

# TECHNICAL NEWSLETTER PAPCEL



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## Assembly of installations in Shklov under way

Twenty-five months have elapsed since the signature of the largest contract in the PAPCEL Co. history. Since 2012, PAPCEL has been realizing a joint investment project with the paper mill "Zavod Gazetnoy Bumagi", Shklov, Belarus, concerning the construction of a new paper plant for the production of decorative papers with a capacity of 30.000 tons per year. PAPCEL is the general supplier of the this "turnkey" plant, which will be located on a greenfield lot of the existing plant.

PAPCEL builds the new paper machine, including all its accessories, in a new hall. **PAPCEL is the general supplier of the entire paper plant, including the whole production technology.** The delivery includes a new boiler room with grate combustion system for biomass burning, located in a separated hall (PAPCEL delivery). The existing wastewater treatment plant will be completed with a new filter-press. The "turnkey" delivery includes the access roads solution, railway sidings and planting of greenery around the buildings.

The project is currently in the realization stage. Construction works on the customer's site have been carried out since 2013. The foundations of the technology hall were completed and the erection of the technology hall has been started in the mid-2014. Construction works are carried out together with the hall assembly. The assembly has been going on since 2014.

The wastewater catching tanks, interior and exterior sewer systems, the input of fire water and raw water for the technology have been completed within the construction. Passages under the existing railway siding for the connection of electricity networks are ready. Bridges for heat networks (water and steam input piping) connected with the existing plant boiler room has been completed.

The assembly of the wire part, the coach agitator, the drying part within the scope of the supporting structure, drying presses, fabric stretching, doctors, the steam box and upper service bridges, as well as the assembly of the reel and rewinder has been completed within the assembly of machinery. The pulper, the broke pulper, the reserve tanks including agitators, the refiners, the pumps and the screens have been assembled in the stock preparation line and the approach flow system. The assembly of PM drives, press part, soft calender, headbox, central lubrication, piping including fittings, measuring and regulation elements, press filter, complete paper rolls packaging line, including connected conveyers, and the lift to the stock of finished products, conveyers to the stock preparation line, roll grinder, electricity part will be completed in course of the second half of 2015. Construction works on the boiler room have been carried together with construction and



► 08/2013  
Beginning of project realization



► 06/2015  
New paper plant SPL and PM hall



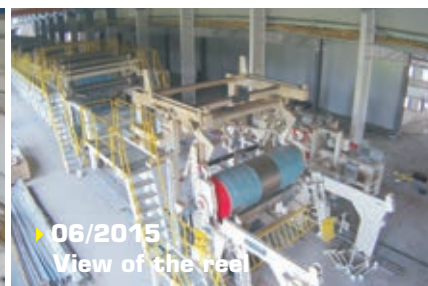
► 06/2013  
PM foundations



► 06/2015  
Machine press part



► 06/2015  
View of the wire table



► 06/2015  
View of the reel



► 06/2015  
Stock preparation line



► 08/2015  
Boiler room

► *Photos: Building site at the time of contract signing. Today a newly built technology hall with accompanying accessories. The next photo shows the construction of PM foundations. Currently, a completed assembly of wire table, press and drying part. The reel and rewinder also assembled. Completion of stock preparation line underway. Boiler room construction works in progress.*

assembly works on the paper mill technology since December 2014. Foundations of this separate hall, including foundations for the boiler itself, were completed in February 2015. The assembly of the supporting steel structure, including the boiler itself, was completed in March 2015. A crane truck with the capacity of 250 tons was used due to the

weight of the pressure part of the boiler (57 tons), placed in the upper floor of the boiler room. The assembly of the steel structure of the boiler room hall is currently in progress. The boiler room should be put into operation in 4Q/2015 and the whole technology till the end of 2015. Guarantee tests are scheduled for August 2016.

## Towards Southeast and East Asia - new deliveries to India and China

The PAPCEL group has been operating on the markets of the Middle East and Asia for at least 10 years. The deliveries to these markets are realized in cooperation with business representations; their network in this territory is relatively dense. Nowadays, PAPCEL has its installations already in countries such as Saudi Arabia, the UAE, Iran, Indonesia, etc. After the acquisition with ABK, the PAPCEL Group also entered the Chinese market where ABK is firmly established and where it has a business representation.

The branch currently employs five Indian workers concentrating not only on the sales as such, but also on engineering activities. PAPCEL has the ambition to become an equal competitor of world's leading manufacturers of paper technology in the Indian market.

In India, there are currently more than 700 operating paper mills, ranging from small mills with technical level of the early 20<sup>th</sup> century to modern high-capacity mills.

The current consumption of paper in India is only

opened a window of opportunity for local and foreign suppliers of all kinds of equipment and machinery for processing of pulp and paper as well as production of all grades of paper. This is a unique situation and everyone in the paper industry tries to be very active in the Indian market.

In December 2014, PAPCEL/ABK Groupe signed a contract with one of the Indian customers for a new hydraulic headbox with wire width of 4.480 mm and design speed of 1.000 m/min for writing & printing PM.



► New headbox to China, dispatch in 05/2015



► The exhibition PAPEREX, India



► New hydraulic headbox to India (2015)

Besides China, India represents another strategic area for the PAPCEL Group, where a subsidiary PAPCEL Pulp and Paper Technology Private Limited was established in Hyderabad, state Andhra Pradesh, in 2014.

11 kg per capita per year as compared to the world average which is approx. 56 kg. As it is expected that the consumption will increase, local entrepreneurs and governments realize the importance of this fact and the Indian market

However, the biggest business success so far has been the conclusion of contract in July 2015 for the reconstruction of paper machines in the paper concern NEPA (read more below).

## Business success in India - modernization of paper machines for production of newsprint and graphic paper for the NEPA company

At the end of July 2015, the PAPCEL Group signed a contract with the paper concern NEPA in India for newsprint and graphic paper machine upgrade. The company NEPA Ltd. is a state paper group, located in Nepangar, Madhya Pradesh state.

The government of India supports modernization of the whole paper mill. All tender participants had to meet very strict selection criteria; the selection procedure itself took more than six months. This project is being realized in cooperation with our subsidiary, PAPCEL Pulp and Paper India. The project is also interesting for the fact that a large portion of deliveries and, above all, services will be realized and purchased directly in India from local subcontractors, and our subsidiary will participate in the subcontracting management process.

The paper mill operates two paper machines producing paper of width 5.350 mm on reel. Both machines will produce paper with a substance of 40 - 45 g/m<sup>2</sup> for newsprint or 50 - 80 g/m<sup>2</sup> for graphic paper. After the upgrade, the PM 1 will reach the output of up to 231 tpd (under the max. operation speed of 700 m/min) and the PM 2 up to 129 tpd (under the max. speed of 400 m/min). Both machines are expected to improve significantly the drainage process efficiency in the wet parts. The drying parts will undergo major renovations in order to increase the output and decrease the energy consumption per ton of the



► PM 1 NEPA, India



► PM 2 NEPA, India

paper produced. Apart from the paper machine upgrade, the approach flow system of the PM will be modified and the line for broke processing and the water management system will be supplied.

The upgrade of the first machine will include a repair of the current hydraulic headbox, as well as the cross profile control system. The wire part will be completed with a new high-pressure washing system and ceramic-lined draining elements. Above the wire part, a new threading and trimming water jet will be installed. The top former will be equipped with a new drive roll to ensure an exact synchronization of both wires. The press part of tri-NIP type with an individual pick-up roll will only be complemented with smaller components. A new adjustable vacuum system will enhance the efficiency of the whole wet part and will allow the settings to be modified according to the produced assortment. In the drying part, most drying rolls will be re-grounded and pressure test will be

performed. To improve the drive of the drying part, new guide rolls with pins will be mounted, the drying cylinder stands on the drive side will be modified and the existing cogwheels will be removed. A new steam and condensate system will be installed and the ventilation and recuperation system will be amended. A major part of the threading system will be refurbished and completed; an air threading transporter will be installed to the end of the drying part. The machine will be equipped with a brand new multi-engine drive.

At the second machine, the existing high-pressure headbox will be repaired, as well as the cross profile control system. The existing register rolls will be fully substituted by dewatering boxes with ceramic foils. A new threading and trimming water jet will ensure precise cutting of the paper web edges and the threading tail. In the wire part, the stretchers will be replaced and a new high-pressure washing system will be added.

In the press part, the existing pneumatic pressure system will be replaced with a new, hydraulic one, suitable for two continuous presses. This will stabilize the pressing process and increase the so-called press impulse. Even here, a new vacuum system will provide more effective dewatering and better regulation when changing the produced assortment. Some drying cylinders of the drying part, similarly to the first machine, will be regreinded and tested for pressure. A balance check for the new speed will be carried out. The cooling cylinder will be checked and refurbished. The ventilation and recuperation system will be enhanced.



► Existing threading system of drying wire



► Reel

Rope threading will also be complemented and refurbished and an air threading transporter will be installed to the end of the drying part. The end of the machine will be equipped with a new hard calender to increase the smoothness of the bottom side of the produced paper. The existing hydraulic reel will be equipped with a new reel spool starter. Also, the second machine will be equipped with a brand new multi-engine drive. Apart from the PM modernization, the approach flow system of the PM will be modified and the line for broke processing and the water management system will be supplied. For the modernization of the approach flow system, a

proven technology will be used, consisting of a three-level whirl cleaning system with a venting station. Further, PAPCEL will supply pressure screens and measuring and control equipment. All pumps of the approach part will also be modernized. The customer wished to utilize the existing tanks and the existing pressure screen for dilution of the stock for PM 1. Water management also undergoes changes. A new disc filter for process water cleaning will be installed, pumps will be replaced, and water management will be equipped with new measuring and control equipment. The PAPCEL delivery also comprises a refiner with LD cleaner, a pump and measuring and control equipment for the broke line. PAPCEL also supplies a complete line for dosing of chemicals.

**PAPCEL is the general supplier of this project; provides complete engineering and project management services, controls the assembly and performs the commissioning and the guarantee tests.** The assembly will be carried out by local companies. So far, this is the largest delivery in Southeast Asia and, by its extent, particularly in terms of the delivered services, it is one of the most important projects of the PAPCEL Group.



## Entering tissue production markets after ABK acquisition

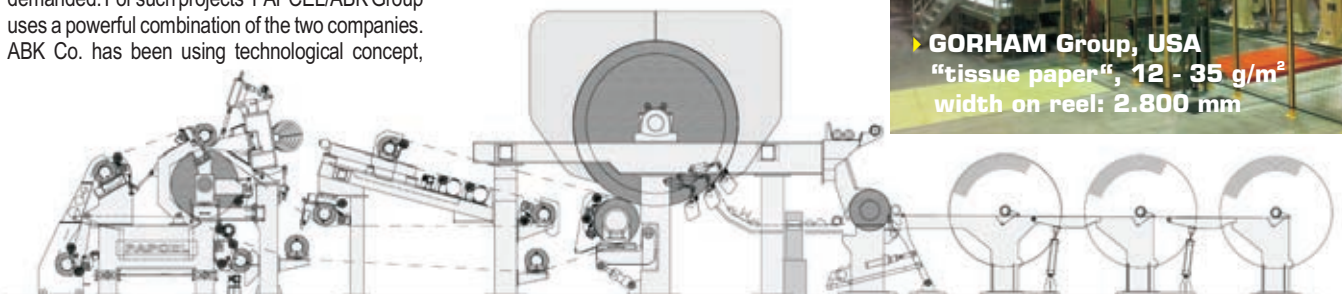
The acquisition of the company ABK, France and PAPCEL, Czech Republic extends the offer of services also to the field of complete technology sales for the production of toilet and sanitary types of paper.

The production of tissue and sanitary papers currently ranks among the most developing branches and the demand for these types of paper is increasing worldwide. Many new interesting projects appear on the market with the production and distribution of this assortment and, in many cases, a construction of a complete new line is demanded. For such projects PAPCEL/ABK Group uses a powerful combination of the two companies. ABK Co. has been using technological concept,

In the projects, PAPCEL/ABK Group acts as a general supplier, including the supply and realization of technological services and engineering services. Besides the complete construction of a tissue PM, it offers stock preparation lines for primary and recycled fibres, approach flow system and all the accessories and auxiliary equipment. The supplies are realized as "turnkey" projects. **The group offers technologies for machines with the reel trim width of 2.7 - 5.6 m, for speeds up to 2.000 min, for capacities of 60 - 250 t/d, and for all the types of tissue papers as cosmetic tissues, toilet paper, napkins,**



► **GORHAM Group, USA**  
"tissue paper", 12 - 35 g/m<sup>2</sup>  
width on reel: 2.800 mm



experience and potential of professionals from prior acquisition of Overmechannicca and applies this experience in tissue projects in recent years. PAPCEL provides complete experience with the preparation of "turnkey" projects in different territories, produces components, provides engineering services, including project management. The Group PAPCEL/ABK is the supplier of a complete tissue paper plant with a complete offer of machinery for this production technology.

**towels, kitchen rolls, medical tissues (papers with basis weights of 12 - 45 g/m<sup>2</sup> on reel).**

**Standard solution of the machine (see picture):**

► headbox - wire part with Crescent former - press part: single suction press, suction press + blind drilled press, Shoe press - Yankee cylinder: Ø 3.6 - 5.5 m (cast iron or steel) + high efficiency hoods, fully automated reel, two-to-four ply combining winder with variable crown combining calender, wrapping machine.

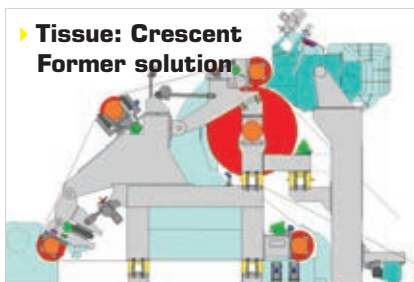
### References of ABK Groupe (2011 - 2014):

- Braswell PM 1, 120 tpd (Brazil)
- Braswell PM 2, 120 tpd (Brazil)
- White Mountain Tissue, 105 tpd (USA)
- MG Tec PM 1, 85 tpd (Romania)
- EKA Kagit PM 1, 90 tpd (Turkey)
- Mediterranean Tissue PM 1 (Egypt)

## Modern tissue technology with Crescent Former

The example solution of delivered PAPCEL/ABK Group technology are machines for production of napkins, paper towels, tissues and toilet paper with weights of 13.5 - 40 g/m<sup>2</sup> on reel, using modern machine technology with the hydraulic headbox and Crescent Former.

The PAPCEL/ABK Group supplies complete technology, including a new stock preparation line.



The machines are fitted with necessary parts and accessories, such as the system of central lubrication, under pressure system, steam and condensate system, Yankee cylinder including its hood, QCS, DCS systems, complete MCC, etc. A complete ventilation system and a system for steam heating and condensating is supplied within the high capacity hood. The hood is also equipped with a regulation of drying of produced paper edges and a possibility of service opening. Before the reel, the paper passes through the system of dust exhaustion. Machine operation speed: up to 2.000 m/min at Yankee cylinder, machine construction speed: 2.200 m/min, paper width on reel: 2.850 mm. The reel is supplied with a reel spool feeding system including 4 new reel spools. Manipulation track for handling of up to 3 finished rolls towards the rewinder is placed after the reel. The new rewinder with a cutting section enables to connect up to three layers of paper and is also equipped with a system for dust exhaustion. In addition, the supply comprises new packaging equipment for packaging finished paper rolls.

## New hydraulic reel for the paper concern Mayak, Russia

In May 2015, PAPCEL shipped a new hydraulic reel for the paper mill OOO Mayak-Vega in Penza, Russia. The machine was installed into a PM producing fluting/liner which was put into operation one year ago. The customer realized its complete reconstruction and completion in 2010-2014 in cooperation with the PAPCEL Group of companies.

The existing reel, supplied as modernized "second-hand" within the dislocation and the general reconstruction of the PM and, unfortunately, insufficient today, has been exchanged in the PM. The complete PM was then realized as a complete dislocation and modernization of the "second-hand" PM from a former paper mill in Alce, Italy, where the whole PM was originally located. It was completed with a new stock preparation line, an approach system, a new top wire table, a film press and chemicals preparation line and its general reconstruction was carried out in order to achieve the production capacity of 70.000 tons of paper per year.

The newly supplied reel is used for reeling paper with width 2.700 mm (diameter of the supporting reel drum: 1.100 mm), the use of new spools will

permit to process paper rolls up to the diameter of 3.050 mm. The reel was supplied with a new system for reel spool loading and its construction will permit a possible future installation of two-drum calender into the machine. There were new drives supplied for the new rolls and the existing drive of the supporting roll was used. The supply of electrical equipment comprised a new control panel, including software and a new switchboard. The supply also comprised the services connected with putting the machine into operation. In the first year of operation, the customer achieved the production of 56.000 tons of paper.



## Press part reconstruction with installation of Shoe press for Mariyski, Russia

In July 2014, PAPCEL signed a contract to supply technological parts for PM 1 for the paper concern Mariyski CBK, Russia. PAPCEL is realizing a reconstruction of the PM wet part for production of fluting/liner papers & bag papers to increase the machine capacity to 187 tpd for packaging papers and to 144 tpd for bag paper.

New parts are constructed for the speed of 800 m/min. The existing press part, consisting of four continuous presses with felts on bottom rolls, will be completely replaced with a new press part, consisting of a combi press with two nips in the first position (picking up from the wire part with help of a pick-up roll) and a Shoe press with a bottom and a

top felts in the position of the second press. The new press part is supplied as a complete set, including a supporting structure, press and guide rolls, doctors, felt washing, stretching, automatic regulation of felt run, water offtake tanks, service bridges. Washing of all the felts is done using low-pressure and high-pressure oscillation tubes, cleaning of felts

surface is assured by suction tubes with ceramic lining. Threading from the wire part into the first press is by a pick-up roll, threading from the first press into the second press is by an air threading scraper, threading from the second press is by a dry transfer roll into the drying wire and into ropes of the rope threading of the drying part (circuit of the first drying section - the customer will add the rope threading in the drying part). Pressing of the press rolls is hydraulic. The equipment is controlled from a separate control desk connected to the central DCS.

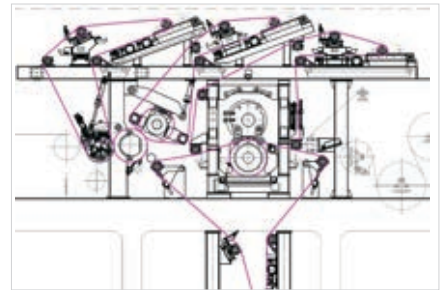
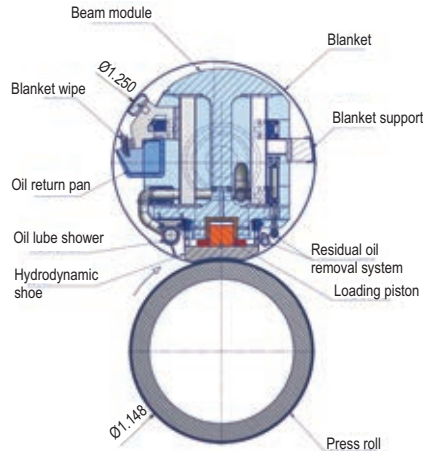
Besides the press part, PAPCEL realizes an overall completion of the wire table and a modification of the machine drying part where it is installing new stabilization boxes, doctors for drying rolls and drying fabric stretching. The machine MCC system will be completely modified within new supplies.

**Connection of a Combi press and a Shoe press:** the combi press consists of a pick-up roll picking up the full width of paper from the wire part, a central and a press rolls. The Shoe press is fitted with one fixed roll, a so-called module roll. The module roll contains a shoe with a hydrodynamic profile for a uniform loading distribution. Installation of a Shoe press usually improves the dryness after the press part, reduces steam consumption, increases the production, enhances the efficiency and the continuity of operation, as well as physical and mechanic characteristics.

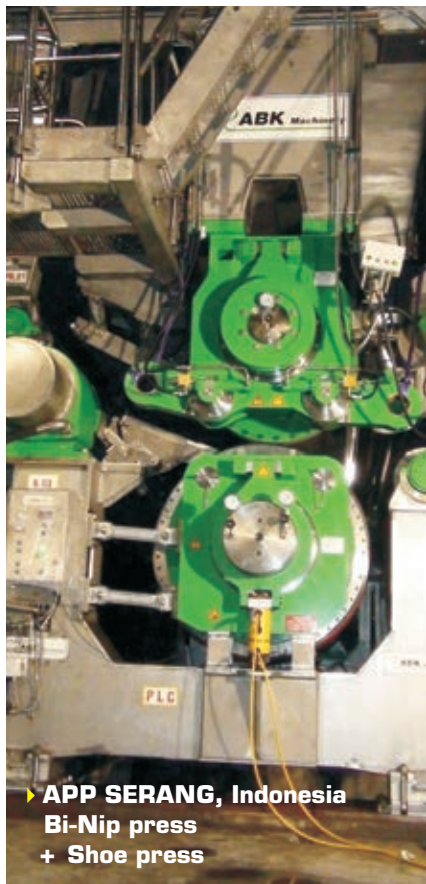
**This type of press part is currently in operation in PM 2 Mayak, working at the speed of 700 m/min. The loading of press rolls is assured by a hydraulic system and this system is extended with a central circuit lubrication of the press part** and the press part is, of course, equipped with a system of press rolls cooling. The maximum pressure on the Shoe press is 1.000 kN/m. Threading of the paper web is done using threading doctors connected to pressure air. Rope threading starts after the press part.

The concept of a Shoe press is based on shoe presses of the companies Gorostidi/ABK. The Shoe press consists of an inversion module with a shoe of  $\varnothing 1.250$  mm and a classical press roll in the bottom position of  $\varnothing 1.143$  mm, with load of 1.000 kN/m and speed of 800 m/min. The Shoe width is 2.900 mm. The principle of the company Gorostidi in PAPCEL design consists in the placement of the shoe through a turning plug on one longitudinal press piston, lubricated with an oil lubricating shower and a DST doctor. The module beam is a ductile iron casting.

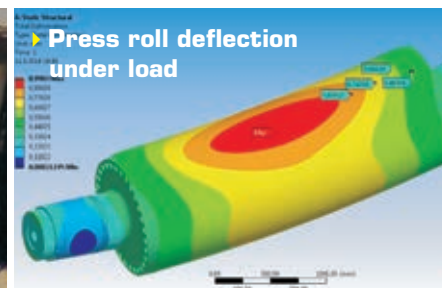
Due to the low lifting capacity of the overhead crane in the mill (16 tons), it was necessary to minimize the weight of the module and the cylinder up by 1/4, than usual for a given width, load and machine speed. Software Ansys was used to optimize strength and weight of the control beam module and of the press roll - see the picture.



► **Shoe press Mariysk: press configuration, machine position**



► **APP SERANG, Indonesia Bi-Nip press + Shoe press**



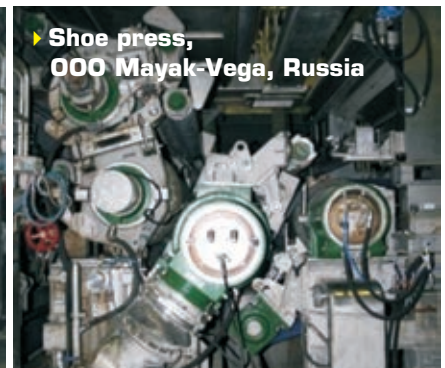
► **Press roll deflection under load**



► **APP SERANG, Indonesia PM width 5 m, 1.000 m/min**



► **Shoe press, OOO Mayak-Vega, Russia**



► **Shoe press, OOO Mayak-Vega, Russia**

## Other concepts of the press part solution in PAPCEL design

### Press part consisting of two continuous presses

Both presses feature top and bottom guiding of the dewatering felt. The maximum pressure on both presses is 110 and 140 kN/m. The diameter of the press rolls is 720 mm at a width of the produced paper of 2.500 mm. Such concept of press part is particularly suitable for low-speed machines with the operating speed up to 250 m/min. Originally, the press part was also installed in the PM 2 in Žimrovice (until the renovation in 2012) and currently it is installed at the Chashniki plant in Belarus. The dryness achieved on this press part at speeds up to 300 m/min is from 46 to 48 %. The contact pressure of the press rolls is ensured by a hydraulic system. In this case, the pressing impulse is 50 kPa.s for the whole press part.

Compressed air and rope threading system are used for threading via the press part. In total, there are two pressing zones, the so-called NIPs.

### Press part equipped with a press with extended pressing zone (Jumbo press)

Such press part is currently operating in the paper mill Nikol-Pack Uchaly in Russia. The Jumbo presses feature both the top and the bottom felt guiding of the felt. The diameter of the Jumbo press rolls is 1.350 mm. The machine works at the speed of 500 m/min. The contact pressure of the rolls is ensured by a hydraulic system. The maximum contact pressure at the Jumbo press is 250 kN/m. Due to higher contact press and speed, the press part is equipped with a press roll cooling system. In this case, the pressing impulse is 60 kPa.s. In total, there are three pressing NIPs. Compressed air and rope threading system are used for threading via the press part. Similar concept is now being implemented for the paper mill L-Pack in Russia.

### ► Assembly of press part for the paper mill "Shklov", Belarus



► PM 2 press part  
Smurfit, Žimrovice,  
Czech Republic



► JUMBO press  
Nikol Pack,  
Uchaly, Russia

## Press part modification for concern "L-Pack", Russia

In June 2015, the PAPCEL Group signed several contracts to modify paper machines for customers in the Russian Federation. Among them was an interesting project of paper machine modernization for fluting paper production for the "L-Pack" papermill in Russia.

The reconstruction is done in order to improve the overall output capacity by about 30%. PAPCEL will realize a general reconstruction of the machine press part where 3 existing small presses will be replaced with a new combined press with two pressing zones and a SH Jumbo press installed after it. A new system of paper threading with help

of an air threading scraper will be installed in the press part and a new coach agitator for processing the wet broke will be installed under the presses.

The supply comprises the installation of an entirely new press structure with a modern system of regulation and felt stretching in the machine. The drive of the press and drying parts will be completely replaced within the modernization, the machine hydraulic and pneumatic system will be adapted and the DCS control system will be reorganized. Besides the wet parts, the drying part will also be reconstructed and two new stabilization boxes will be installed. The width of the PM wire table is 2.990 mm, the paper width at reel is 2.520 mm.



► Similar concept solution will be delivered to the paper mill "L-Pack", Russia

## New project for Okulovskiy Bumazhnik, Russia

In May 2015, the PAPCEL Group signed contract concerning modification and complementation of the stock preparation line. In August 2015, a contract for PM reconstruction was signed with the customer Okulovskiy Bumazhnik in Russia.

The paper mill currently produces fluting/liner papers with two paper machines in operation. The reconstruction concerns modification of the PM 7. The objective of the modernization is to increase the overall machine capacity. At the same time, the stock preparation line will be modified from which the finished stock is pumped to both PMs. The aim of the reconstruction is to increase the machine output by 25 %. From this reason, the wire table will be modified and, in particular, the press part will be completed where a new pick-up press will be installed and the drive of the press part will be completely exchanged. The existing JUMBO presses remain in the position of the second and the third presses.

The total reconstruction is carried out in cooperation with the group of companies PAPCEL/ABK. A professional technological audit of the machine drying part will be performed in cooperation with the technologists of the ABK division. Within the reconstruction of the stock preparation line, the PAPCEL Group will supply an entirely new pulping node with a high-capacity pulper LCV-50 (waste paper processing), equipped with a complete system of paper stock washing and dewatering.

The capacity of the pulping stage is constructed for 420 tpd. In addition, the part serving for the stock coarse separation will be modified. This is a second successive supply realized within the installation of the high-capacity pulping node. The first installation of a higher series pulper, i.e. LCV-65, was carried out at the end of 2014 in Murom division (Nikol-Pack Uchaly, Russia), where the customer increased, thanks to the line modification, the total capacity to 600 tpd.



► 3D pulping model,  
Uchaly, Russia



## Project with EU grant for Ecobulhart, Bulgaria

A contract with the company Ecobulhart, Sofia, Bulgaria, was signed by PAPCEL in June 2014. The customer purchased a new stock preparation line with the capacity of 120 tpd.

The whole project is realized with support of EU grant within the support of alternative processing of input raw materials and their future use. The line is designed for recycling waste paper with a semi-finished product in form of dewatered pulp on pallets as the final product. This is not a supply for a paper mill, but for a company dealing with further distribution and sale of "semi-finished product" in form of dewatered pulp to the final producers of paper. The supply comprises a pulper LCV-20-WD, including belt conveyer, reject dewatering drum OBN-10, washing separator VSV-30, periodical reject separators PSN-30, cleaners SVS-25-M, HRB pumps, belt presses including thickeners, water cleaning filter etc. The equipment was shipped to the customer in the 1Q/2015 and the assembly is in process now. The line should be put into operation during the 3Q/2015.

The project was realized by the group of companies PAPCEL. The machine technological project was

processed by the company Erma Elan Engineering, Prague. The line is installed in an entirely new hall constructed by the customer.

Due to absorption of European funds, the work on the project was divided into two phases. Phase 1 (February - April 2014) consisted in processing of the basic engineering which was complemented with preliminary foundation plans. After a short pause the detailed engineering was processed (July - December 2014). After a short pause the detailed engineering was processed (from July to December 2014). Cooperation with the Bulgarian side was very good and smooth.



► SPL in Ecobulhart, Bulgaria

## erma elan engineering

### Current activities of Erma Elan:

Erma Elan has been working primarily on the project Shklov. Since assembly is currently being performed not only in Belarus but also in the Egyptian company "Rakta", Erma supports the implementation of this project as well. In recent months, the company has established an interesting collaboration with German TCB Upcon designing company, whom Erma is helping to prepare project documentation for various projects. During the last six months, the pulping in the Belgian paper mill Idem Papers has been reconstructed and some smaller works for the Swiss concept of Erma have been carried out.

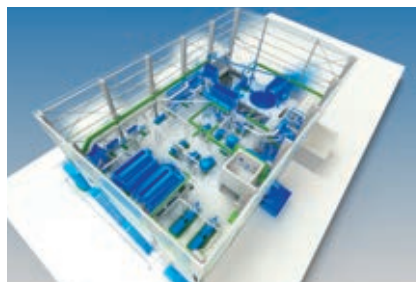


► 3D model of PM "Shklov", Belarus

## Finishing assembly of stock preparation line in Rakta, Egypt

Finishing works on machinery in the paper mill Rakta General Co., Alexandria, Egypt, are being carried out during the second half of 2015. PAPCEL has supplied the entire stock preparation line with an output of 220 tpd.

A new stock preparation line for three paper machines was supplied. The mechanical engineering project was prepared by Erma Elan Engineering, Prague. PAPCEL acts as the supplier of complete engineering services, including the commissioning of the equipment. The line is being installed in a brand new building constructed by the customer. Due to the shift in construction schedule,



the commencement of assembly had to be postponed. At present, most of the line machinery has been installed, the distribution boxes in MCC



have been fitted and assembled, and the installation of cable trays has started. The piping of the whole technology is being welded gradually.

## Hydraulic headbox modification in Ecuador

At the end of 2014, the company PAPCEL put into operation a hydraulic headbox of the company Geasa with manual control of cross-section profile, which has been upgraded by PAPCEL to the headbox with automatic control of cross-section profile using diluting water.

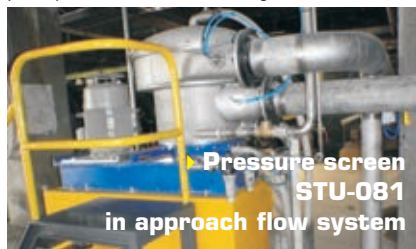
The headbox is installed in a machine producing papers with substances from 100 to 300 g/m<sup>2</sup>; the machine has a capacity of 21.5 tons of paper per hour.

### Results achieved:

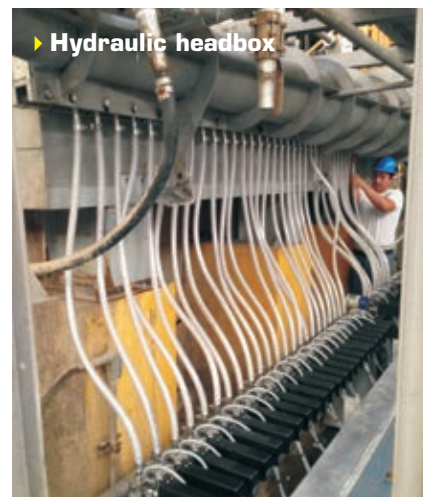
- 110 g/m<sup>2</sup> - 2 sigma: 0.91 g/m<sup>2</sup>
- 146 g/m<sup>2</sup> - 2 sigma: 0.92 - 1 g/m<sup>2</sup>
- 270 g/m<sup>2</sup> - 2 sigma: 2.11 g/m<sup>2</sup>

The customer has been satisfied with the quality of produced paper, the professional approach of the assembly team as well as the quality of delivered

equipment and machinery. The modification itself consisted of the installation of dilution plates, manifold displacement, plumbing of dilution water (pump, STU-081, pipelines), dilution valves, electrical wiring and software. Electrical wiring, software and valves were supplied by the company Honeywell, which participated at the commissioning.



► Pressure screen STU-081 in approach flow system



► Hydraulic headbox



## Processing of liquid packaging board (Tetrapak) - contemporary technology

**Liquid packaging board**, most often simply called “**Tetrapak**”, represents, on one hand, a serious environmental problem as a waste. On the other hand, as a secondary raw material, it may be used as a convenient resource for economic exploitation. Tetrapak-type packages are composed from pulp fibres (60 - 70 %) and polyethylene foils and (not always) aluminium (30 - 40 %). All of these components represent valuable raw materials for industrial use. However, there is one condition - they have to be separated as perfectly as possible.

The most important problem is the separation of pulp fibres from foils. There are several paper technologies resolving this problem with varying degrees of success. It is usually possible to obtain pulp fibres of a sufficient purity for the processing in a paper mill, but the foils fraction is usually too contaminated with pulp fibre to be economically used as a secondary raw material for recycling. This fact is underlined with a fact that the Tetrapak has been economically exploited in relatively high-capacity lines and the shortage of Tetrapak for loading the line has been eliminated by adding common waste paper, bringing further types of impurities into the system, entirely destroying the foils fraction.

**Within its “Program of Environmental Development”, the corporation “ASS” (UA) resolved, in cooperation with the company PAPCEL, a.s., Litovel (CZ), a unique task:**

To construct a nearly “waste-free technology” in its paper mill OOO “KRONEX-Ukraine” Zmiiv, with a line output consisting of a fraction of pure pulp fibres for the exploitation in the paper mill and a fraction of pure foils for recycling, contaminated with max. 1 % of residue pulp fibres. The waste was a negligible quantity of heavy impurities mixed in the raw material and a small quantity of water for biological cleaning. The task was based on a real quantity of beverage packages in Ukraine and it was conceived for the line capacity of 15 - 20 tpd.

The proposed technology was based on a long-term experience of both partners with the processing of waste paper. It was first tried in the PAPCEL test plant and then realised in Zmiyev Paper Mill. The line is based on PAPCEL type machines, specially adapted for the given purpose. The customer provided the auxiliary machines. A press from the company Vanex (SK) was used for fibres dewatering. The line works in compliance with the flow sheet.

The raw material is pulped in a periodical pulper (LCV-14) in high consistency. After pumping of fibres, the remaining fraction of foils is washed in the pulper and discharged into the rotary drum (OBN-10) where it is washed and dewatered for the last time. The pulped fraction of pulp fibres continues through the cleaner of coarse impurities (SVS-20) into the separator of fine impurities (VSV-30). VSV-30 is a periodical separator which first separates the fibres on a screen with bores of 1.8 mm, deflakers unpulped pieces of paper, cleans the remaining fibres stuck on foils, washes this material and discharges the remaining foils with water to the vibrating thickener.

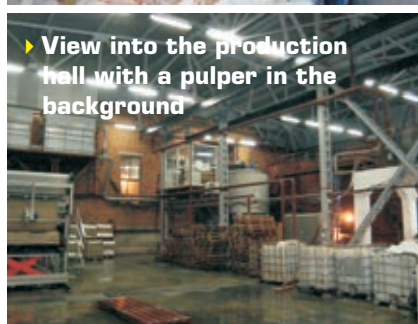
The dewatered foils go away, together with foils from the drum, into the container of foils and then into the packing press. The separated fraction of fibres passes into the Vanex press (VX-20-VT)

connected to palletting equipment. All the water is recirculated in several circuits and, depending on the degree of contamination, it is used for pulping and washing. The line works in automatic mode (except for manual manipulation with raw material and products). The operator controls the pulping stage only and verifies the quality of work of the remaining line. The line is currently working with an average capacity of 15 tpd and fulfils the quality requirement according to the project specification.

► **White Tetrapak - packaging from dairy products**



► **View into the production hall with a pulper in the background**

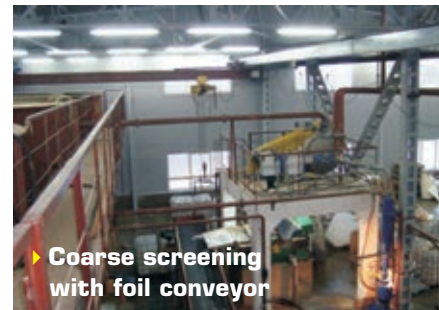


### Subventions from the EU funds

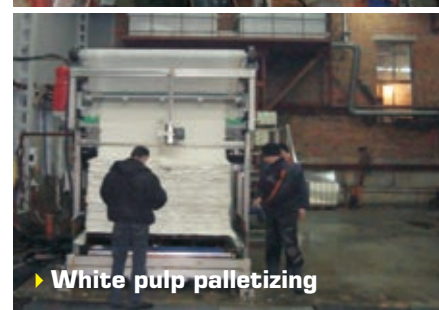
**At the end of 2014, the company PAPCEL won a subvention within the Operational Programme Enterprise and Innovation “Potential” for the “Development Department of Laboratory Data Analysis and Development of Paper Press Prototype”.**

These financial means will permit to create a new specialized department for remote access to control systems serving for “on-line” connection with company projects, with a possibility to remotely monitor technological and production processes.

Together with an IP camera system, this will enable an overall overview of processes within realized projects in the customer's location during the construction, guarantee tests and warranty. Among other things, this department will serve as a development department of automating technologies and as a computer centre for strength calculations.



► **Coarse screening with foil conveyor**



► **White pulp palletizing**

Further investments from the subvention are oriented to the production and to purchase of a new combined machining centre from the Czech company TOS Varnsdorf for the production a new prototype of a shoe press for the paper machine and other research and development tasks.



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