



Promotional Magazine

27/2014

Paper | Tissue | Build-To-Print | Services | Specialty Products

New PMP products
take over the market!

160 years of PMP
Group's history
different owners, same principles

Is achieving
dryness level after
press at 50-52%
possible?

How to
minimize media
consumption

Hydraulic
Headbox as
the heart of the
paper machine

Case
studies
real life examples of
executed projects

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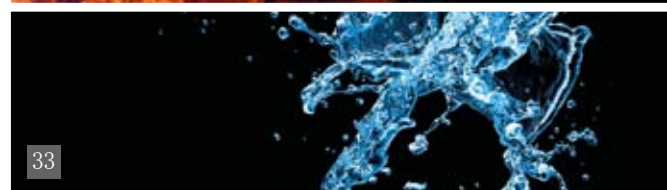
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Passion comes first

It has been 160 years since PMP Group became involved in the paper industry. During those decades, due to historical, political and economic reasons, the company went through many transformations and take-overs. The name changed from H. Füllner, Fampa, Beloit Poland to finally be established (in the year 2000) as an independent, global corporation – PMP Group. The company's history was filled with challenges, however one element always stayed unchanged – Passion.

Since the nineteenth century, beginning from the first owner, commitment to development and teamwork were the roots for further success. The company has always followed one simple rule: helping our customers to develop their business, makes our company grow together with them. By being flexible in the approach towards customers, the company has the possibility to not only tailor the offer according to customers' needs, but also to develop and improve its own technology. This creates a win-win type of solution, which is the base for future, long-lasting partnership.

Currently, PMP Group is present all over the world. By having five divisions on three major continents (Europe, North America and Asia), the company is able to offer high quality products and services for a reasonable price. Favorable location gives also the opportunity to be close to its customers. As they say "time is money", thus fast reaction to any need is crucial in today's industry. This approach, combined with the company's business philosophy based on trust, seems to be well received on the market. Last fourteen years alone, brought 166 projects (new units and rebuilds of technological lines) for 105 customers, in 24 countries.

Many of those projects are repeatable orders from the same customer/corporation. This is a confirmation that PMP Group is a reliable business partner that is focused not only on its financial growth (which in fact shows stable, year by year sales increase of 32%) but also on the customer's business development. The company is proud to be working, for many years now, with companies such as Yuen Foong Yu (China/Taiwan), GCPU (Indonesia), International Paper (USA) or Procter&Gamble (USA).

As a global corporation, PMP Group is focused mainly on five business areas: paper, tissue, build-to-print, specialty products and services. Paper customers are offered complete paper machines for special papers (like MG) and packaging units, described by the Intelli-Technology® platform. Product portfolio in this area covers everything from Intelli-Jet V® headbox, through dewatering unit – Intelli-Top® former, Intelli-Nip® shoe press, Intelli-Sizer® metering size press (film press), Intelli-MicroCrepe® and ending on Intelli-Reel® (more on page 16).

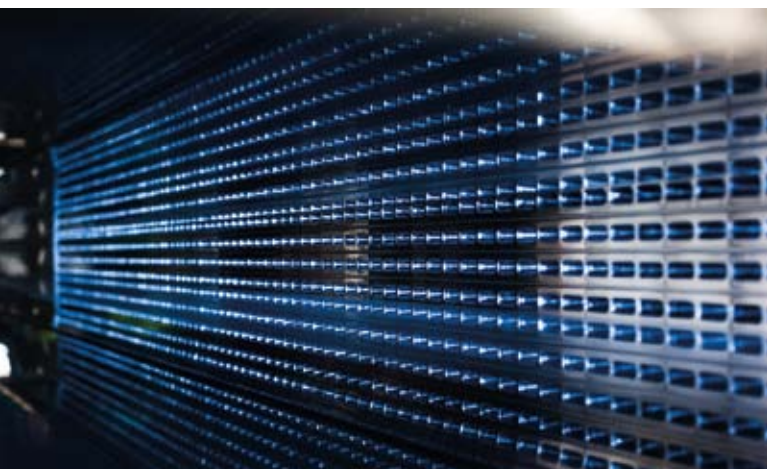
Due to the high demand on the market in regard to leading complex added-value projects, PMP Group offers also a so called Phoenix Concept™ rebuilds. This specific offer is connected to the machines modernization in 3 scenarios (more in the article on page 28). Just as a phoenix rises from the ashes – PMP Group is able to put a new life into any machine.



“From my point of view, this constant statement “price, quality and technology” is exactly what PMP Group offers.”

- Sergey Pogodin, CEO, SFT Group





For the tissue industry, PMP offers complete technological lines (Crescent Former type tissue machines), described by the Intelli-Tissue® platform. This platform presents variety of solutions and TMs of capacity starting from 50 t/d up to 240 t/d, of width 2.4 – 5.6 m and operating speed up to 2100 m/min. Intelli-Tissue® machines can run on both virgin and recycled fibers. A new release, in the PMP's portfolio, is the Intelli-Tissue® EcoEc family which was introduced to the market in March 2012. These machines are designed exclusively for emerging markets, due to their ultra-low media consumption figures (steam, electricity and water) as well as optimum investment costs. These specific TMs are designed in Poland while most parts are built in China, which gives an excellent synergy effect. Intelli-Tissue® Advanced tissue machines line is a perfect choice for customers who are experienced in tissue production and are looking for product portfolio extending (through adding new features) as well as total capacity increase. Tissue machines from the Advance line offer capacity over 75 tpd (more on page 50).

For both tissue and paper industry, PMP Group provides variety of engineering services that are based on experience

and modern tools such as 3D Solid Works, CosmosWorks, CadSimplus, E-plan and DB Works. What is more, PMP service portfolio covers anything from erection supervision groups, safety audits, periodical surveys and repairs of rolls, small repairs of existing equipment (like pumps, blowers or corroded constructions) and many more (page 36).

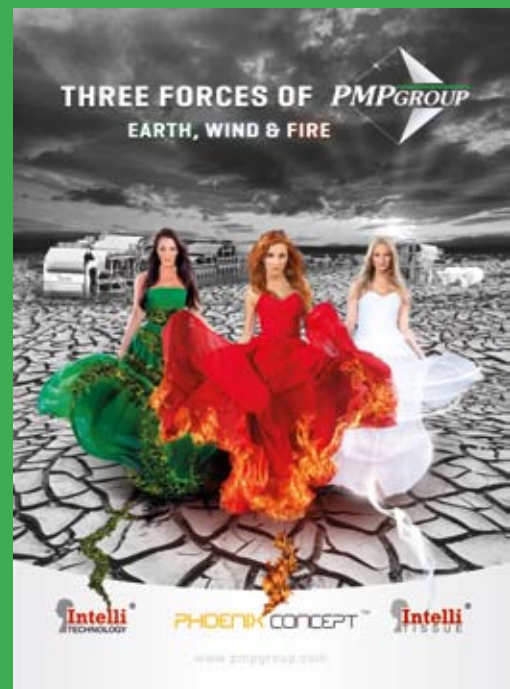
In the Build-To-Print business PMP Group offers precision machining, fabrication and assembly of complex and large machinery, based on documentation provided by the customer. Due to a vast experience, the company deals with both metric and imperial designs and specializes in stainless steel and heavy fabrications. This area is also an excellent way to consume PMP's manufacturing capacity and support the company's cash flow (page 38).

Last but not least is the Specialty Products area. This business is based on designing and building custom gauges and fixtures for production and assembly lines for the Automotive, Aerospace and General Production facilities. PMP is able to design and build a custom gauge to check incoming part



tolerances, production part tolerances, or final assembly tolerances. PMP also designs custom fixtures for work-holding and assembly. These fixtures are used to dramatically decrease manufacturing and assembly times (more on page 35).

PMP Group's product and reference portfolio is vast and divers. This diversity allows to assure a stable position on the market, which eventually resolves in the company's reliability. However, the most important asset, is the PMP Group's employees. All in all, people are the ones who develop dreams into reality. People working at PMP Group are committed and passionate about what they do. Every customer is treated individually and meets a friendly and honest atmosphere. PMP has its own, internal Code of Ethics which is based on partnership, optimism, decency, teamwork, professionalism, openness and efficiency. By following these simple rules the company gained not only acceptance on the market, but also managed to develop long-lasting B2B relations. Ultimately, for PMP – Passion Comes First...



Three Forces of PMP Group – Earth, Wind & Fire

Metaphorical properties of forces of nature have become an inspiration for PMP Group to start a new campaign which symbolizes benefits of the company's three major, technological lines in the pulp and paper business.

EARTH – Intelli-Technology® - Platform Concept for Papermakers - characterized by low media consumption (ECO) and high runnability – thus the green color and the connection to Mother Nature. PMP's Intelli-Technology® line reflects all benefits that are associated with one of the most powerful Forces of Nature – Earth.

WIND – Intelli-Tissue® - Platform Concept for Tissue makers – technology that produces premium tissue (light and bulky) and is characterized by cleanliness of equipment (hygienic, safe for health) – thus the white color and wind - to underline main features of the final product. PMP Intelli Tissue® line is as powerful and delicate as the Wind itself.

FIRE – Phoenix Concept™ Rebuilds - Red color symbolizes energy and power to act. FIRE underlines dynamism. For PMP Group, Fire is the link between Earth and Wind. In the technological concept, it refers to both the Intelli-Technology® and Intelli-Tissue® line.

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Near and far travels...



PMP Group's Global Presence



A long time ago, back in the nineteenth century, certain businessman decided to start a company that would design and manufacture machinery for the paper industry in the very center of Europe, in a town called Jelenia Góra (in free translation: the Deer Mountain). Most certainly, Heinrich Füllner did not even imagine that 160 years later, in the very same place, machines would still be produced, albeit in a changed reality, full of electronics and much more dynamic that it used to be. The company, despite those passing years, still has the same principles and priorities, which are focused on the customers' needs. Since 1854, the firm did not change its headquarters, although it has changed its name a few times, from H. Füllner, through Fampa and Beloit Poland and since the year 2000 – PMP Group. Between 1854 and 2000 an impressive number of 1175 projects have been executed in Jelenia Góra – including the deliveries of new machines and modernizations in various technologies, all over the globe (approximately 8 projects per year).

Beijing, Taipei, Jakarta, Canberra, Bangkok, Delhi, Washington, Ottawa, Madrid, Paris, Berlin, Moscow, Kiev, Prague, Warsaw, London, Amsterdam, Brussels – those are only a few capitols of countries in which you can easily find deliveries with PMP Group's logo. Last 14 years were full of projects, executed for both paper and tissue producers, while the company's reference list was enriched with 166 new projects.

The last decade has brought drastic changes in the paper industry. Consumption of newsprint has significantly decreased,

due to new electronic media. The demand for fine print was reduced as well. Only packaging papers managed to keep their position on the market. Less and less new paper machines have been produced. For some time now classic modernizations, as well as modernizations requiring profile change, have become more and more popular. PMP, as a medium-sized company, characterized by flexibility, has managed to fit perfectly to the market demands by offering Phoenix Concept™ modernizations. At the beginning, under PMP's name, modernizations were based on exchanging existing units such as headboxes, wires and press sections. A significant number of rebuilds of such type (Phoenix Concept™ Basic) PMP Group conducted for groups such as Mondi (in Poland and Czech Republic), APP (China, Indonesia), Smurfit Kappa (France), Zhaoqing Kelun Paper Co. Ltd. (China), JSC Rubezhnoye (Ukraine), Shandong Huajin Group (China), Ilim (Russia), YFY (China and Taiwan), SONOCO (USA and Canada), or Chamfor Group (China). Most popular however is the newest generation hydraulic headbox: Intelli-Jet V®, that has been appreciated by big corporations, as well as individual customers. There are over 110 units of that type all over the globe, including headboxes of pondsides over 9.5 m. Another product, which is becoming more and more significant in PMP's portfolio, is the Intelli-Nip® shoe press. In 2014 alone, PMP is planning to start-up 3 more units of that type - including one in Tri-Ex configuration. Downturn in the paper industry has forced papermakers to search for alternatives to classic rebuilds. Most recently, complex and demanding projects, that require machines relocation and necessary refurbishment (changing the production profile or technical parameters) have

become more and more popular. In 2011 PMP has executed its first project of such type (Phoenix Concept™ Advanced) by relocating a machine from Switzerland to Germany and executing necessary regeneration services, as well as modifying the line, including deliveries of new equipment such as a new hydraulic headbox or reel. Another Phoenix Concept™ Advanced rebuilds, PMP Group executed for JSC Rubezhnoye (Ukraine), Schumacher Packaging (Poland), SFT Group (Russia) and currently, for a leading brown paper producer in Europe (machine relocation from Italy to UK). In addition, PMP Group offers a highly advanced type of rebuilds, called Phoenix Concept™ Premium, which is a specific modernization that includes designing innovational products together with the customer. PMP is executing this type of projects repeatedly with the world's biggest paper producer. In recent months, PMP has become more active on new markets by delivering for e.g. its first hydraulic headbox to India or by increasing its activity on the demanding American market.

Except from cost optimization, lowering media consumption is the key factor when choosing PMP Group's offer. Thus in the company's Intelli-Technology® platform portfolio, customers can find tailor made solutions. Particularly noteworthy are mentioned previously Intelli-Jet V® hydraulic headboxes, shoe presses Intelli-Nip® and Intelli-Sizer™ size presses. Applying these products in various scenarios, results in meeting the needs of customers in the terms of improving the quality of paper, optimization of media consumption, as well as optimizing investment costs.

Depending on the geographical region, PMP Group is successful in two areas, when it comes to the tissue industry: deliveries of new machines and modernizations of existing lines. In Asia new, complete tissue lines with Crescent Former technology are most popular, whereas North America and Europe prefers various Phoenix Concept™ modernizations. Competition is huge, especially when it comes to deliveries of new machines. Most popular are still Crescent Former type machines (over

3000 installations in the world), whereas optimization projects are focused on minimizing investment and production costs, especially in the area of media consumption. Industry development is also limited by the availability of raw materials (virgin fibers) as well as media (gas). By observing market trends PMP Group has



Successful start-up of PMP Intelli-Tissue® 2100 in GCPU, Indonesia (2011)

developed two solutions, based on the Intelli-Tissue® platform, that are tailored to the needs of tissue makers: Intelli-Tissue® EcoEc (capacity up to 60 tpd) and Intelli-Tissue® Advanced (capacity over 75 tpd).

The main concept of Intelli-Tissue® EcoEc is simplicity and achieving lowest possible media consumption in the production process. Thus it implements basic and necessary solutions, with the usage of modern technology, such as a single-layer hydraulic headbox, steel Yankee Dryer and a steam hood. This type of machines are especially popular on developing markets like China (projects for Anhui Bilun Tissue Paper (Smile), Hebei Xuesong Paper, Henan Hulija Paper) or Thailand (Wang Paper). The Intelli-Tissue® Advanced line is characterized by flexibility and achieving exceptional tissue quality. Thus the possibility to implement single or multi-layer headbox (2,3 or 4), suction press roll with a gigantic diameter, steam hood, etc. Machines with higher capacity are especially popular among corporations, for e.g. YFY (7 Intelli-Tissue® Advanced 1500 machines), or GCPU (Indonesia – 2 Intelli-Tissue® Advanced 1800 and 2100 machines).

In the tissue area PMP Group offers two types of modernizations: Phoenix Concept™ Basic – exchanging sections, or delivering individual, new sections for machines made of elements supplied by different



New PMP Intelli-Reel® at PMP Group workshop

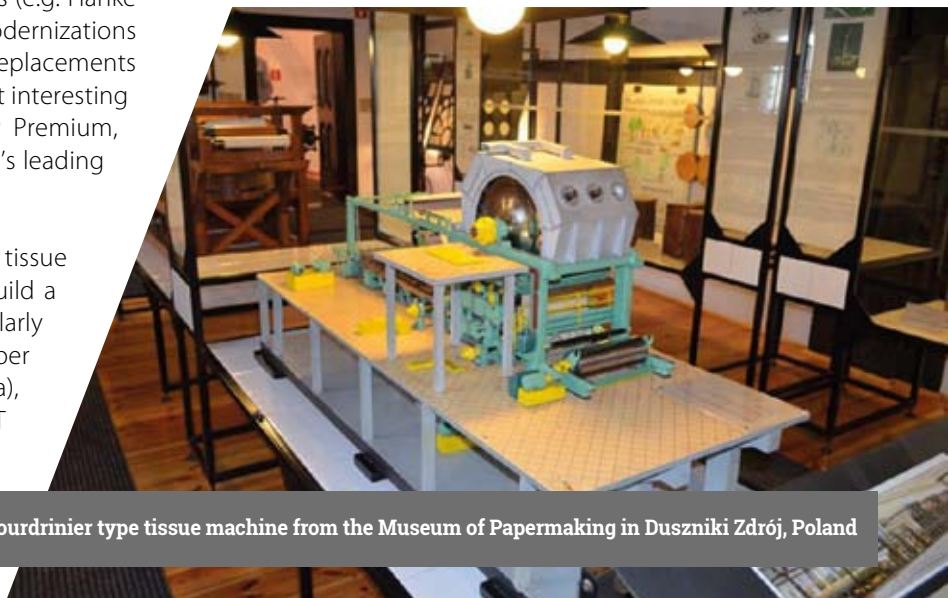


Wire section modernization for Rubezhanskiy Cardboard and Packaging mill (Rubezhnoye), Ukraine

providers and Phoenix Concept™ Premium – highly developed modernizations that include deliveries of products, designed individually for a particular customer. On the Phoenix Concept™ Basic project list we can find customers from Europe, Asia and Australia. In Asia deliveries of new sections for machines constructed by different suppliers are most common (e.g. 30 Intelli-Jet V® hydraulic headboxes for APP). In Australia rebuilds are done to change existing machines to Crescent Former technology (two projects of that type, including one for ABC Tissue), in Europe – mainly headbox replacements (e.g. Hanke Tissue, Lamix, Wepa Piechowice), press part modernizations (Swiss Quality Paper, Kimberly Clark Klucze), reel replacements (Kimberly Clark Aranguren), or safety analysis. Most interesting and most complex projects: Phoenix Concept™ Premium, are executed for over 8 years for one of the world's leading tissue producer – corporation from USA.

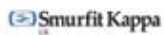
Regardless whether the delivery is executed for a tissue or paper producer, PMP Group always tries to build a long-term partnership with its customers. Particularly noteworthy are long-term relations with: in the paper area: IP/Ilim (USA/Russia), Chamfor Group (China), YFY (China/Taiwan), APP (China/Indonesia), SFT Group (Russia) and Sonoco (USA/Canada) and in the tissue area: with P&G (USA), YFY (China) and GCPU (Indonesia).

160 years of tradition, passion, success, challenges. PMP's counter (as well as its predecessors) shows 1341 projects and keeps on going. Most important however, is that PMP Group is facing new challenges on a daily basis and is aware that in the next 100 years, its successors will take inspiration from the events that are taking place here and now.



Model of fourdrinier type tissue machine from the Museum of Papermaking in Duszniki Zdrój, Poland

PMP Group's Global



166 projects

105 customers

References



in **24** countries



 **Kimberly-Clark**

 **ARCTIC PAPER**

 **Mecol Tissue**

 **mondi packaging**

 **APP**

 **SFT GROUP**

 **山东华鲁集团**

 **YFY**



EARTH



Platform Concept for papermakers

In response to market requirements, PMP offers the Intelli-Technology® Platform as a compact & flexible solution for paper & packaging producers. PMP Intelli-Technology® Platform is designed to bring structurally lower costs & savings. Certainly, it does not mean reducing quality standards or increasing project risk. By the term "optimum cost solution" PMP Group understands investing in a reasonable way, approaching every project individually and where it is possible, combining core technological elements with refurbished parts. Due to the high demand on the market in regard to leading complex added-value projects, PMP Group enlarged its portfolio by Phoenix Concept™ Rebuilds. According to PMP Group experience there are three rebuild scenarios to consider to reach a combination of different goals: Phoenix Concept™ BASIC Rebuilds, Phoenix Concept™ ADVANCED Rebuilds and Phoenix Concept™ PREMIUM Rebuilds for both paper and tissue makers. Just as a phoenix rises from the ashes – PMP Group is able to put a new life into the machine.

As a concept for papermakers, PMP Intelli-Technology® Platform, provides 6 key technological products: Intelli-Jet V® Hydraulic Headbox, Intelli-Top® Former, Intelli-Nip® Shoe Press, Intelli-Sizer® Size Press, Intelli-MicroCrepe™ Extensible Unit and Intelli-Reel®. All equipment is designed to produce high quality paper at optimum level of energy and water consumption. PMP Group's solutions are kept in the user-friendly manner in order to minimize maintenance time. All

products are characterized by high European technology and quality standards.

The first component of the platform is Intelli-Jet V® Hydraulic Headbox. It is often considered to be a heart of every paper machine, due to its influence on the final product parameters. PMP headbox is a technologically advanced equipment characterized by high durability. The unique design of the hydraulic unit enables to proceed in production process of various paper grades. PMP Group is able to deliver headboxes up to 10 m pondside. Headbox is without any doubts the leading product in PMP portfolio. Years of worldwide experience and optimization process of the unit, helped to create proven and solid solutions. Since 2000, PMP has installed almost 110 hydraulic headboxes all over the world.

The next product of the PMP Intelli-Technology® Platform is the Intelli-Top® Former. PMP Group provides high capacity formers that can run on paper machines that are operating up to 1200 m/min. Location of the Intelli-Top® depends on the paper grade. By applying the former unit dewatering capabilities are increased. Moreover, two-sidedness evenness of the paper is improved. Higher efficiency of the water removal enables to shorten the wire table.

The key element of the press section is PMP Intelli-Nip® Shoe Press. The press can be located in various press

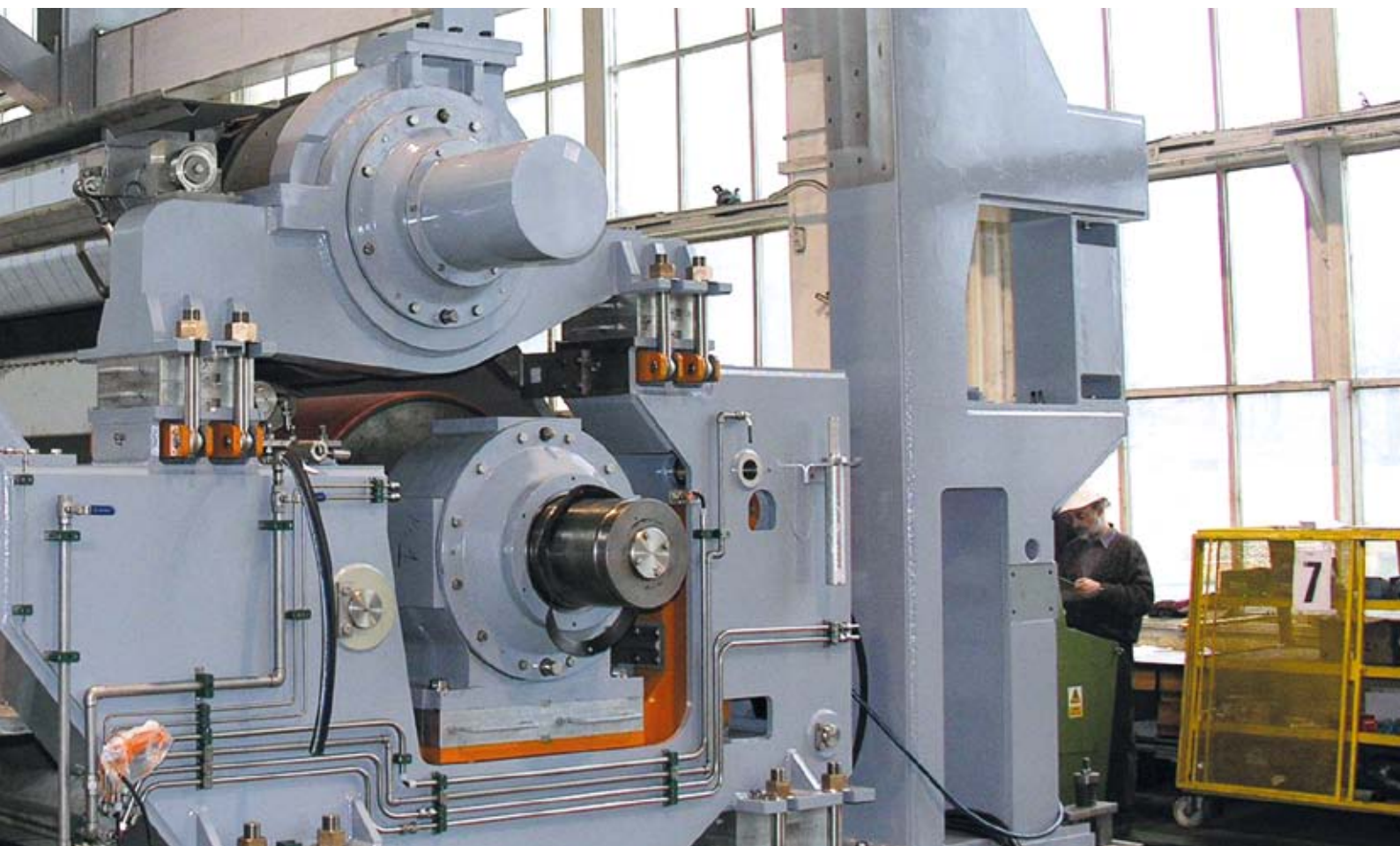
arrangements (as a second nip, double or tri-ex) and in configuration (up-right or inverted position). In PMP Group offer, you can find shoe press in two module sizes dia: 1300 mm and 1500 mm. It is possible to apply maximum design linear load up to 1400 kN/m. Nowadays, the shoe press became a market standard. Its main advantage is the significant increase of dryness after press section (up to 50-52%). In addition, it should be mentioned that 1% dryness increase after press, results in 3-5% machine capacity increase. Paper properties are significantly improved including bulk and stiffness.

A relatively new product in the PMP Intelli-Technology® Platform is the Intelli-Sizer® Size Press – introduced due to market requirements. PMP Group provides mainly metering type of presses, however the company is able to provide also puddle size presses. Intelli-Sizer™, equipped with metering heads is adjusted to apply sizing substance as well as pigments. The main benefit of the PMP Intelli-Sizer® Size Press is its uniform starch application regardless of paper machine speed, starch solids and viscosity.

For the sack kraft manufacturers PMP Group offers Intelli-MicroCrepe™ extensible unit. The equipment might be designed in width range from 1400 mm to 7000 mm. The main benefit of the unit is its compact design and independent PLC control system. It can be installed on paper machines operating up to 1000 mpm. The Intelli-MicroCrepe™ extensible unit is installed on technological lines in order to achieve proper microcreped structure of the packaging paper. Microcreping process increases paper's elongation and strength.

The last product in the Intelli-Technology® Platform is Intelli-Reel®. The unit ensures safe and stable winding process. PMP reels suit all paper machines that are producing various paper grades. The main benefits of the Intelli-Reel® is minimizing winding defects and sheet loses. The reeling parameters are fully controlled via clear user interface in the control panel (it can operate in two modes: manual or fully automatic). The control might be done by its own PLC or mill's DCS.





- ▲ Press section modernization
- ◀ Intelli-Top® Former for Shandong Huajin Group
- ◀◀ PMP Intelli-Jet V® Hydraulic Headbox for Shandong Guihe

Within recent years trends in the pulp and paper industry have changed. PMP's experience confirms that today papermakers expect complete technological solutions and that partners will work as process integrators. PMP Group constantly develops its products in order to provide high quality, reasonable price and results. PMP Group is aware that qualified engineering team is the core of any technological company. PMP engineers accompany project execution - from application to the paper machine optimization phase. Moreover, in order to expand company's capabilities and to widen market trends awareness, PMP Group cooperates with consultants all over the world.

As the summary and better understanding of PMP Group business philosophy, please think for a moment what are your project priorities. Is it the lowest possible investment cost, the best result or maybe a mixture of both? Each project requires a certain amount of investment costs. Through investment, a certain result is expected. PMP Group solutions are meeting customers' expectations, they are technically advanced and of high execution. Compromise should be reached – what is really the priority (PM runnability, low media consumption etc.)? As a result, the investment cost is optimum – thus you invest exactly what is required taking the advantage of compromises and PMP being a flexible machinery provider.

In general, PMP Group is able to provide three different scenarios for paper mills when applying the Intelli-Technology® Platform. The first one, is to deliver a complete PM line based on the Intelli-Technology® Platform's products. Another idea is to provide standard rebuilds in the wet or dry end area, in order to increase paper machine capacity or to improve paper quality. The third option is to provide blend of modern technology and optimum costs – a so called Phoenix Concept project. It is a new value for existing machinery – including relocation of paper machinery used in other paper mills.

Intelli-Sizer™ metering size press at PMP workshop



For Paper producers PMP Group offers complete paper machines for special papers (like MG) and packaging units, described by the Intelli-Technology® platform. The company specializes also in rebuilds and upgrades of existing technological lines. Product portfolio in this area covers everything from Intelli-Jet V® hydraulic headbox, through dewatering unit – Intelli-Top® former, Intelli-Nip® Shoe Press, Intelli-Sizer™ metering size press (film press), Intelli-MicroCrepe™ and ending on Intelli-Reel®. Since the year 2000, PMP Group produced 84 new units, from which 55 were PMP Intelli-Jet V® hydraulic headboxes.

THREE FORCES OF *PMP*GROUP

EARTH, WIND & FIRE



PHOENIX CONCEPT™



www.pmpgroup.com





Intelli[®] Platform Concept T I S S U E for tissue makers

A BREATH OF THE PAST—A STARTING POINT— 1960s-1980s

Squint your eyes, relax and imagine that you are going back in time to 1960s. How was tissue produced back then? A dominant technology was a fourdrinier type tissue machine – a good solution tailored to current needs when preferences of consumers were in the shaping process. It is still possible to find running machines of that type in some tissue mills around the world. Basically fourdrinier type machines were designed to run with a maximum speed of 600 – 700 mpm. It was possible to implement improvements later on, to slightly increase their capabilities. The adventure of our company (then known as FAMPa), with the tissue business, started exactly in 1967, when the first, complete fourdrinier tissue machine was delivered to Skolwin mill, Poland (operating speed: 350 mpm, reel trim: 2950 mm). It is worth mentioning, that three years before, the company received the license from the world's famous corporation - Beloit Walmsley, for deliveries of modern, technological equipment. Tissue machines, designed and made in Jelenia Góra, were working not only on the local, Polish market, but also in Romania and on the sunny Cuba island. Most of the projects executed by FAMPa were focused on other paper grades at that time (from 120 projects only 8% were dedicated to tissue). Tissue had to wait for its harvest period.

THE TISSUE BUSINESS IS BECOMING IMPORTANT – 1990s

1990s brought significant changes in the tissue business (average tissue consumption increased as well as consumers' expectations regarding quality). Tissue producers were fascinated

by new, modern Crescent Former technology, which became a milestone step in the capacity increase (operating speed changed from 600 mpm up to even 2100 mpm). What is more, energy balance was improved (much lower media consumption per ton of produced tissue). At the same time, FAMPa was taken over by a new owner and continued its operations under a new name - BELOIT POLAND. A strong link to the market leader of paper machinery deliveries and continuous connection with the Beloit Central Engineering, helped to absorb knowledge about modern tissue technologies by the Polish facility. Soon, the American owner appreciated values offered by Jelenia Góra facility and decided to create a so called Centre of Excellence (1996), which was dedicated to designing and producing tissue machines as well as hydraulic headboxes. The facility structure and resources were tailored to new needs. Our staff had a chance to actively participate in all ongoing projects and start-ups of tissue machines all over the world. Aside from Crescent Former tissue machines, BELOIT POLAND participated in the deliveries of TAD tissue machines for American and British customers. One of the most interesting projects executed at that time was a complete technological line for Georgia Pacific Plattsburgh, USA (operating speed: 1950 mm, reel trim approx. 3600 mm) and the following one for Procter & Gamble in UK (operating speed: 1750 mpm and reel trim 3400 mm). In 1998, a unique pilot tissue machine for Beloit R&D Center in Rockton, USA was designed and built. This tissue machine (reel trim 800 mm) was designed to run at a record speed of 3050 mpm. Great achievements of BELOIT POLAND resulted in getting the invitation to another innovative project called WIPE-OUT. Its main goal, was to design a tissue machine, which would bring maximum profit for the



Twin Intelli-Tissue® 1500 machines at PMP IB workshop

end-user – tissue maker, at significantly lower investment costs. Direct results of ideas collected by the WIPE-OUT team, were implemented in two real projects: Chinese Vinda Paper (operating speed: 2000 mpm, reel trim: 2700 mm) and another German Omega Papier (operating speed: 1600 mpm, reel trim: 3450 mm). At the end of the 1990s, Beloit Corporation did not handle problems well and went into bankruptcy. Last tissue projects signed by Beloit were mostly fully designed and made in Poland (Georgia Pacific Ipek Kagit, Turkey (operating speed 2000 mpm, reel trim: 5400 mm)) or Omega Papier (today, part of the Sofidel Group), which, without any doubts, became a strong basis to build the company's identity under a new name.

PMP's AMBITION AND DEDICATION TO THE TISSUE INDUSTRY DEVELOPMENT - PMP INTELLI-TISSUE® BRAND EVOLUTION

A new era for the company started with PMP Group's establishment in 2000/2001. Experience collected over the years in both tissue and paper mills, was the motivation to continue the tradition and technology development. After completing all projects signed before by Beloit, PMP was focused on tissue and paper machine rebuilds (with focus on capacity increase, safety and final product quality improvement), however the situation changed later on.

Starting point (2006) – Intelli-Tissue® Platform Concept for Tissuemakers

In 2006, PMP, for the first time, presented a platform concept for tissue makers: Intelli-Tissue®. The main idea, was to classify solutions in a clear way for customers, taking into account different capacity needs (featuring Yankee Dryer dia, hood type (steam/gas) and single press Crescent Former configuration).

The main area of interest were narrow tissue machines (2.4-2.7 at reel) as they were the most popular among users as well as medium size TMs (3.6- 3.65 at reel). At that time TM brand names were indicating daily capacity of the machine, PMP decided to apply terminology connected with the TM's working speed. As a result, PMP introduced, both through promotion and running references, the following machines: Intelli-Tissue® 900 (Smile), Intelli-Tissue® 1500 (YFY), Intelli-Tissue® 1800 (GCPU) and Intelli-Tissue® 2100 (GCPU).

In time, customers' needs developed further. Therefore, PMP supplied couple of machines with additional options/solutions. As a result, selected lines could operate in a wider than expected range of speeds: e.g. Smile - 1150 mpm or YFY - even 1700 mpm.

Giving Birth to Intelli-Tissue® EcoEc Line (2012)

In 2012, having in mind meeting needs of customers located on emerging markets and especially bringing a tool to optimize investments' costs, PMP (during Open House, Changzhou China) introduced EcoEc tissue line for the first time. The TM (equipped with a 12' steel Yankee Dryer, a simplified steam hood, of double press configuration, capacity – 40 tpd brought at ultra-low media consumption) was named Intelli-Tissue® 900 EcoEc. The concept of moving tissue production to a higher technological level (running faster and bringing more capacity) and replacing even 10 old TMs (less space and personnel needed) was appreciated especially by Chinese customers. In 2013, the idea developed further. The EcoEc family gained a new product: Intelli-Tissue® 1200 EcoEc (a Crescent Former, of double press configuration, with a steam heated hood, a ribbed, steel Yankee Dryer and capacity of 50-60 tpd) - Hebei Xuesong Paper (China) case. Consequently,



Intelli-Tissue® EcoEc line of tissue machines is a perfect choice for customers from emerging markets, who are interested in technology that provides soft quality tissue while maintaining ultra-low media consumption level. At present PMP offers Intelli-Tissue® 1200 EcoEc machine (output: 50 -60 tpd). The solution is based on classical Crescent Former with a focus on applying essential solutions. A combination of a single layer Intelli-Jet V® hydraulic headbox, 4-roll CF Intelli-Former®, a double press configuration Intelli-Press®, a steel ribbed Yankee Dryer (12') – Intelli-YD™ and a steam heated hood (simplified or classical) – Intelli-Hood™, enable to reach ultra-low media consumption level. Typical reel trim (2.85 m at reel) allows smooth and problem-free incorporation of the line into a paper mill building. The PMP Intelli-Tissue® EcoEc technology brings fast return on



"Susana" – Intelli-Tissue® 1800 – first PMP TM for GCPU, Indonesia



Crescent Former TM for Omegapapier Wernshausen, Germany (with triple layer headbox)

PMP has broadened its product portfolio and significantly improved its competitiveness.

PMP 3 Forces Campaign – Intelli-Tissue® Brand as a Wind Force (2014)

The main task for any supplier is always fit to the needs of customers the best way here and now and, at the same time, to provide future development flexibility of the line. Perfect product quality and technology liability are main priorities. In May 2014, during CIDPEX trade fairs in Chengdu, China, PMP has officially presented a new face of Intelli-Tissue® brand: Intelli-Tissue® EcoEc line and Intelli-Tissue® Advanced line.

investment and exists"... in harmony with nature".

Intelli-Tissue® Advanced tissue machine line is a perfect choice for customers who are experienced in tissue production and are looking for product portfolio extending (through adding new features) as well as total capacity increase. Tissue machines from the Advance line offer capacity over 75 tpd. Applied technology (a hydraulic headbox Intelli-Jet V®– single or double layer, a Crescent Former Intelli-Former®, of a single press configuration, equipped with a steel Yankee Dryer 15/16/18' (Intelli-YD®) and a high temperature hood – steam or gas – Intelli-Hood™) is focused to ensure the best quality of the final product - softness at premium level, excellent hand feel and an added value, that opens the door to new market niches. There are three machine

types available: Intelli-Tissue® 1500 Advanced (output: 75 tpd), Intelli-Tissue® 1800 Advanced (output: 90 tpd) and Intelli-Tissue® 2100 Advanced (output: 110 tpd). As it is observed, 2.7-2.75 m at reel, are still the most popular trim among customers. However for those who would be possibly interested in higher production figures, Advanced line offers TMs of 3.6-3.65 m reel trim (up to 145 tpd).

It is worth mentioning that tissue machines from the Advanced line offer a high future developing potential. Depending on the needs and tastes of customers, PMP applies variety of solutions that help to gain defined project goals efficiently and that bring potential field of innovation. PMP Intelli-Tissue® Advanced technology ensures high flexibility and “hi-tech performance”.

In all cases PMP offers cooperation based on split deliveries, as well as a turn-key philosophy.

Currently PMP Group provides also Phoenix Concept™ Rebuilds in three scenarios: Phoenix Concept™ BASIC Rebuilds, Phoenix Concept™ ADVANCED Rebuilds and Phoenix Concept™ PREMIUM Rebuilds.

The first scenario, PMP Phoenix Concept™ BASIC Rebuild, assumes classic rebuilds. One of the most popular are deliveries of an Intelli-Jet V® hydraulic headbox or a press section rebuild (vibration reduction, structure condition improvement, etc.). PMP executed a lot of projects of that type in Poland (Kimberly Clark, Wepa, MetsaTissue, Lamix, Hanke Tissue), Switzerland (Swiss-Quality Tissue), Spain (Kimberly Clark), UK, Taiwan, Indonesia (Suparma) or in Australia.

The main idea of the Phoenix Concept™ ADVANCED Rebuild is to combine key, new technological items like a hydraulic headbox, a new wire, a press section or a reel and refurbished parts from the existing relocated machines.

Through Phoenix Concept™ PREMIUM rebuilds PMP offers (for corporate customers in particular) – so called tailored made solutions, with the high level of added value, connected with the product development, designed exclusively for the end-user. These type of projects require significantly more time at

the design of the right solution. In most cases, they are highly confidential because the main goal is to build a competitive advantage. Since 2005, based on this philosophy, PMP Group has been working with one of the leading tissue corporations in USA.

ADDED VALUE DELIVERED BY PMP

PMP philosophy is based on flexible project execution. It is possible due to PMP's organization size (medium size corporation, short communication channels). Another factor, is strongly connected with experience collected all over the world, both in tissue and paper mills. PMP's main advantage over competitors is executing projects under precise control.

Each machine is always pre-assembled in one of PMP's facilities and presented to the customer. The main idea, and the base for success, is creating an added value through Optimum Cost Solutions, mainly through favorable locations of PMP's facilities in low wage rate countries (Poland and China). What is more, the company continuously invests in its own development, offering its customers advantages of 3D designing (Solidworks) and other modern process efficiency improvement systems. The main motivation factor is on time delivery of every project, and at the end, achieving premium quality tissue on the machines that are defined by the PMP Intelli-Tissue® brand.

PMP GROUP'S FUTURE CONNECTED WITH THE TISSUE BUSINESS

The tissue business is unique in a way that is strongly linked to consumers' preferences. Each one of us, who decides daily which tissue product to purchase, influences (in long term perspective) the shape of the tissue industry. At present, trends are optimistic and they are growing steadily. Tissue consumption is growing as well, so, as a result, more tissue machines are needed. On the other hand, price pressure on lowering investment costs is huge. PMP Group carefully observes those trends and develops

with the tissue business to be able to satisfy the needs of the most demanding investors. All depends on defining the goals definition. The experience collected all over the world (almost 80 large tissue projects) is very helpful. Another important aspect is PMP Group's corporate policy to maintain the business balance between tissue and paper projects (50%/50%) which ensures much better stability and higher dynamism of the company's development.



Since the year 2000, PMP Group managed to design and manufacture 15 complete tissue lines, and produce 132 new units, from which 52 are PMP Intelli-Jet V® Hydraulic Headboxes.



Hi-tech
Performance...

...In Harmony
with Nature



www.pmpgroup.com

REBUILDS



An added value for existing paper and tissue machines

CONTEMPORARY CHALLENGES FOR THE PAPER INDUSTRY

The pulp and paper business is a capital-intensive industry that provides variety of commodity products. The competition in this sector is based on price and on economics of scale. In addition, the demand for paper products grows steadily and slowly and the differentiation depends on the geographical location. The main focus for paper and tissue makers nowadays is to keep continuous and reliable operation of PMs/TMs and, this way, to ensure business security. The world is divided today. There are areas with high GDP growth and dynamic development of economy, where the paper industry is in very good condition (new paper and tissue machines are put on steam pretty often) – like for e.g. in Asia. Just to mention China, where salaries and media prices are lower than in North America and Europe. Other markets are much more mature and are challenged every day by local regulations, limitations and tough competition. As a result, new investments are not common. Definitely an observed general trend in the paper business is to lower capital investment costs and pay attention to energy efficient solutions through applying modern technological equipment. But how to find a golden mean?

LOOKING FOR A GOLDEN MEAN

Let's presume that you, as an investor, are standing in front of a challenge: you need to add more capacity (15-25% average increase) and significantly improve the quality of

paper (better properties, getting lower grades, etc.) – if not, your business will lose competitive advantage and your customers will find new suppliers. It is always a big question mark, what would be the market demand for your new product when it finally arrives. Market research should help to answer questions regarding trends and expectations. However, the question may be more complicated than that and similar to the one expressed by Hamlet: to be or not to be? – but in your case to continue the business or to allow it to die slowly? What decisions should be made? What path should be chosen? I encourage you to spend some time to take into consideration improvement ideas of the existing resources you have.

PMP PHOENIX CONCEPT™ REBUILDS

If you ask yourself the question: how to improve quality of the final product, increase PM/TM capacity and effectiveness (lowering media consumption per ton of produced paper), as well as to increase PM/TM flexibility? Instead of investing in a completely new line (which is in many cases not even affordable), the alternative is to choose a rebuild of existing resources. PMP offers rebuilds under the brand name Phoenix Concept™. According to our experience, there are three scenarios you might be interested to consider, in order to reach a combination of different goals: Phoenix Concept™ BASIC Rebuilds, Phoenix Concept™ ADVANCED Rebuilds and Phoenix Concept™ PREMIUM Rebuilds, for both paper and tissue makers. Let's discuss shortly each idea:

Phoenix Concept™ BASIC Rebuilds– the idea is to change old, inefficient sections of PM/TM and apply brand-new technological items to reach higher capacity or better quality of the final product. In some cases, elimination of vibration is required. In most cases however, this type of rebuild covers: understanding goals of the rebuild, precise calculation, on site measurement, scheduling, design of the new equipment and 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. Phoenix Concept™ BASIC Rebuild is based on standard products from PMP Intelli-Technology® - platform concept for papermakers or Intelli-Tissue® - platform concept for tissue makers.

Phoenix Concept™ ADVANCED Rebuilds – the main idea is to combine key, new technological items like a hydraulic headbox, a new wire, a press section or a reel and refurbished parts from the existing machinery. The project might be based on relocated technological line or might be a blend of two existing lines and new technological units. The main target is to significantly lower investment costs (by even 50%) compared to getting additional capacity from the new line. Typically, this type of rebuild covers

elements presented in the Phoenix Concept™ BASIC Rebuilds however, it is also extended with the following items: existing PM/TM relocation (if applicable), concept design of the new line, refurbishment services of equipment and combining new machinery and refurbished parts. Wider scope requires more effort within process integration (technology-logistic-on time delivery).

Phoenix Concept™ PREMIUM Rebuilds – these tailored made rebuilds are chosen especially by corporate customers. It is actually the highest level of technological rebuilds executed by PMP. It may cover all elements presented above in Phoenix Concept™ BASIC and ADVANCED Rebuilds however, it also includes one more item: incorporating products exclusively designed for a customer or developed with a customer. These projects are highly confidential as it is always a chance to discover a revolutionary concept, which may help to build a competitive advantage. The engineering phase in Phoenix Concept™ PREMIUM Rebuilds is much more demanding and time consuming. Sometimes several concepts are discussed in order to find a unique one, during project reviews. Phoenix Concept™ PREMIUM Rebuilds are sophisticated projects which require conscious approach and competence, to choose the best option for the future.

PMP PHOENIX CONCEPT™ REBUILD IN YOUR PAPER MILL

Are you asking yourself the question? Is the PMP Phoenix Concept™ Rebuild applicable for my mill? I would say this way – why not? So many other mills from North America, Europe and Asia have already appreciated the concept. During only the past decade, PMP have executed globally almost 140 Phoenix Concept™ Rebuilds in all scenarios.

Phoenix Concept™ BASIC Rebuilds are chosen mostly by individual mills which are building their position step by step and are ready to invest in a particular, new section (get rid of the old one and install a brand-new technological unit like Intelli-Jet V® hydraulic headbox, Intelli-Press® (tissue) or Intelli-Nip® Shoe Press (paper), Intelli-Reel® and so on) in order to improve performance. Rebuilds are more popular among papermakers, however, PMP has executed some projects for tissue producers as well. There are lots of projects of that type



executed by PMP in Europe (Germany, UK, Spain, Poland, Russia, Czech Republic, Turkey). Just to mention some customers: Papierfabrik Niederauer Muehle (Germany), CEL Aranguren (Spain), Wepa Piechowice, Mondi Świecie, Kimberly Clark Klucze, Lamix, Hanke Tissue, Schumacher Packaging (Poland), Smurfit Kappa Roermond (Holland), Ilim Group, L-Pack, Kuban Papier (Russia), Selkasan Manisa (Turkey), Mondi Steti (Czech Republic), or JSC Rubezhnoye (Ukraine). Projects of that type are also executed in Asia (China – YFY, APP, JCP, Kelun, Huxing, Taiwan - YFY, Indonesia- Suparma) and Australia. Phoenix Concept™ BASIC Rebuilds require precise planning and paying attention to details, to make sure the new equipment fits the existing machine well. Precise calculation helps to optimize the design. Interest in those type of projects has been relatively stable over the years.

By implementing a Phoenix Concept™ Rebuild, PM capacity can be increased by 10-25% and quality of paper can be significantly improved, thus higher margins can be created. In the case of Phoenix Concept™ ADVANCED Rebuilds, it is possible to reduce the investment cost even by half.

year by year. Just to mention two projects for JSC Rubezhnoye in Ukraine, one for Schumacher Packaging in Poland and one for Papierfabrik Niederauer Muehle – the biggest PMP project in 2011. Currently, PMP is working on two projects that include all typical execution stages of the Phoenix Concept™ ADVANCED Rebuild (one of them is for SFT Group, Aleksinskaya paper mill in Russia). All mentioned references have required relocation of the equipment from different sites - even different countries. In addition, in some cases, the PM was transformed from newsprint into liner grades adjusting to current market trends. Executing this type of projects requires very flexible approach, coordination capabilities and high focus on the goal. PMP performs well as a process integrator, which has been proved with achieved results. Last three years have shown significantly increased interest in those type of

projects among both individual customers and corporate players.

Phoenix Concept™ ADVANCED Rebuilds are especially popular in Europe among papermakers where cost of media and salaries are higher than in other areas of the world. PMP experience grows

Phoenix Concept™ PREMIUM Rebuilds are successfully executed by PMP, mostly in North America and Europe, and are



based on close partnership with key corporations (P&G, International Paper, Smurfit Kappa Group). Phoenix Concept™ PREMIUM Rebuilds require a lot of engineering effort and close cooperation with customer's engineering staff, to create a vision and implement it successfully into the reality with all necessary trials. Each time, team spirit is the base for building a unique solution. Tailored made rebuilds are executed for particular partners and are based on trust and long-term partnership.

PMP PHOENIX CONCEPT™ REBUILD – AN ADDED VALUE FOR EXISTING MACHINERY

At the end, we are coming to the fundamental question: how much money you may save when choosing PMP Phoenix Concept™? Let me first explain some industry standards. Based on know-how from experts, to get additional capacity from the brand-new machine you need to invest around 600 EUR per each ton of paper (including all possible work on the machine, auxiliary systems, civil works, etc.). The investment per ton depends on the concept – it can be less it can be more. Phoenix Concept™ BASIC Rebuilds investment cost depends on the scope of delivery and current PM/TM condition, but typically the average payback time (ROI) is fast – less than 5 years. Results are encouraging: PM capacity can be increased by 10-25% and quality of paper is also much better than before, so higher margins can be created. In the case of Phoenix Concept™ ADVANCED Rebuilds, it is possible to reduce the investment cost even by half (around 300 EUR/t taking European standards into account) compared to an investment in a brand new technological line. Lastly, Phoenix Concept™ PREMIUM Rebuilds require the highest investment input from all presented scenarios. The main advantage though, is the chance to create a significant competitive advantage – reimbursement in the future.

As always – there is no universal solution that corresponds with all projects. All depends on an individual strategy, needs and ideas. PMP can support you by offering a flexible solution – Phoenix Concept™. Feel free to invite PMP representatives today to open the discussion in looking for a tailored made solution for your business.



Phoenix Concept™ is a line that offers rebuilds on three levels: BASIC (classic type: exchanging the old section for a new one), ADVANCED (logistically sophisticated, including PM/TM relocation and a profile change) and PREMIUM (including basic/advance level, plus products exclusively designed for a particular customer).

Phoenix Concept™ BASIC Rebuilds are chosen mostly by individual mills which are building their position step by step and are ready to invest in a particular, new section, in order to improve performance (solution chosen mainly in Asia). Phoenix Concept™ ADVANCED Rebuilds are especially popular in Europe where costs of media and salaries are higher than in other areas of the world. Phoenix Concept™ PREMIUM Rebuilds are most popular among developed markets - like North America and Europe.

Up to date PMP Group executed 140 projects of that type (in all three scenarios).

PHOENIX CONCEPT™

The new value for existing machinery



www.pmpgroup.com



Build-To-Print

SERVICES

SPECIALTY PRODUCTS

WATER

SPECIALTY PRODUCTS



PMP Group designs and builds custom gauges and fixtures for production and assembly lines for the automotive, aerospace and also for general production facilities. If you need a custom designed gauge to check incoming part tolerances, production part tolerances or final assembly tolerances PMP will design and build the gauge to meet your needs.

The company also designs custom fixtures for workholding and assembly. These fixtures are used to dramatically decrease manufacturing and assembly times. Together with the customer, PMP focuses on ergonomic designs that are both safe and help to reduce strain on their employees.



Services

PMP Group, as a process integrator, provides variety of technological and mechanical services, constantly supporting customers from the paper and build-to-print business. Engineering group equipped with modern software (such as SolidWorks CosmosWorks, CadSimplus, E-plan and DB Works), tools and start-up experience collected all over the world, is the core of PMP. The company's engineers are present during all project stages, starting from application up to the post-guarantee period.

PMP Group, as a technological company, offers a wide range of engineering services such as application, project management, technological project, designing, detailing, manufacturing with full engineering supervision, pre-erection, erection at site, mechanical and technological start-up, optimization, field measurements, safety analysis and advisory services. The company's experienced, qualified and dedicated team is ready to share knowledge with customers and to solve all possible problems. PMP co-operates with paper producers as well as other industries.

Nowadays it is crucial to keep the defined deadlines and minimize investment costs. That is why, PMP Group offers the service of its Erection Group. The team has a necessary knowledge in regard to applying dowed structures and executing pre-erection at PMP facilities, in order to double-check the equipment and shorten erection at site by even 30%. What is more, PMP's erection team supports relocation projects as well.

Paper machines consist of many types of rolls that require periodical surveys and repairs. Keeping those elements in good condition guarantees PM lifetime extension. PMP's well-equipped Roll Service workshop (PMP Fast Service) provides both full service and

individual repairs. To meet customer's requirements, PMP Group offers complete services for various types of rolls with max dia up to 2 000 mm and max shell length of 10 000 mm. Depending on delivered roll's condition there are two scenarios of action: elements replacement or its regeneration. It is also possible to rebuild the rolls to change their parameters. During service, the internal assembly of all components is conducted and proper performance and adjustment ranges are being tested. Each time after assembly, the roll is balanced in accordance with its design criteria and its operating parameters.

PMP Group's service portfolio covers anything from engineering support, various mill services (e.g. erection of equipment and paper machines at site, optical alignment services of existing equipment, PMs and new elements, relocation of existing second-hand paper machines – part of Phoenix Concept™ projects, maintenance and refurbishment services of PM parts and auxiliary equipment such as pumps, rolls etc.), service rolls and refurbishment services. Small repairs of existing equipment in the paper mill (like pumps, blowers or corroded constructions) keep PMP's production capabilities fully used and by applying small jobs the company builds trust and reliability among its partners.





Mill services and service Rolls

PMP Group team supports paper and tissue producers in both engineering area and project execution. Depending on the customer's needs PMP can support its partners in each of the selected stages of the project – in all of them or just selected areas.



Engineering

3D tools allow better project alignment and give the opportunity to avoid design miscalculations during the engineering process. PMP engineers can work on both metric and imperial designs and use process attitude to project execution (from application to PM optimization) based on ISO Standards



Refurbishment

PMP provides professional repair and maintenance services executed by qualified team, in many branches (e.g. pulp factories, paper mills, refineries, sugar factories, plastic factories or mining industries).

Build-To-Print

Build-to-Print is a part of PMP Group's business area that offers precise machining, fabrication and assembly of complex and large machinery based on documentation provided by the customer. In addition to manufacturing, the company is ready to execute complete projects. In this area PMP specializes in stainless steel and heavy fabrications. What is more, during the production process the company uses only high quality materials such as mild steel, aluminum, tungsten carbide, Delrin® or Lexan®. Taking all PMP Group facilities into account, that are located on 3 continents (Europe, Asia and North America), and it's all 14 production bays, PMP's production capabilities are estimated to consist of: 30 000 working hours that can be devoted to machining and grinding, 33 500 welding hours and 16 000 assembly hours.

Thanks to gained experience, PMP Group can deal with both metric and imperial designs. Build-to-Print business provides its services among various industries such as: chemical, mining, brewing, food, shipbuilding etc. PMP sample projects include tanks, silos, chests, bridges and building constructions, fan housings, air transmission installations, machine constructions, foot-paces, ladders and stairs. Whereas most Build-to-Print customers are located in Finland, Sweden, Germany, Austria, Poland, USA, Canada and China.

PMP Group's technology in this area is based on modern CNC (numeric

control) machinery. What is more, a few months ago the company has bought a new three-dimensional measuring technology called FaroArm Edge. Faro Edge is a portable device, which is impeccable in the production area. It is a 3D imaging device that can solve dimensional metrology problems. This tool is equipped with communicational interfaces (Bluetooth, Wi-Fi, Ethernet) and a self-powered battery, due to which, the measurements can be taken even inside large objects. What is more, the scan arm allows to take measurements regardless of temperature. This means that the expansion or narrowing of a measured part is compensated automatically.

It is an important device that can be used daily, i.e. to measure the geometrical features of an object, that cannot be taken with the usage of any other tool. Another benefit of the FaroArm Edge





Pulper rotor produced for an American customer – papermaking business.

is the possibility to take measurements of the final product (after machining), measure elements delivered by subcontractors, measure casted elements, take measurements of the shape and position misalignment, etc.

The FaroArm device allows to integrate the SolidWorks (a 3D design tool) documentation with the software used in measuring. Basing on the generated models from SolidWorks, it is possible to prepare measurement templates and to verify real-life dimensions. The scan arm generates detailed measurement reports that that can be useful in the interpretation of results. Consequently, we can explicitly define if the detail/element meets the required tolerances.

PMP Group is now on the FARO customers list that includes brand names such as Boeing, NASA, General Motors, Porsche, BMW, Audi, Aston Martin, General Electric, Harley Davidson, Hewlett-Packard and Braun Corporation.

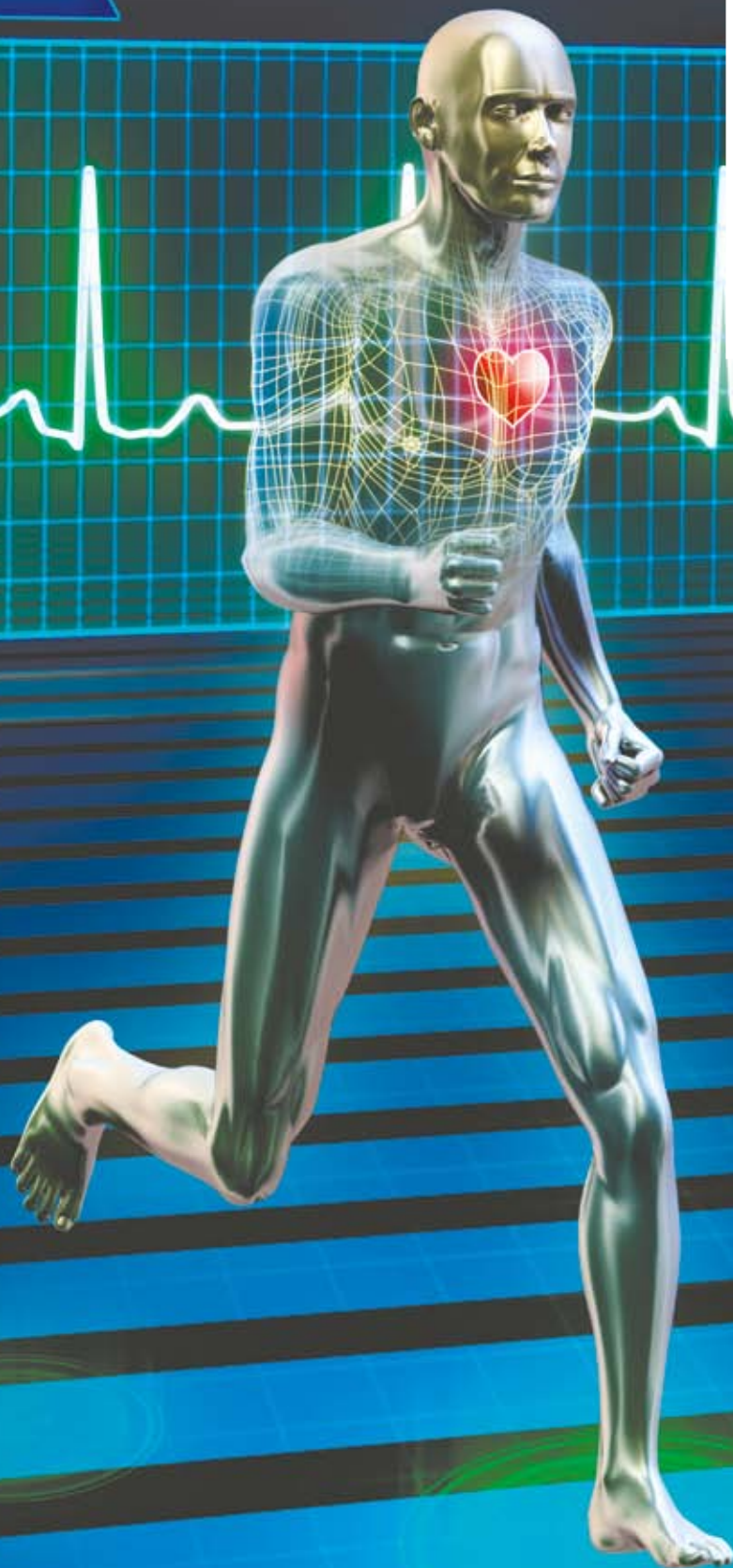


Pulper tank for a Polish customer – papermaking business.



Wider for fiber optic cables produced for a customer from England - telecommunication industry.






120/70

Hydraulic Headbox

as the heart of the paper machine



PMP Group's experience in the headbox area has been collected on 4 continents, on both well-developed and emerging markets, in paper mills that produce almost all grades, including tissue, packaging, fine and specialty papers. There are over 100 PMP Intelli-Jet V® headboxes working around the globe. Intelli-Jet V® hydraulic headbox is PMP's patented design. Among our customers today you may find market leaders such as International Paper, Mondi Corporation, Smurfit Kappa, Procter & Gamble, Asian Pulp & Paper, Yuen Foong Yu, as well as other individual producers. In our headbox portfolio, you may find small tissue headboxes of the most popular pondside 2.7 m. In the case of paper machines, typical installations are of 5 - 7 meters width. We are proud to say that currently we are executing the project for headboxes of pondside over 9.3 m for a leading corporation from USA.

For over 160 years of our company's activity, almost 760 headboxes of different technology have been built in our factory in Jelenia Góra, Poland. Including rectifier roll headboxes, as well as hydraulic ones, with and without Consistency Profiling. In 1990s our company was a part of Beloit Corporation and was named the Centre of Excellence for producing hydraulic headboxes. This tradition continues today. Complex control of the headbox process, from the concept, through the design, manufacturing, quality control up to optimization, have been our core expertise in providing optimum solutions to papermakers. We can, and have been delivering hydraulic headboxes with or without CP to machines of any type, up to 10 width, from 2 - 12 channels and working speed of 1500 m/min (paper machines) or alternatively up to 2100 m/min (tissue machines).

MARKET REQUIREMENTS WITH REFERENCE TO PAPER QUALITY

Let's look closer at current global market trends and their influence on the development of paper machines. To help to illustrate this point, let's take three big countries with a range of consumers demand: USA, China and Russia.

In the growing tissue sector, quality level is determined by local consumers. As you may be well aware, when GDP growth and disposable income is observed, the demand for tissue is increasing in both volume and quality. Projects in this sector, on emerging markets, are focused on replacing old machines by new Crescent Former types. This trend is especially observed in China and Russia. Only within the last year, we have sold (7) new TMs of average capacity of 45 and 75 tpd in Asia. In more mature markets, as in this particular case: USA, most of the projects are focused on sophisticated rebuilds with replacing multilayer headboxes (2,3,4). Currently we are in the middle of that type of project for a leading corporation from USA. In these markets, modern formers are already a standard, so producers are focused on implementing highest product quality solution with an optimum web structure.

In graphic papers, demand has been decreasing in mature US and European markets. Papermakers there are more focused on cost optimization and PM runnability improvement. Many of them are looking for universal solutions, to produce paper suitable for both colour ink jet and colour laser jet printers (2 in 1 or dual purpose), a demand driven by today's office equipped with both of these equipment. This is not a small task for papermakers. The demand is clear - to have repeatable performance (no jams in printers) and stable quality (excellent colour reproduction). The key for their



Since the year 2000 PMP Group designed and manufactured 111 headboxes worldwide that can be found in 17 countries, on 4 continents. If we consider the number of headboxes produced since the very beginning of the company (in 1854), the number reaches an impressive amount of 760 headboxes.

IntelliJet V™



success is to start with proper fiber orientation to avoid paper diagonal curl during the printing process. Excellent formation provided by a properly designed headbox will help greatly to reproduce consistent shape sharpness and brilliant colour. Rebuilds of graphic paper machines are applied within the wet end with a special attention to headboxes. A similar project of that type has been executed by PMP in Russia for Ilim Group.

Unlike the maturing graphic paper, the packaging sector has been developing and increasing step by step on all continents without exceptions. We have noticed that basis weight of container board is decreasing year by year by 1-2 gsm, especially in Western Europe and now, more and more, in the USA as well. While this lower basis weight trend is observed, in many cases the expectations for the same or even higher sheet strength is expected. Fast Moving Consumer Goods (FMCG) producers push to optimize distribution and handling costs of ready made products is a key driver for this trend. 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 whole supply chain must be reduced (cost of the box, its efficiency to pack more in one common pallet, the max, No of pallets per truck and disposable 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 quality of printability is critical to influence consumer's choice. For papermakers the challenges are formidable : Lower the production cost of a box and at the same time, to deliver better box performance, and let's not forget that the box must have better printability.

In Europe, this trend is fueling the strong growth of Kraft Top liners. These containerboard grades are typically made with a duplex structure whereas the top is made with virgin Kraft fiber while 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 layers Fourdriner machines, however, nowadays even Gap forming is used more often. Common technology used is hydraulic headboxes that offer superior sheet uniformity and formation - a critical element in the pursuit of better printability.

TIPS FOR A SUCCESSFUL REBUILD

It is important to understand the needs of your customers. There are a few important points to consider while considering a rebuild of a machine that involves a headbox.

First of all – it is critical to understand that a headbox is the beginning of the paper web forming process. If this step is done



correctly, everything you do afterward (pressing, drying, sizing, calendaring etc.) is easier. In fact, reaching the high quality and productivity targets can only be possible with the highest quality hydraulic headboxes. Any compromises made at the beginning of the forming process will lead to other amplifications of defects requiring even more compensations. All these non-value added steps will ultimately drive up costs and lower productivity.

Problems, like poor sheet profiles from a headbox, will not only cause more paper rejects, it will also force you to slow down the line to dry up the moisture peaks. If there are web defects (stock lumps and edge defects) coming out of the headbox, more web breaks will occur. An outdated headbox in poor technical conditions may cause problems but you may not noticed it and you may be led to believe, over the years, that these symptoms are somehow normal and that the problem is somewhere else. Here is a tip. Our experience all over the globe has shown us that every time we put a strong focus on the wet end section and when PMP Intelli-Jet® V hydraulic headbox is involved in our projects, we have been achieving success stories quickly. Acting smarter rather than harder is the process of rebuilding the line.

Secondly, a headbox is not a screwdriver that can be used for everything. In today's more and more demanding marketplace, a paper machine cannot be designed to produce efficiently, vastly different products – creating hybrid designs that do not work well. A modern and efficient paper making line is designed

and tuned to produce a relatively narrow range of products to avoid making compromises by trying to make grades at the far extremities of the spectrum.

Sometimes, when the solution is defined, we are requested to deliver a headbox, proper for any scenario. We have a good saying: if something is dedicated to everything, it is really dedicated to nothing. PMP Intelli-Jet® V hydraulic headbox allows proper performance within a wide range of basis weight and working speeds that can be adjusted to any paper grade.

However, please keep in mind that each paper type has its own properties' requirements and each PM section should be configured accordingly. We have proven in the past projects that we have the know-how and capability to properly design and tailor a solution for any customer.

Thirdly – a headbox is not a brick – it is a system. Before you decide to switch on a green light for a PM rebuild with a new headbox application, it is essential to analyze its environment. Simply pay attention to what is before and after an existing headbox. From our experience, changing the headbox requires also the modification of the stock approach system, in order to be compatible. Some attention must be also paid to the fan pumps, stock cleaning and dosing controls system. A delivery of a sophisticated CP system and possible modification of a wire section must be included in your considerations as well.

However, it is very important to do things right. PMP's proposal always covers technical environment analysis and the indication of points that are essential in order to reach the goal. That is why headbox solutions are not delivered straight from the shelf. We need to tailor them. Each project, as well as a customer, is different and needs are different. While having ambitious goals, professional execution is crucial to make returns on your investment efficiently and to earn money faster.

Finally, the last point is that: details matter. The devil always is in the smaller details. Many people say that the headbox is the heart of a paper machine. The heart is the engine for our body. So is the headbox for a machine. It should be in good condition, clean and one should take care of it. If so – it can last for a very long time. PMP Intelli-Jet® V hydraulic headbox is built according to this concept, so that it could last for a long time. Every headbox is like a unique luxury item, it is custom, tailored made solution, produced by us from A to Z, under a full in-house control, in PMP Group's headquarters in Poland. We apply modern manufacturing technologies, including laser welding and other automated steps. Our policy is based on continuous quality control. We execute surface smoothness measurements by using a Faro Arm device. Once we finished polishing a surface, you can see yourself in it like in a mirror. Still sensitive and critical parts are hand-made and custom fitted by our specialists. For PMP, the use of manufacturing methods according to highest world standards to ensure excellent headbox performance and low maintenance costs, is just what we do very well every day.

CASE STUDIES

To better illustrate all the points above, below you will find two examples of such projects.

Case study number 1 is a PM wet end rebuild, producing fine papers (copy and offset) completed in 2012. Basic PM parameters cover: trim width slightly over 7000 mm, maximum working speed of 1100 m/min and basis weight range 55-140 gsm. The entire project was based on an existing paper machine relocated from Western Europe. The main goal of the rebuild, defined by the paper mill, was to produce high quality fine paper, that would meet customers' expectations.

PMP set internally an additional goal. This project was going to demonstrate PMP's capabilities in applying the systems know-

how to demonstrate the amazing ability of the Intelli-Jet® V hydraulic headbox, at the start of the web forming process and its beneficial effects on the whole production line, to reach high expectations in regard to basis weight profile, wet end stability and product quality. In addition to the Intelli-Jet® V hydraulic headbox with Consistency Profiling System, PMP was also delivering a complete system covering the stock-approach and essential wire part modifications. In this case, the headbox had a pondside width of slightly over 7300 mm and it was designed as a 5 channel device.

The main result of the project was to provide a guarantee to maintain of stable basis weight profile, lower than 2σ cov 0.3 %. This very high standard was achieved within (7) minutes from the systems start-up.



The second case study is also a PM wet end rebuild scenario. The discussed machine produces folding box-tetrapack products with basis weight range: 125-310 gsm. PM of width slightly over 4800 mm and working speeds : 170-300 m/min is equipped with (4) headboxes. The main goals of the project, defined by the mill, were: to achieve stable fiber orientation in MD (machine direction) and also to optimize investments' costs.

Challenges taken by PMP in this case were: to execute the project in stages and also to design hydraulic headboxes that would work well at a low operation speed (less than 200 m/min).

The Project was divided in three phases:

The first phase was to carry out a deep analysis of the PM environment and to define the source of problems as well as bottlenecks.

The second phase : changing (2) headboxes of the poorest condition and refurbishment services of remaining (2) to extend their lifetime for further 3-4 years.

And finally, the third stage, (that is taking place right now), changing the remaining (2) headboxes.

This stepwise approach was chosen by the client to optimize the investment costs. It also demonstrates PMP's flexibility to adapt to particular needs of the client and to prepare a tailor made, unique set of solutions.



The described project went so well that while discussing project achievements after the start-up, the paper quality was immediately approved and without any further need to do a performance test, as described by the contract. Fiber orientation improved drastically after start up. To check this parameter, an extraordinary test was executed. 200 meters of paper in MD direction was cut. Despite the fact that only (2) headboxes were changed, and only one of them was equipped with a CP system, in case of basis weight profile, up to 40% improvement was observed on some grades.

In addition, as PMP, we achieved a technological goal proving empirically, that a hydraulic headbox (in a case of an extreme application), can work stable at a very low working speed: 180 m/min. It is, we believe, the only reference of that type worldwide.

SUMMARY

To sum up. When you look for opportunities to improve basis weight profile, sheet formation, fiber orientation, productivity improvement or better strength properties of paper, take a closer look at your current headbox. Despite the fact that it is inconspicuous, it is a small piece of the puzzle at the beginning of the process, but its impact on the whole project is huge. Personally, we would like to encourage you to meet PMP experts, who, we are sure, can help you to choose the best way for your success. You are warmly



invited to Jelenia Góra to witness headboxes' designing and manufacturing process anytime. Who knows? Maybe, in the nearest future, the next PMP Intelli-Jet® V hydraulic headbox , will help you to build a competitive advantage for your company?

PMP Intelli-Nip® Shoe Press – added value or a whim only?

Interview with Maja Mejsner - Director Business Development and Marketing



■ PMP Intelli-Nip® Shoe Press –added value or a whim only?

Why Shoe Press? Is it an added value or a whim only? Some time ago, PMP Group has been looking for answers and decided to execute a deep analysis on this matter. PMP Group is going to share with you the results of this work and present a response to demanding market needs.

The pulp & paper industry is a capital-intensive industry that provides variety of commodity products. The main focus for papermakers nowadays is to keep continuous and reliable operation of PMs. Definitely, the way to reduce the risk is to apply proven technology solutions, like Shoe Press.

■ Why Shoe Press technology?

There are three main driving factors when choosing the Shoe Press technology. First one: lowering the cost of paper production through decreasing steam consumption due to higher dryness after press. The second target is to improve paper quality. Finally, a significant increase in PM's capacity and runnability is another encouragement.

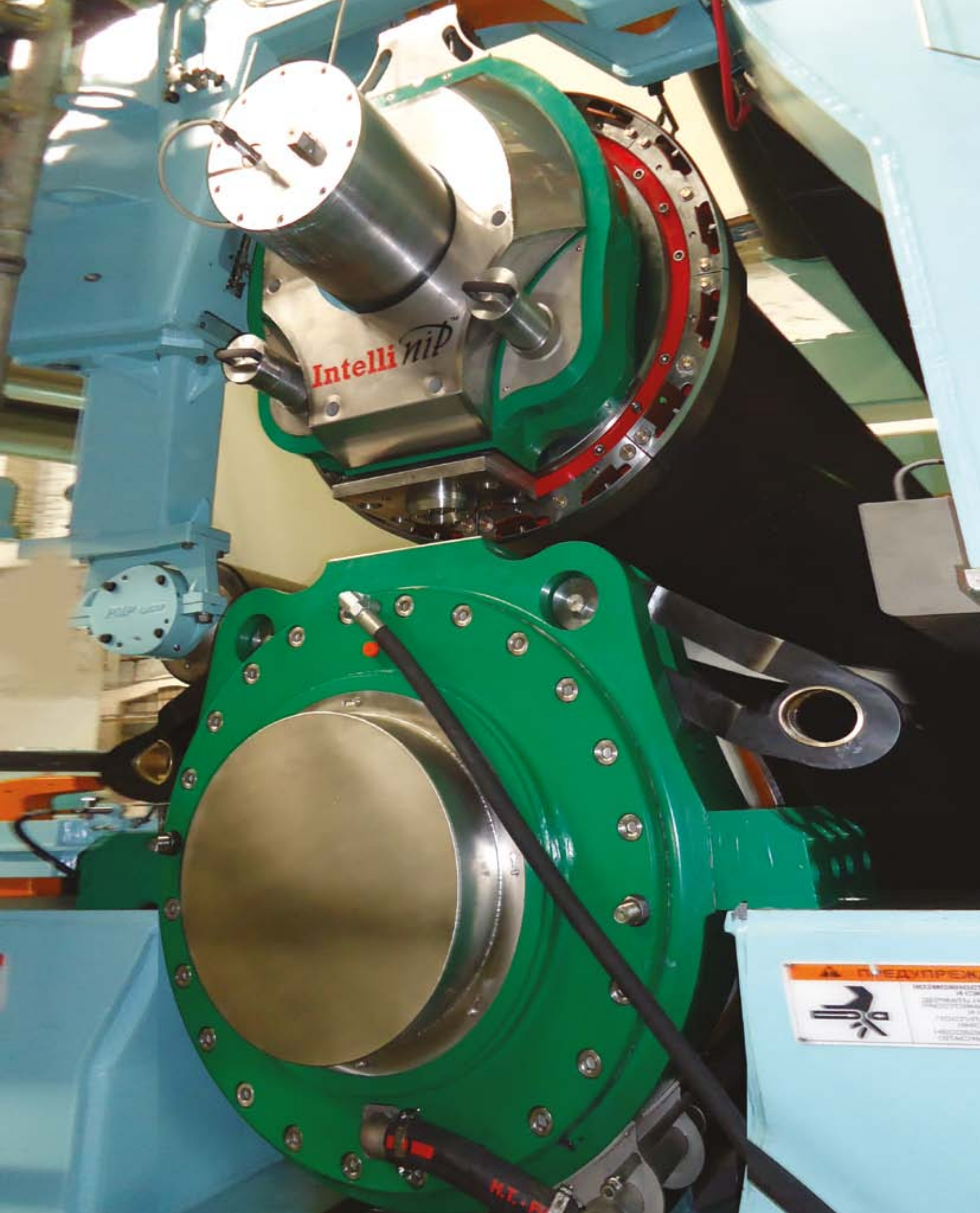
■ How PMP can be agile in case of the Intelli-Nip® Shoe Press project?

PMP has decided to lower capital investment cost of the solution while maintaining high quality standards. That was the idea - to enhance the trust and minimize the risk for customers and take the advantage of PMP's flexibility. At the same time, PMP has found the way to strengthen the brand by making the Intelli-Technology® platform complete. What is more, the Intelli-Nip® Shoe Press has become the key for success in case of Phoenix Concept projects (blend of technology and optimum cost).

■ What kind of benefits does the Shoe Press technology have?

Applying Shoe Press technology in containerboard machines, results in increased production capacity of PM due to better dryness. It is estimated that the capacity of existing lines can be increased by 10-40%. Improved dryness helps to save space in the mill – dryer section is more compact – in this case there is no need for extension by adding more drying groups. Better runnability is another benefit when applying this technology.

After shoe press installation, you can count on savings in steam consumption. Definitely it is an ECO friendly concept. As per TAPPI standards definition 1 % higher dryness after press, brings 4% lower steam consumption in the dryer section.



Intelli nip

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The machine with shoe press brings possibility of producing lighter and stronger paper grades. In fact, most of the paper parameters are improved. There are three main features that should be mentioned: increased stiffness, improved bulk and better smoothness, achieved as a result of the gentle dewatering of the shoe press.

PMP Intelli-Nip® Shoe Press as a part of Intelli-Technology® platform can run both with module size of dia 1300 or 1500 reaching the nip range up to 1400 kN/m and depending on paper machine width and operating speed with counter roll: plain or controlled crown. According to the rebuild scenario and press part arrangement – it can be applied in up-right or inverted position.

What is your experience with the Shoe Press technology?

The first Intelli-Nip® Shoe Press was launched in 2007 in Rubezhnoye Mill in Ukraine. PMP managed to persuade partners to accept the risk of the prototype project of Intelli-Nip® with module dia

1500 of nip load up to 1250 kN/m. PMP installed new press part in an existing PM. The results of the rebuild made the customer very satisfied. The dryness was increased from 7 to 10%, the steam consumption in the dryer section per tonne was reduced by 37%. The first PMP reference is a strong case, working well with good results. While executing this project PMP collected many data and this was the base (besides Beloit experience) for the next generation product which is presented today.

The press part arrangement of PMP Intelli-Nip® Shoe Press for SFT project in Russia, has an inverted position. The module of dia 1300 mm is designed to run with nip range up to 900 kN/m. It is working with plain counter roll. The maximum operating speed is 900 m/min. The entire project team effort was focused on two areas – lowering capital investment cost and maintenance time savings.

What are the design specifications of Intelli-Nip®?

PMP Intelli-Nip® module is of compact design. As the result, it is easier to install it on existing PMs. As the weight of the machine is lower, the crane size can be minimized. PMP Intelli-Nip® Shoe Press design includes the following elements: central beam, loading system, counter roll,

lubrication shower, oil pan, oil doctor, belt support, piping, belt tensioning and belt.

The counter roll is plain. PMP design has been optimized by FEM calculations. As a result, the roll is lighter – compared to designs available on the market. The roll can be disassembled in pieces (journal and shell separately) which is useful in case of limited crane capability.



What are the maintenance features of Intelli-Nip® Shoe Press?

PMP belt clamping patented design guarantees reliable, uniform, leakproof and fast clamping every time. Pneumatic design gives the opportunity to decrease exchange time from 4 to 1.5 hour. PMP belt clamping solutions give 5 hours of additional production. This is probably the most effective clamping system available on the market.

It is much easier to exchange head sealing due to existing division of the slide bearing. The operation can be shortened from 6 to 1 hour only. In daily operation, it is required to change the sealing every 2-3 years. However, in case of emergency, PMP solution helps to solve the problem quickly and effectively.

Another maintenance value is offered as the result of application of the multi-coupling connection. Connection points are under control, so time is saved (no need to find the same connection again and again).

How would you compare it to conventional press configuration?

The average dryness level of conventional press configuration (with suction press and jumbo press) depends on the grade

by 20%. Fresh water consumption stays at the same level, vacuum goes down by 23%.

What are the financial savings of incorporating the Shoe Press technology?

To understand the benefits of the new concept, PMP has calculated carefully how much money (per ton of paper) is required for media in both scenarios. Please note: I'm talking about media consumed by the press section only, plus steam in the dryer section.

SFT case is the example – project executed in the Russian Federation (thus the analysis is based on media prices in this country). In summary – to produce 1 ton, before the rebuild, the mill had to pay slightly below 25 EUR. After the rebuild: around 20 EUR. It means about 20% less.

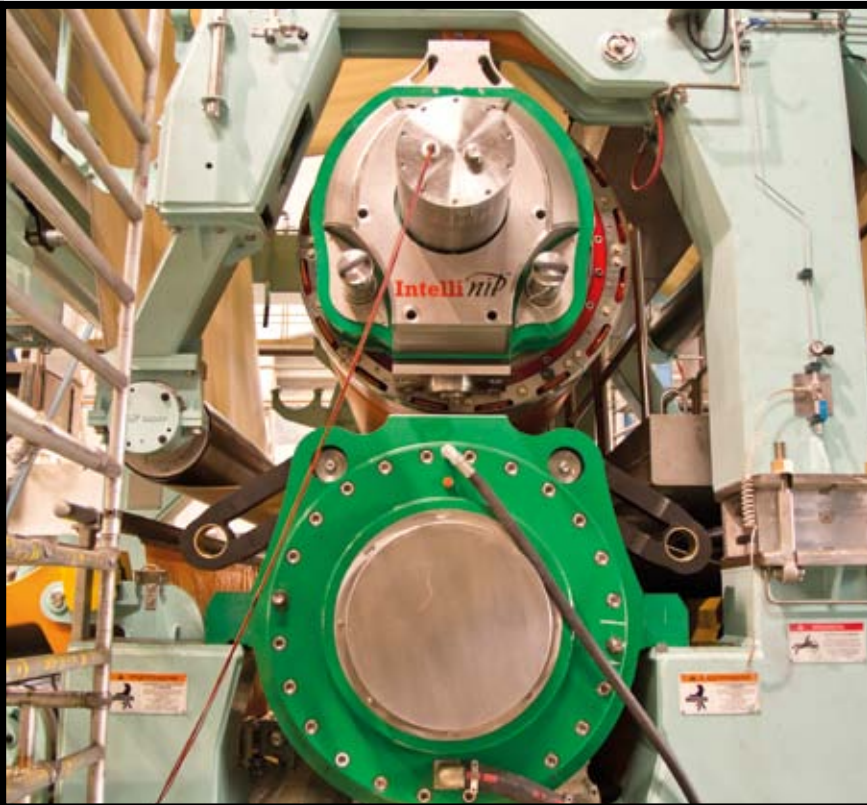
Applying the shoe press technology increases lifetime of the felt. Instead of 6 felts only 4 are needed per year (cost saving roughly 64 000 EUR,

including the felt change time cost). We need to grind the plain roll once a year, compared to two rolls in conventional solution that should be grinded every 8 months – thus estimated cost savings are 10 000 EUR. Shoe press technology requires belts (PMP assumed a conservative figure: two pieces per year – estimated cost is 60 000 EUR, however possibly only one per year is enough). It is seen that costs in this area are balanced with the small advantage on the Shoe Press side. It was also calculated and estimated

that PMP design innovations within the Intelli-Nip® Shoe Press brings 10-12 hours of additional production hours per year.

What is your personal opinion in regard to the Shoe Press technology?

When you add reliability of the shoe press solution and all maintenance benefits covered by PMP Intelli-Nip® Shoe Press, the justification of the investment will become obvious. Shoe Press technology is proven - it helps to save costs of production and produce premium quality paper. I encourage the readers to ask as many questions as they have to expand their knowledge in regard to economic benefits of incorporating the shoe press technology into their paper making line.



and is around 42%. After applying the new press configuration with Shoe Press and reaching PM target speed (800 mpm in SFT case) the expected dryness level is to be 50-52% (when furnish WRV is 1.7).

In comparison to traditional press concept suction press and jumbo, analyzing SFT case (suction press and shoe press) there are the following summary results: reaching PM capacity 625 t/d steam consumption per tone is decreased by 20%. Fresh water consumption stays at the same level, vacuum goes down by 23%.

In comparison to traditional press concept suction press and jumbo, analyzing SFT case (suction press and shoe press) there are the following summary results: reaching PM capacity 625 t/d steam consumption per tone is decreased



Save (your) energy

PMP Intelli-Tissue® EcoEc - Ecological & Economical
solution in harmony with nature

As a response to market demands and requirements of newcomers in the tissue business, PMP has launched a new product line – PMP Intelli-Tissue® EcoEc. EcoEc means an Ecological and Economical machine with ultra low media consumption and low investment and operating costs. PMP Intelli-Tissue® EcoEc is specifically developed for newcomers in the business, who has never produced tissue paper before, however it may be also applied successfully in case of changing the technological concept of the mill. Intelli-Tissue® EcoEc can replace couple of outdated and slow tissue machines, bringing costs savings and additional profits from a ready-made product. Reductions are directly connected with the limitation of the space needed in the mill, less personnel required to run the line and significantly smaller replacement parts base. Additional profits are coming from higher quality of the final product (soft tissue – higher margins) and entering new, unexplored market niches. It is worth adding that working with state-of-the art technology – Crescent Former – is more efficient and easier for the operation personnel.

In 2012, during PMP Open House in Changzhou, China, organized by PMP Group and Henan Association (March 14th - 16th, 2012), EcoEc tissue line was introduced for the first time (as a pilot concept). The TM (equipped with a 12' steel Yankee Dryer, a simplified steam hood, of double press configuration, capacity – 40 tpd brought at ultra-low media consumption) was named Intelli-Tissue® 900 EcoEc.

In 2013, the idea developed further. The EcoEc family gained a new product: Intelli-Tissue® 1200 EcoEc (a Crescent Former, of double press configuration, with a steam heated hood,



a ribbed, steel Yankee Dryer and capacity of 50-60 tpd). At present, PMP promotes Intelli-Tissue® 1200 EcoEc machine from the EcoEc line. In case of changing the technological concept of the mill, PMP Intelli-Tissue® 1200 EcoEc machine can replace even 15 TMs of outdated technology. Consequently, PMP has broadened its product portfolio and significantly improved its competitiveness.

PMP Intelli-Tissue® EcoEc machine is a modern Crescent Former technology with excellent formation that brings soft tissue. The machine can produce tissue paper from virgin fiber, recycled fiber or bagasse, in a basis weight range from 12.5 to 20 gsm.

PMP approach to quality

The scope of supply includes designing and detailing the PMP equipment in Poland, Europe, by using 3D software - SolidWorks. What is more, during the manufacturing process, PMP uses a quality system which is based on the ISO philosophy. There is a permanent quality control in all PMP facilities that meets worldwide standards. Consequently, PMP has met its strategic goal to implement Optimum Cost Solutions by executing the tissue machine full design in Europe (PMPoland), manufacturing critical components (Intelli-Jet V® headbox, SPR (Suction



Additional services

Aside from PMP equipment, the company provides also additional services, as a part of the basic scope of supply. Complex project management is included in the offer. Everything starts just after contract signing, when together with the customer, PMP defines project milestones. During the project, there are important term points that need to be discussed between PMP's and Customer's teams. Face to face meetings seem to be the best solution. There are fixed meetings after contract signing (project opening – kick off meeting) and the design approval meeting.

Ultra low media consumption

PMP main focus is to lower media consumption figures (especially steam) and is proud to announce that media consumption of the new PMP Intelli-Tissue® 1200 EcoEc, referring to basic scope of supply, is as follows: steam of 2.0-2.1 T/T of paper, energy (approach & TM) of 371 kW/T of paper and water of 6.35 m3/T of paper. All parameters based on started-up Intelli-Tissue® 1200 EcoEc reference machine.





Basic scope of supply

Focusing on the PMP Intelli-Tissue® 1200 line, basic scope of supply includes approach flow, PMP Intelli-Tissue® 1200 EcoEc machine, mechanical drives, steam & condensate system, lubrication system and tissue machine controls. The Intelli-Tissue® 1200 EcoEc machine of standard design, is a combination of a single layer Intelli-Jet V® hydraulic headbox, 4-roll CF Intelli-Former®, a double nip press configuration Intelli-Press®, a steel ribbed Yankee Dryer (12') – Intelli-YD™ and a steam heated hood (simplified or classical) – Intelli-Hood™ and Intelli-Reel®. Typical reel trim (2.85 m at reel) allows smooth and problem-free incorporation of the line into a paper mill building. The time delivery of the PMP Intelli-Tissue® 1200 EcoEc machine is from 10 to 12 months.

Press Roll), steel Yankee Dryer, steam Yankee Hood) in Europe, and the remaining manufacturing, tissue machine pre-assembly completed at the Center of Excellence PMP IB (Changzhou) Machinery & Technology (China). PMP always provides Factory Acceptance Tests when TM is fully tested. In addition, PMP takes care of the assembly and start-up supervision at site and provides advisory services for Customer's scope of supply. During the start-up PMP leads trainings for the Customer's staff. Finally PMP starts-up the new installation and assists after start-up and assures guarantee services. PMP IB (Changzhou) Machinery & Technology becoming a Service Center especially for Chinese Customers, is ready to support the Customer's needs.

Advanced scope of supply

On Customer's request PMP is ready to deliver supplementary equipment as well as additional advanced components and services. In the scope of supply of other equipment, there are spare SPR (Suction Press Roll) and components for stock preparation, electrical drives and motors, and vacuum systems. In the advanced scope of supply, PMP provides a broke line, automatic spool storage with automatic loader, shaft puller, QCS system and a combining winder. PMP is ready to offer transport directly to the mill site. It is also possible to get the whole erection services as a part of a turn-key project. PMP is able to take care of process optimization after the guarantee period. If it is needed, PMP is ready to provide mill safety analysis of existing lines.

Summary

PMP's new product, Intelli-Tissue® 1200 EcoEc, is a solution which is dedicated to customers that expect soft tissue and professional approach in project execution. With ultra low media

consumption customers can get significant annual savings. High return on investment (1.5 to 2 years) and compact design (taking less space in a building) makes PMP product even more attractive. The first Intelli-Tissue® 1200 EcoEc machine in China, has been already brought on stream, confirming and proving all design parameters. Our customer Hebei Xuesong Paper is proud to expand its business and launch it to the next level. The second Intelli-Tissue® 1200 EcoEc machine, for Henan Hulijia Paper, will be started-up in the nearest future. The success story of Intelli-Tissue® 1200 EcoEc is continued through upcoming projects (currently in the development phase). We do hope that there will be more customers satisfied with PMP's machines and approach towards cooperation.



Steam: 2.0-2.1 T/T

Water: 6.35 m3/T

Energy (approach & TM): 371 kW/T



Customer: **Hebei Xuesong Paper Co., Ltd.**
Location: **Baoding, China**
Product: **PMP Intelli-Tissue® 1200 EcoEc**
Start-up date: **May 2014**
Project goals: **minimizing media consumption, good quality tissue production, capacity increase, technological development, reduction of ROI**

First PMP Intelli-Tissue® EcoEc machine in China

Project for Hebei Xuesong Paper

Interview with Maciej Ossowski –
Senior Application Engineer at PMP
Group

Please tell us something about yourself.

My name is Marcin Ossowski and I'm a Senior Application Engineer in PMP's Tissue department. I have a rich experience in regard to tissue machine start-ups. Both new machines and refurbished ones. Although you might say, that after so many years I'm just starting to become fully aware of what this industry is all about [laugh].

Who is the lucky owner of the new Intelli-Tissue® EcoEc machine?

It's a Chinese company - Hebei Xuesong Paper Co., Ltd., which is located in Baoding, Henan province, in China. The company produces 80,000 tpy of tissue and is the owner of brands such as Xuesong, Jiabei and Haorenjia.

TM designed for Xuesong Paper is the first PMP Intelli-Tissue® EcoEc (1200) installation. What are the benefits of this solution and for whom it is most attractive?

Recently PMP has worked on the design and optimization of double press Crescent Former tissue machines, named the Intelli-Tissue® EcoEc line (Eco - Ecological & Ec - Economical). Those type of solutions are especially attractive for customers from emerging markets who are interested in tissue machine capacity up to 60 tpd. The PMP Intelli-Tissue® 1200 EcoEc for Hebei Xuesong Paper Co., Ltd. at Baoding, is characterized by width of 2850 mm at reel, a max working



First PMP Intelli-Tissue® 1200 EcoEc machine in China

speed of 1200 mpm and 60 tpd capacity (basis weight range: 12.5 – 20 gsm).

What were the Hebei Xuesong Paper TM#1 project goals?

Some time ago we have proved that we are able to produce a machine in China, which is based on Chinese components and

execution (in most parts). Now however, being just cheaper is not enough. Now, it is important to have the lowest possible labor costs. Obviously, it would be perfect if there were no costs at all [laugh]. Unfortunately there is no such thing as perfection, in my opinion however, we should try to at least get as close to it as we can. Thus the main goal in the Xuesong project (which should be inseparably linked with the Hulijia project) was to prove to ourselves and to the world that we are able to make a machine which would produce so much for so little. We have established the basic configuration of the EcoEc machine which main goal was to minimize media consumption (especially steam and energy). First observations after startup are encouraging and are even better than we expected for such a configuration (double press with a steam hood). Other goals covered increasing TMs production by 21 000 t/a, technological development of the customer and the reduction of Return On Investment (ROI) to less than two years.

What was PMP's scope of supply?

The Intelli-Tissue® 1200 EcoEc is equipped with a modern single-layer hydraulic Intelli-Jet® V headbox, a 4-roll Crescent Former Intelli-Former®, a double nip Intelli-Press®, a 12 ft, ribbed steel, Yankee Dryer Intelli-YD™, a steam-heated Intelli-Hood™ and an Intelli-Reel®. In addition, PMP provided a stock approach system, mechanical drives, electrical drives, lubrication system, steam and condensate system and DCS. The PMP team also provided erection supervision and technological start-up.

Successful start-up as a confirmation of a partnership-based business relation



There are new PMP products implemented in this particular case. Can you tell us something more about them?

In the last three years, PMP has focused on the development of key products concerning tissue machines, based on its own concept: a steam-heated Intelli-Hood™ and a steel Yankee Dryer Intelli-YD™. Consequently, PMP has broadened its product portfolio and significantly improved its competitiveness by introducing those two units to the market.

Why is it worth to own a PMP Intelli-Tissue® EcoEc line?

If a tissue producer is focused on lowering production costs and in the same time, keeping high quality of the final product (soft tissue) than the Intelli-Tissue® EcoEc line has no equal.

How many operator are essential to run the line?

During machines normal work time (including stock preparation) only 3 operators are necessary.

You have already started-up numerous PMP tissue lines. How was this particular start-up different from others?

Each start-up is different. This particular one however, was extremely unique since it was connected with the launch of PMP's first Yankee Dryer and first steam hood. Unlike previous start-ups, this time we didn't have the support of experienced engineers from the sub-suppliers side. Everything was in our hands. Despite initial difficulties, the weight of the entire installation brought an immense satisfaction and a big chunk of additional knowledge, which is all in all, acquired throughout our entire lives.

Could you please tell us something more about TM#1 current achievements?

The key feature of the EcoEc line is ultra-low energy consumption levels. Currently, the machine at Hebei Xuesong operates at 2.0-2.1 T/T steam consumption. Thus, Hebei Xuesong produces soft tissue at attractively low production costs. The estimated Return on Investment (ROI) for the Hebei Xuesong project is 1.5 - 2 years.

Hebei Xuesong Paper owned in the past only tissue machines of low operating speed, designed and made locally in China (23 lines of total capacity 80 000 t/a). How did the customer adapt to a modern Crescent Former technology?

The Intelli- Tissue® 1200 EcoEc machine (Crescent Former Type) is able to replace up to 15 machines which were designed and manufactured in China with outdated technology (narrow and slow machines), saving floor space,

"Why did we choose PMP tissue machine? PMP is the successor of Beloit and the Intelli-Jet V® technology is a patented design based on Beloit solutions. Now, the machine runs smoothly at operating speed of 1200m/min. The tissue quality is excellent and belong to the top tissue products, because of the CF technology application."

- Mr. Zhao Baoshui, President and GM of Hebei Xuesong Paper Co.,Ltd.

replacement parts and resources. Preliminary concerns in regard to the inability to run such a CF machine were quickly dispelled. Machine's very stable working parameters, in connection with the employees experience (current and newly employed ones) in the field of operating tissue machines, resulted in achieving the machines maximum speed and expected guarantee parameters sooner than anticipated.

What were the key elements important for the customer? Why do you think the mill team decided to choose PMP as a partner?

I think that an important role, when choosing PMP, played our attractive price while maintaining a high level of technology in crucial parts of the machine.

Is owning a Service Center in China (PMP IB) an important PMP aspect?

Indisputably. Without this kind of support any plans that concern the EcoEc machine could not exist.

Could you tell us something more about the daily life during erection at site and start up?

Typical working day is no different than during any other start-up. Early in the morning we set an internal action plan for the current day, than we show it to the customer and ask for his help during delivery contact points. At the end of the day we usually do a summary and establish what we managed to achieve and what still needs to be done. Finally, we have some time to ourselves.

An effective planning is an important aspect of the project success. On the other hand, there are also some unpredictable situations and then flexibility in action is the key. How does PMP define mile stones of each project and what are the communication channels?

The key to success is to create a start-up schedule that also sets defined responsibilities of each start-up participant. Having this type of plan allows us to execute, step by step, each point, without worrying that a small, although important aspect of preparing the machine for start-up, might be omitted. What is more, it also gives us the opportunity to optimize the assembly costs by having only the necessary staff that is needed during a specific start-up point. Of course, preparing such a plan, is only possible when you possess a complex knowledge of the entire tissue production process and when you have a strong support of the customer in most needed areas.

And now the most important question: have all projects goals been achieved?

Thanks to excellent cooperation between Hebei Xuesong Paper and PMP team, just 5 days after start-up, tissue installation has reached maximum production capacity. Consequently, PMP has met its strategic goal to implement Optimum Cost Solutions by executing the tissue machine's full design in Europe (PMPoland), manufacturing key components such as a hydraulic headbox and a steel Yankee in Europe (PMPoland), and the remaining manufacturing, tissue machine pre-assembly and tests completed at its Center of Excellence - PMP IB (Changzhou) Machinery and Technology (China). This combination has allowed a lower cost investment for the customer, while maintaining the quality of the equipment supplied. The estimated Return on Investment (ROI) for the Hebei Xuesong project is 1.5 - 2 years.

What do you think future will bring?

Achievements have become an inspiration for further business growth of both Hebei Xuesong Paper Co., Ltd. and PMP Group, as well as a stronger partnership between the two companies. I have a strong feeling that this is not the last project that our companies executed together.

Customer: **Yuen Foong Yu**
Location: **Yangzhou , China**
Product: **twin PMP Intelli-Tissue® 1500 machines**
Start-up date: **August 2012, October 2012**
Project goals: **premium quality tissue, capacity increase, minimizing investment and operational costs**



Twin PMP Intelli-Tissue® 1500 machines for Yuen Foong Yu (TM#5 and TM#6) Yangzhou, China

Nowadays, the global economy is very demanding. To execute an investment it is required to look for smart solutions. Today, we would like to present an interesting green field project that PMP executed for Yuen Foong Yu last year – the delivery of two modern Crescent Former tissue machines from the Intelli-Tissue® platform.

YFY YANGZHOU PROJECT BACKGROUND

In 2010, YFY noticed that the existing tissue production was fully utilized and customers in Mainland China were eager to buy more tissue products. The expansion plans were approved and the decision was made to launch a green field project in Jiangsu province (Yangzhou). YFY Group and PMP Group have been working together for almost 20 years, executing projects in China and Taiwan, in paper as well as tissue mills. Both companies have been executing successfully the strategy of Optimum Cost Solutions based on partnership and win-win solutions. In Yangzhou case, PMP was rewarded again to be a part of YFY's success.

In the tissue area, YFY owns (up to date) 7 PMP Intelli-Tissue® 1500 lines – all are (or will be) installed in Mainland China in Beijing, Yangzhou and Dingfung . Ambitious plans are in progress which

means that in the future, YFY will hit total tissue capacity of almost 300 000 t/a. PMP Group is proud and honored to support YFY in this development.

YFY - AMBITIOUS PAPER MANUFACTURING COMPANY

YFY Group was founded in 1925 and is recognized as a paper manufacturing company. YFY is focused on continuous development of technology and complexity of actions – to meet expectations of customers and keep business profitable. The main YFY added value is providing high quality products. The company is proud of its achievements to maintain a friendly environment and pro-employee attitude. Today YFY is active in three business areas: fine paper & board, packaging and consumer products, owning 23 facilities in China, Taiwan and Vietnam. The distribution net is efficient, thus products can reach consumers quickly. YFY headquarters is located in Taipei, Taiwan. At present



YFY holds the second position on the Taiwanese tissue market with 30% shares, promoting three brands: Mayflower, Tender and Delight. In Mainland China, YFY group is a newcomer in the tissue sector. The goal for the nearest future is to reach the level of 10% market share with the Mayflower brand.

” We have a very good relationship and communication with PMP. We chose them again to be our partner for the Yangzhou project because we had wonderful experience before in Beijing ”

– Ming-Fa Tang, Vice President, YFY

YANGZHOU PROJECT GOALS

From the very beginning YFY team set clear goals. The key issue was premium quality of the final product and significant increase of capacity. In addition, it was important to minimize investment costs. YFY dared to be open and look behind stereotypes by applying European technology (Crescent Former) that was not built fully in Europe, but instead, manufactured partly in Poland and in China (Optimum Cost Solution). Finally the customer paid attention to media consumption levels and user-friendliness of equipment – to minimize operational costs. Proven technology helps to decrease media consumption. Mills location with favorable prices of media, is another supporting factor. Flexible approach of both partners was crucial to fulfill ambitious plans.

INTEGRATED MILL AS A COST OPTIMIZATION STRATEGY

To optimize the investment, YFY decided to invest in the facility with two tissue machines, with a common control room. It was planned that the mill would be equipped with a warehouse and converting area creating this way an integrated tissue mill. What benefits can you get when investing in an Integrated Tissue Mill? Having two TMs in just one location? Firstly – much higher flexibility. For the product: you can play more with production options and reduce necessity of frequency of TM readjustment. As a result, better annual TM effectiveness is reached. At the same time number of staff can be reduced by approx. 30%. Secondly, you can save money on capital investment costs. Just to mention supporting factors: an optimum building arrangement (smaller than in case of putting two individual machines), common

systems for two lines (2 in 1) and only one replacement parts base.

WHY PMP Intelli-Tissue® 1500 LINES?

There were three main reasons for choosing PMP for the Yangzhou project. First of all, very good experience collected during the Beijing project execution, with the same TM type delivered by PMP. Projects goals were met and communication was smooth and efficient. Then appreciation of CF technology by YFY when producing premium tissue and finally high TM capacity - 75 t/d. Machines in Beijing and Yangzhou are similar with the exception of wider reel trim 2.8 m and YD of bigger dia (single press arrangement with big SPR, steam heated duo hood, 16 feet YD). Each TM operating speed is 1600 mpm. The tissue can be converted into facial, toilet and towels.

THE FASTEST START-UP in YFY HISTORY

The project for YFY Yangzhou was launched in January 2011 and both TMs were executed simultaneously up to the pre-erection phase. PMP Group executed Optimum Cost Solution taking the advantage of its two facilities: PMPoland (Poland) and PMP IB (China). Crucial systems like headbox, SPR, YD and hood were made in Europe with the usage of 3D Solid Works designing. Other parts were built in China (including TM pre-erection). Yangzhou project was split between YFY and PMP. PMP took care of stock preparation, stock approach, both tissue machines including auxiliary systems like mechanical drives, oil lubrication system, steam & condensate, dust control system, machine controls and instrumentations, as well as shaft pullers. YFY was responsible for the building, rewinders, QCS & DCS and electrical drives.

The PM#5 erection at site started in May 2012. Then a month later PM#6 foundation was ready. As a result, the TMs were put on steam one after another: PM#5 in August and PM#6 at the end of September 2012 - only three months (from base plates up to paper at reel) for each machine. The start-ups were described by mill representatives as the fastest in YFY history.

BENEFITS of RUNNING PMP Intelli-Tissue® 1500

What is mill life with twin PMP Intelli-Tissue® 1500 after start-up? Let's discuss benefits shortly.

PMP Intelli-Tissue® 1500 is FLEXIBLE. TMs in YFY run on virgin fibers and produce tissue within the range from 13-31.3 gsm. Grade change is possible within 15-20 minutes. TMs design is modern and compact, as a result machines clothing is easy and fast. Change time: for wire – one hour, for felt - up to two hours.



Successful start-up at Beijing mill, 2011



Contract signing ceremony for twin Intelli-Tissue® 1500 machines, 2011



One of the twin Intelli-Tissue® 1500 machines at PMP IB workshop, 2012



TM#6 start-up at Yangzhou mill, 2012

PMP Intelli-Tissue® 1500 is a CRESCENT FORMER technology. It is the leading concept worldwide for tissue production.

PMP Intelli-Tissue® 1500 is RELIABLE. Modern solutions ensure 95% of effective production of TM per year. COMPACT DESIGN of PMP TMs is 10% shorter in comparison to TMs available on the market. As a result, space of the building can be saved and/or an investment value can be optimized.

PMP Intelli-Tissue® 1500 ensures HIGH EFFICIENCY of production. YFY can get 75 t/d of premium tissue from each machine. Attractive media consumption levels per ton of paper: steam 2.1 T, water up to 4 m3 and electricity up to 729 kWh, results is total cost per T of media, only around 930 RMB.

Another benefit of executing two PMP Intelli-Tissue® 1500 at the same time, is SHORTENING the delivery time as a result of optimized execution cycles – approx. 8 months ready for shipment. Components are interchangeable between machines which helps the staff to get familiar with solutions faster and save costs of replacement parts. Two PMP Intelli-Tissue® 1500 for YFY are the combination of European technology and Asian execution. Modern design helps to reduce downtime to a minimum (approx. 12 days a year). User-friendly solutions help to reduce number of staff – 6 people is enough to run the entire line from stock-prep up to the rewinder. Finally, on skid building philosophy helps to save 20-30% of the investment in comparison to a building with a cellar.

PMP Intelli-Tissue® 1500 is definitely an ECO FRIENDLY solution which is mainly confirmed by low media consumption. User friendliness helps your operators to get familiar with the TM faster and run it without problems.

Finally we are coming to the fundamental summary. PMP Intelli-Tissue® 1500 machines produce fantastic quality tissue. That was the most important goal in the YFY project, especially the Mayflower brand, which is recognized as an ultra-soft, premium product.

SUMMARY – PASSION COMES FIRST

Success is always built by dedicated people. At PMP Group, we say that passion comes first. Great teamwork brought 52 000 t/a tissue produced in a well-organized mill in Yangzhou. Project went smoothly, bringing all involved satisfaction and pride. Partnership is continued with a new project for Yangzhou and Ding Fung – this time 4 tissue lines. More information to come.



Customer: **Jiangsu Changfeng Paper Co., Ltd.**
Location: **Danyang, China**
Product: **PMP Intelli-Nip® Shoe Press**
Start-up date: **March 2014**
Project goals: **capacity and dryness increase, paper quality improvement, implementation of modern technology**

First PMP Intelli-Nip® Shoe Press in China

Project for Jiangsu Changfeng Paper Co., Ltd.

Jiangsu Changfeng Paper Co., Ltd. (located in Danyang city) was established in 2002 as a part of the Chamfor Group. The mill is a high strength corrugated base paper producer (3-ply, 110 – 190 gsm) owning 3 paper machines. PM#1 and PM#2 were installed in 2008, while PM#3 in 2010. Within a decade, JCP managed to reach annual output of 600 000 t/a by implementing state-of-the-art technologies. High quality of the final product is appreciated by consumers in the south-east Asia. Jiangsu Changfeng Paper Co., Ltd. is focused on expanding its business through entering new market niches.

PROJECTS GOALS

After installing (3) three PMP Intelli-Jet V® hydraulic headboxes and a PMP Intelli-Sizer™ on PM#3 in 2013, this time project goals were focused on increasing PMs capacity through changing the working speed from 580-700 mpm to 750-850 and (consequently) increasing the dryness from 43-44% to 50-51%. In addition, significant improvement of quality parameters of the final product (especially its bursting strength and folding resistance). Project design has been focused on the press section. The main idea was to implement a new configuration of the entire section: jumbo press + shoe press (replacing the previous solution jumbo press + jumbo press).

Intelli-Nip® Shoe Press – Gentle touch with extensive impact

What are the differences between the old and new design in JCP? First of all, Intelli-Nip® Shoe Press offers much higher nip load on the 2nd press position (before: 360 kN/m and now: an average of 800-900 kN/m and a maximum of 1050 kN/m). As a result, steam



consumption can be reduced significantly (even by over 30% per each ton of paper). The following advantages are associated with higher parameters of the final product (higher bulk, bursting strength and folding resistance). Taking all media consumption level into account, a new configuration brings an attractive steam consumption factor, that generates cost savings. Compact design of the shoe press helps the operators to adjust easily to the new solution. JCP's Shoe Press module, of dia 1270 mm and mating roll of dia 1460 mm, works in inverted position.

THE PROJECT UNFOLDS

Seeing things with your own eyes is always worth more than hearing even 1000 words. Implementing this philosophy into practice, JCP team led by Mr. Wang Huamin (Vice General

Manager of JCP), in March 2013, participated in the PMP Open House conference in PMP Group's headquarters, in Jelenia Góra, Poland and witnessed full workshop tests of the Intelli-Nip® Shoe Press. JCP had the chance to get familiar with this modern design and was offered tailored made solutions provided by PMP. Professional attitude helped PMP to build a leading position in the last stage of negotiations. A month after the conference, JCP made a brave decision of to choose PMP to provide the PM#3 press section rebuild, becoming this way the first Chinese paper mill that owns the PMP Shoe Press technology.

Project goals were clear for both parties and the process of designing the state-of-the-art technological solution (Intelli-Nip® Shoe Press) was launched. Both teams were eagerly working on all project aspects, taking care of concepts, integration, combining new parts with existing ones etc. - having in mind that they had a chance to create a milestone for both companies. The dream of incorporating a core technological item into PM#3 and (at the same time) to liven up the 1st PMP Intelli-Nip® Shoe Press in mainland China, started to take shape.

In December 2013, a Chinese delegation was invited for a Factory Acceptance Test in Poland. JCP team was impressed by the tests, as well as by the place where paper machinery has been designed and made since 1854. In addition, it was a great chance for JCP to get familiar with a reach Polish culture, built stronger partnership relations and to make all involved excited about the forthcoming start-up.

The new Shoe Press was waiting patiently in the container during its sea trip to China. Closer to the start-up date everybody was focusing strongly not to miss any details, having in mind that only successful start-up and then smooth PM performance, would be a reward for the entire effort. Preparation works were launched around the Chinese 2014 New Year. A Year of the Horse brought more energy at the finish line of the project, just before the start-up. On March 12th, 2014



2012



2012



2013



2014



2014

the equipment and PM clothes were fully assembled at site and tested. It was about time to switch on a green light and to start movement tests. The sweet smell of success was raising around. On March 13th, the Shoe module was fully tested (at operating speed of 900 mpm and nip load of 1000 kN/m). A day after, the first paper after the rebuild appeared at reel making all involved proud. PM#3 was running smoothly, adapting to a new situation. First results were really good, both taking dryness level into consideration (around 50%) and reducing significantly steam consumption, as well as improving paper quality. Within 5 days after the brilliant start-up, guaranteed parameters have been fully met which was confirmed officially. Steam consumption has been reduced from 2.2-2.4 to 1.5-1.6 T/T (production costs of each t of paper have been reduced by 120 RMB) and at the same time machine daily capacity has been increased by 16% (currently 780 t/d). Just calculating reduced steam consumption and basing on instead production PM#3 production numbers, JCP can save significant amount of money annually which drives to the conclusion that they might reach Return on Investment (ROI) slightly over a year from now.

RESULTS THAT MATTER

The key for success sits in modern technology, great team work, communication, paying attention to details and focusing on the final result. PMP chose China as its key market couple of years ago. It is the harvest period now, as the consequent company strategy was designed well. Base of references in mainland China is growing constantly for PMP. Through PMP IB (PMP

Group's facility in Asia), PMP Group is closer to its customers. Mr Wang Huamin, when summarizing the PM#3 press section rebuild (directly after start-up) said: We chose PMP as the shoe press supplier for their advanced technology and excellent service. They have a factory in Changzhou, China - PMP IB, which is benefit for us because of the convenient service in the future. Dryness after press improved a lot. For now, the machine speed has increased from 680 m/min to 850 m/min, and it runs smoothly. Paper quality also improved a lot after the rebuild.

PMP Phoenix CoNCEPT™ Rebuilds fit Chinese tastes

PMP team does not plan to rest on its laurels. The commitment is to work even harder to support JCP in its long term development plans. We have equipped PM#3 with PMP's headboxes, metering size press, as well as shoe press so we are confident we can speed up this machine to a production capacity far exceeding the original design parameters and push Changfeng Paper to a higher level, said Mr. Wang Huamin. PMP trusts that through smooth and efficient implementation of PMP Intelli-Nip® Shoe Press in JCP, it has all aces in its hands for any PM rebuild scenario having the knowledge, expertise and experience appreciated by the Chinese customers.

Learn more about the project at: <http://pmpgroup.com/newsroom/project-facts.html>

Learn more about JCP at: www.cfpaper.com.



Customer: **Papierfabrik Niederauer Mühle**
Location: **Kreuzau, Germany**
Product: **PMP Phoenix Concept™ Advanced Rebuild**
Start-up date: **May 2011**
Project goals: **production profile modification, reduction of investment costs,
combining new technological elements with refurbished parts**

The first PMP Phoenix Concept™ rebuild

History of cooperation between PMP Group and Papierfabrik Niederauer Mühle

Nowadays, the global economy is very demanding. To execute an investment it is required to look for smart solutions. Today, we would like to present an interesting green field project that PMP executed for Yuen Foong Yu last year – the delivery of two modern Crescent Former tissue machines from the Intelli-Tissue® platform.

In the paper industry, due to the complexity of the machines and significant investment costs, only few projects are implemented every year. Each branch carries them in accordance with its own, developed business model. All the more, it is worth to distinguish those who find a successful way from planning to the execution as the part of calculated investment plans. In this article the story of such a project - the PM3 project, executed by PMP for Papierfabrik Niederauer Mühle will be presented.

Papierfabrik Niederauer Mühle – paper mill with traditions

Mr. Holger Autenrieb, since 1984 President and co-owner of the company, together with his team of professionals, has expanded Niederauer Mühle's market position as one of the leading producers of white top testliners. He consistently develops the individual production lines, improves the quality of products which have gained recognition among customers from Europe and overseas markets.

Key to success - Choosing a Partner

Increasing demand for paper products and new customer requirements resulted in the decision to build and start-up the project for the next paper machine. The new production line, in addition to providing increased production and paper quality parameters, was expected to be high efficient. Due to the complexity of the project (disassembly, transfer of the machine, refurbishment of parts, engineering design and the construction of new sections, integration, installation, technological start-up and optimization) it was decided to look for a supplier with comprehensive project management skills.

The fast production start-up was also a significant factor, thus keeping the deadlines and commitments were extremely important. Choosing PMP as a partner was also based on previous projects that were jointly executed by both companies and in which, the PMP values (partnership, teamwork, professionalism,



PHOENIX CONCEPT™
The new value for existing machinery

efficiency) were confirmed and verified. PMP Group joined the Papierfabrik Niederauer Mühle group of suppliers in 2005, when the first contract for a headbox with consistency profiling system for PM2 was signed. Satisfaction with the cooperation resulted in choosing PMP to carry out another modernization project, this time for PM1, in the range of a wet end section (wire and press part). Through the experience gained in the projects were carried out mutual understanding, customizing of the work style and an optimization of the operations.

In April 2010, in the last phase of negotiations for the project of PM3, PMP team - led by Zbigniew Manugiewicz (President of PMP Group) - received gratifying information from Niederauer Mühle that the project was assigned to PMP. Niederauer Mühle and PMP teams realized that was only the beginning of a very demanding project.

Changing the production profile – the concept of the project

The former PM5 of Perlen Papier AG, Switzerland, which was originally producing newspapers, was bought by Niederauer Mühle. After disassembly, reconstruction and completion of the former PM5 from Perlen, the machine in Kreuzau, now under the name PM3, produces only testliners from recycled fiber.

PMP execution of the project included the following tasks:

- design and delivery of new key technological elements from the Intelli-Technology® platform™ such as a Intelli-Jet V® hydraulic headbox, top wire, 4th and 5th dryer groups, Intelli-Reel® and mechanical drives
- extension of the existing bottom wire, modernization of the press section
- full support for disassembly of the machine and auxiliary systems including the equipment in Perlen, Switzerland
- preassembly and testing of new deliveries
- ensuring compliance with the EU regulations on safety
- technological start-up of the newly established production line
- an active role in optimizing the installation, including the necessary training for the machine operators

Machine specification – technology created by demand

The new machine sections was designed using modern design tools that enable creating models in three dimensions technology (SolidWorks) by applying particular sections of the Intelli-Technology® platform. Visualizations improved complete understanding of the final solutions and allowed to introduce improvements during planning phase causing increasing user friendliness for machine staff.

Technical-logistic processes integration – the compact project schedule

From the moment the contract was signed to getting paper on reel 13 months passed by. It is worth to mention, that the whole project was executed successively: on the one hand





all work with existing machine from Perlen, on the other designing and manufacturing new equipment in Jelenia Góra, their full integration in Kreuzau. PMP exactly prepared matrix work schedule, containing 3 main tasks, which made easy work coordination. It became a base to the exaction of time-limits with relation to subsuppliers of paper mill and PMP as well.

Disassembly and elements transportation from Perlen took almost two months. During this time over 2300 t steel of constructions was disassembled and packed in 170 trucks. In the whole disassembly and transport phase there was no accidents occurred.

The last stage – assembly and integration of all elements in Kreuzau was executed by PMP in cooperation with project management of Niederauer Mühle and external companies. Thanks to philosophy just-in-time and precise planning of storage capacity, the project was executed efficiently and on time.

The effective start-up – minimizing the risk

New equipment passed double stage tests: first in PMP Group headquarters, during preassembly, and then in Kreuzau. In May 2011, the machine was started-up.

Partnership – great team as the base of success

What is important, both sides succeeded to create a team of specialists, who with their knowledge and energy, day by day consistently executed the project. The team from Jelenia Góra had a chance to prove in practice, what flexible approach to problem solving means, keeping

deadlines. The whole project was led bilingually (German and English) to reduce the risk of mistakes resulting from misunderstandings.

Professionalism – common goal and the philosophy

The success of the project PM3 for Papierfabrik Niederauer Mühle was build on determination and coherence of entire project teams.

Project PM3 has become an inspiration for PMP to create the Phoenix Concept™ projects – added new value for existing machinery. PMP has ambitions and is fully prepared, both in terms of organization, cost and quality aspects as well to create the next installations on existing production lines. The intention of that kind of projects is optimum cost investment that gives you a chance to obtain high effectiveness. Reborn machines are smart solutions, where technology is tailor made – key elements are new, less significant parts refurbished. Skills, experience and PMP technologies allow to change a production profile of the machines. PMP is able to act as an integrator executing the complete process involving the relocation of existing machine, parts refurbishment, application of new equipment, the unification of all deliveries, and final assembly, technological start-up and optimization of the line. The key to success is PMP's ability to respond to changes, and full focus on reducing costs and meeting deadlines obligations.

Currently the next project of the same kind is executed, this time in Russia. We hope that soon we will have a chance to share the details and describe the history of the next Phoenix project reborn from the ashes.

8 FACTS

about the PMP Group's HISTORY

1854

H. Füllner founds a workshop which manufactures elements for paper machines. Soon Füllner's workshop becomes a respected supplier of paper machines.

1928

The company received an order for the five-hundredth (!) paper machine.

1946

After the Second World War crucial border change took place. Lower Silesia became a part of Poland. Polish government decided to continue the tradition of H. Füllner's factory and established, in the same place, the Paper Machinery Works - Fampa. It was (and still is) the only paper machinery producer in Poland.

1964

FAMPA received a licensee of Beloit Walmsley. It was the beginning of a fruitful and constant cooperation with the market leader. In 1991 it was renamed Beloit Poland and became a part of Beloit Corporation.

1996/97

Beloit Poland becomes the Centre of Excellence for Beloit Corporation for manufacturing complete Tissue Machines, Hydraulic Headboxes with Consistency Profiling and modern Reels including the Beloit TNT.

1997/98

Beloit Poland becomes the main producer of complete Tissue Machines for the entire Beloit Corporation with capacity to produce 10 complete machines per year. During this time the company invested much capital in implementing modern computer systems and modernization of the company's buildings.

2008

8. PMP Group decides to widen its market horizons and opens a new facility in China – PMP IB (Changzhou) Machinery & Technology. From this moment on, PMP Group owns three divisions in Poland, one in USA and one in China. Soon PMP IB becomes PMP Group's center of Excellence for Intelli-Tissue® 900 machines.

2000

7. The year 2000 was an extremely difficult time for the Beloit Corporation and soon it went into bankruptcy. Managers from Poland and an investor from the United States took over Beloit Poland and created a company named PMPoland S.A. A year later PMPoland bought four more divisions: PMPKonmet, PMP Fast Service (both in Poland), PMP Americas (USA), PMP Xibe Roll Covering (China) and established the PMP Group corporation. PMP Xibe was sold a few years later.



In 2004 PMP published a book entitled "150 years" to commemorate the 150th anniversary of the company. The trilingual, historical publication is illustrated with archival and current photos. The book is dedicated to the memory of all factory workers who created the shape of the company for several generations. If you wish to receive this book, please contact us.



