

Conventional Surface Sizing

Today in surface sizing, the film sizer is the most common application method. However, the maximum solid contents of starch is on the level of 15%. This means that the amount of water transferred with the starch is 6 to 7 times the amount of starch to be applied. Sizing of lower basis weight grades, where both sides have to be surface sized simultaneously, is challenging

Barrier Coating

The rod metering system is used for barrier coating. The solids content is usually 45 - 50% and the amount applied is on the level of 7 - g/m² (dry). The best result in barrier coating is achieved with two barrier layers. Double barrier coating with conventional equipment is not feasible.

THE ANSWER TO THE ISSUE - HIGH PRESSURE SPRAY COATING

In a High Pressure Spray blade method of coating, each layer of coating is applied via a high concentrated spray directly onto the web surface and smoothed with a light pressure, low impact blade.

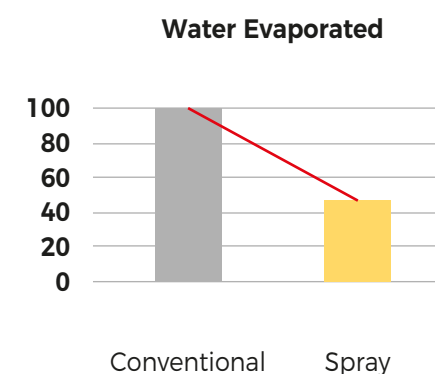
By breaking up the slurry into a fine spray and applying that spray onto the surface, a uniform and even surface is achieved. The low impact blade is required for the coating to get anchored onto the web surface. With the blade a small amount of excess coating is removed.

With this application and metering concept, the range of coating that can be applied to the surface is between 1 to + 20 g/m² in one or two layers, and in exact amounts. The high pressure hydraulic system is designed to handle slurries with solid contents up to 70%.

Based on pilot testing, it has been found that with high pressure spray coating, rewetting of the web is lower than that of blade coating. This has been verified on the pilot machine and with printing tests. This is a result of several factors, such as the following:

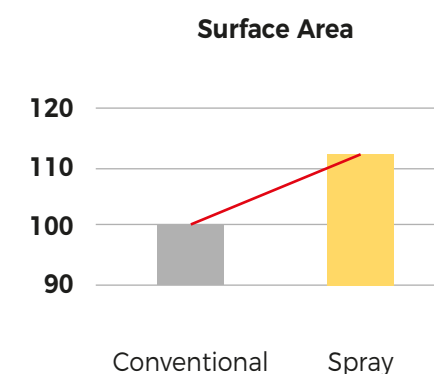
1. High solids content of the coating.
2. Small amount of excess coating.
3. Lower blade pressures.

The re-wetting of the web can be decreased further by applying the coating in two layers against one backing roll. The first layer is adjusted to a maximum of 5 g/m² of coating. There is a low amount of water in 5 g/m² coating at a high solid content close to 70%. Trial results suggests that first layer formed can carry the next layer without the need of interim drying between the two layers applied. This means less penetration of water into the web and less mottling. As a result, a double coating effect is achieved with one coating station. Double coating with a high pressure application method without interim drying also called wet-on-wet spray coating.



Example Case

- Potential 200 t/d steam savings
- Payback < 18 months



Example Case

- Yield improvement +10 %
- Payback 8 months

CONCLUSIONS

To sum up. When papermakers look for opportunities to improve basis weight profile, sheet formation, fiber orientation, productivity improvement or better strength properties of paper, but also to achieve energy savings, fiber savings, better operating costs or stable PM run, we would like to encourage them to take a closer look at technologies available from PMP Group Paper Platform, which can be installed on their papermaking lines.

What have been the most important technical developments made at PMP during 2018 and what can we expect in 2019?

Year 2018 has been a record year in a long PMP history taking turnover into account. As we are becoming stronger, our brand is more respected, we dare to think about a more dynamic and conscious development of solutions we provide for our customers (following our company vision).

When our Chinese customer, who is one of market leaders in China, appreciated spectacular start-ups of several Intelli-Tissue® EcoEc 1600 lines (3.65m @reel) and recognized us during an official gala as an silver level, strategic vendor we felt very proud. Encouraged by this achievements and following our Everest Development Strategy for years 2017-2010, we decided to re-enter a segment of double width tissue machines. Understanding that tissue machine technology has been optimized over the years and most solutions available on the market are very similar, we decided to brainstorm and create a refreshed vision generated by a special working group of specialists. I am honored to lead this team utilizing all PMP experience in this area. It is a great opportunity to ask users what they like, what is smart and what are their daily challenges. In autumn this year, we have launched WIDE project and our driver is to create 5.6m @reel tissue line of the best media consumption in the world (Crescent Former type). In addition, it will ensure a quality advantage in a final product for customer and will be characterized by a high runnability and at the same time comfortable working conditions, with an attractive conversion rate of operating costs per ton of tissue. WIDE stands for Wise Solutions, Innovative, Durable, Energy Efficient. Wise solutions meaning all ideas that help to improve tissue quality such as double layer headbox, massive SPR or shoe press and others. Innovative – user friendly – solutions that correspond with robust solutions and users preferences as well as PMP smart concepts, with industry 4.0 flavors. Durable – of high quality (without pauperization), a compact-modular construction, trouble-free operation (TM efficiency as high as 95%, that offers a comfortable

TISSUE TRENDS INTERVIEW

MAJA MEJSNER
Vice President Business
Development & Marketing
PMP Group

performance. Energy Efficient TM – of lowest possible media consumption (steam consumption as low as 1.68 t/t of paper). TM line has been named Intelli-Tissue® Ultra and will be introduced in Asia during CIDPEX and in Europe during Tissue World in Milan.

What developments have you made in terms of energy?

I have recently heard an interesting statement that papermakers biggest challenge nowadays is energy policy trilemma: security, affordability and sustainability. We – as a machinery company – need to constantly think how to make tissue makers life a bit easier. An obvious driver is to provide solutions of the best media consumption (to decrease amount of energy needed) applying smart technologies like already known steel YDs, Intelli-Cap®, massive dia SPR (over 1400 mm) or shoe press and so on. Our focus now is to take a magnifying glass and to look for even small savings. As a part of above mentioned WIDE project, we have already created a concept of a full energy recovery system in the area of TM dry end helping to decrease steam usage by approximately 5% and at the same time to increase TM efficiency by further 4-5% as well. That is the way to utilize knowledge coming from observation of running references in a conscious way. We are also convinced that we cannot stop in looking for further improvements of existing solutions. That is why we look for improvements of design of our steel YDs to maximize energy efficiency effect. We even see further opportunities of the entire process evolution by applying an alternative configuration of a shoe press. This way a wall thickness of YD can become thinner which results in decreasing investment costs and increase of process effectiveness. It is very important to join forces with agile tissue makers who are ready to share a risk of trials to become leaders of those who dare to be first.

It is worth mentioning that as PMP we have a dedicated division: PMPower located in Italy that is actively working on new solutions in the area of energy. Their rich experience and knowledge has already helped many tissue makers to improve energy consumption results.

What changes have you seen in the global tissue market in terms of changes in demand, and what new challenges and opportunities has that presented for paper machine suppliers?

In case of the tissue business, it is important to look from a different angle. What we take a consumer point of view, it will be affected by where the person lives, what preferences he/she has, how much money he/she can spend on tissue products. More mature market require more innovative products – softer, smarter and more flexible. If a market is more mature, then a tissue line needs to be more flexible (wider product range), offer extra tissue features (extra bulk, extra softness) – simply those TMs should be more advanced so an investment cost is typically higher. In case of emerging markets, consumers expect less – so TMS can be simplified and cheaper. PMP couple of years ago implemented Optimum Cost Solution strategy and opened an entity in China: PMP IB to provide a high quality product, combining European expertise with a wide span of Asian market potential. Today PMP IB is a fully operational Center of Excellence with a capacity of up to (8) TM lines per year.

When we take tissue producers angle into account, they want to make sure per ton of tissue production is optimized. When they own one machine a challenge is smaller. However if a tissue producer runs for instance 50 machines in several locations, in different countries their biggest challenge is how to standardize the process to have the business under control.

I would sum up this way, for us as the machinery company: to discuss as much as we can with tissue producers to understand a context of running the business to provide a smart solution and at the same time to do our best to show a long term consequences of choosing a particular one. If I were a tissue producer, I would pick a flexible line, meaning for instance a construction allowing me to install today certain units and in the future – if a market changes, to have a space for new elements.

What geographical areas are you looking to next year and why? What technical PM trends and challenges are you seeing in these regions?

Even tissue sector has slowdown a bit recently, it is still healthy. Tissue market is pretty dynamic: today China is a leading producer of tissue followed by North America and Western Europe. Recently there are two interesting trends that will change a shape of our industry: politics and consolidations. China has been recently scientifically affected by its government policy. Some mills have been closed already as their technology was obsolete. Some other will be closed due to expiration the business license and energy limitations. It means some producers will be forced to go somewhere else. It is interesting to see big players like APP decided to enter US and Australian market by taking over existing mills. It is a sign of time.

Taking current trends into account, I would still keep China in mind (even with their temporary troubles they will stay number one), however will increase attention towards Latin America and Eastern Europe – areas ready to grow. Technology choice as I said before will be driven by local consumers' needs. Emerging markets will probably become more agile to install faster TMs than before (to increase annual production

potential). Mature markets will bend themselves towards double width TMs rather than single one. I would also expect more interest in the area of alternative fibers understanding that recently fiber costs are in a permanent increase.

What overall trends in tissue machine manufacture will have the greatest impact on the production process in the next five years?

Actually I would repeat what I said last year. There are, in my opinion, three main drivers that fuel a technological growth in tissue machinery: an energy saving need, a tissue quality improvement and an increase of safety. In addition, there is a need of higher system automation according to a philosophy of industry 4.0. This year I would add: let's understand operators and make their life easier.

Energy saving solutions are directly connected with robust solutions like large dia steel YDs, suction press rolls or shoe presses, air caps, highly efficient auxiliary systems etc. I would also mention our recent ideas like full energy recovery system. The next level is to improve those technologies for instance to apply alternative configuration of shoe press to optimize YD configuration. Time will show.

Shaping of tissue quality might be achieved by applying technology on the machine (layer type headbox, shoe press etc.) as well as to work with alternative fibers. Papermakers are getting more open to test alternative fibers like cocoa, coffee, hazelnuts as well as nanofibers). We should move ourselves in the field of innovation more than before.

Safety is a priority worldwide. I believe it is a right time to join forces on an industry level to define safety standards for the entire industry. We should take this subject and discuss during industry events to learn from one another and make our industry a better place.

How to make operators' life easier? The only way is to visit installations and ask what they like and what is a daily challenge. It is crucial to maintain a connection link between design engineers with users. Brainstorming about it? Why not!

How are new paper machine technologies changing the marketplace for the paper machinery manufacturers?

Tissue business is a growing place however its priority is to run stable and keep production costs under control to make business profitable. There is a small area of taking risk and to run trials. Finding a sweet spot is not easy.

I rather see we and our competitors as machinery builders push tissue producers to move forward and apply novelties. I strongly believe in a long-term partnership. Then both parties know each other and can create something spectacular. We are lucky to have such partners. It is a privilege to be involved in development projects that might become a breakthrough for the industry. Time will show!



CASE STUDY

Be Wise, Get Wide, Achieve Spectacular Results with Intelli-Tissue® Ultra Technology

Presented by Maciej Ossowski
26th March, Tech Talks Seminar

reel trim
up to
5.6m
220in

SYD dia
up to
18'
SYD

DESIGN SPEED
up to
1900 m/min
6234 fpm

basis weight
up to
14.5
g/m²

TM Efficiency
higher than **95%**

Media Consumption
Steam as low as 1.73T/T
Electricity 390 kWh/T average

Double Layer
Intelli-Jet V®
Hydraulic Headbox

intelli
JET-V

Intelli-Cap™

intelli
CAP

Intelli-YD®
18' Steel Yankee Dryer

intelli
YD

Intelli-Former®
4-roll Crescent Former

intelli
FORMER

Intelli-Nip®
Shoe Press

intelli
NIP

Intelli-Reel®
& Tail Threading

intelli
REEL

EVENTS 2019



20 - 22 FEB ACOTEPAC

(Cali, Colombia)

ACOTEPAC
CONTRIBUYENDO CON INNOVACIÓN A LA INDUSTRIA DEL PAPEL

25 - 27 MAR Tissue World

(Milan, Italy)

TISSUE WORLD
Milan

5 - 9 MAY PaperCon

(Indianapolis, IN, USA)

PaperCon 2019
May 5-9 Indianapolis, IN

23 - 25 OCT ASPI Fall Meeting

(Charlotte, North Carolina, USA)

ASPI
Association of Tissue and Paper Industry Leaders
The Forum for Connecting Industry Leaders

2019

20 - 22 FEB ASPI Spring Meeting

(Sarasota, Florida, USA)

ASPI
Association of Tissue and Paper Industry Leaders
The Forum for Connecting Industry Leaders

17 - 19 APR CIDPEX

(Wuhan, China)

CIDPEX
CONFERENCE

9 - 11 OCT MIAC

(Lucca, Italy)

MIAC
2019

10 - 12 DEC APPITA 2019

(Melbourne, Australia)

Appita
Pulp > Paper > Packaging > Bio products

pmp

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