UMBC
UGLEPROM
MACHINE-BUILDING COMPANY

Product Catalog

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2019

In 2019 the Company was certified according to ISO 9001: 2015.

ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

Management Service

СЕРТИФІКАТ

Орган з сертифікації
TÜV SÜD Management Service GmbH

засвідчує, що підприємство

UMBC UGLEPROM MACHINE-BUILDING COMPANY

ТОВ ПТК «ВУГЛЕПРОМ»
вул. Робоча, 89 А
м. Дніпро, 49047
Україна

впровадило та використовує систему
менеджменту якості у наступних галузях:

Проектування, розробка, організація виробництва, модернізація та монтаж устаткування й запасних частин паперової, гірничо-металургійної, машинобудівної, цементної, скляної та інших галузей промисловості

Аудит, номер замовлення **707105993**
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виконані.

Сертифікат чинний з **12.06.2019 р.** до **11.06.2022 р.**

Реєстраційний номер сертифікату: **12 100 58085 TMS**.

Product Compliance Management
м. Мюнхен, 12.06.2019 р.

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TÜV®

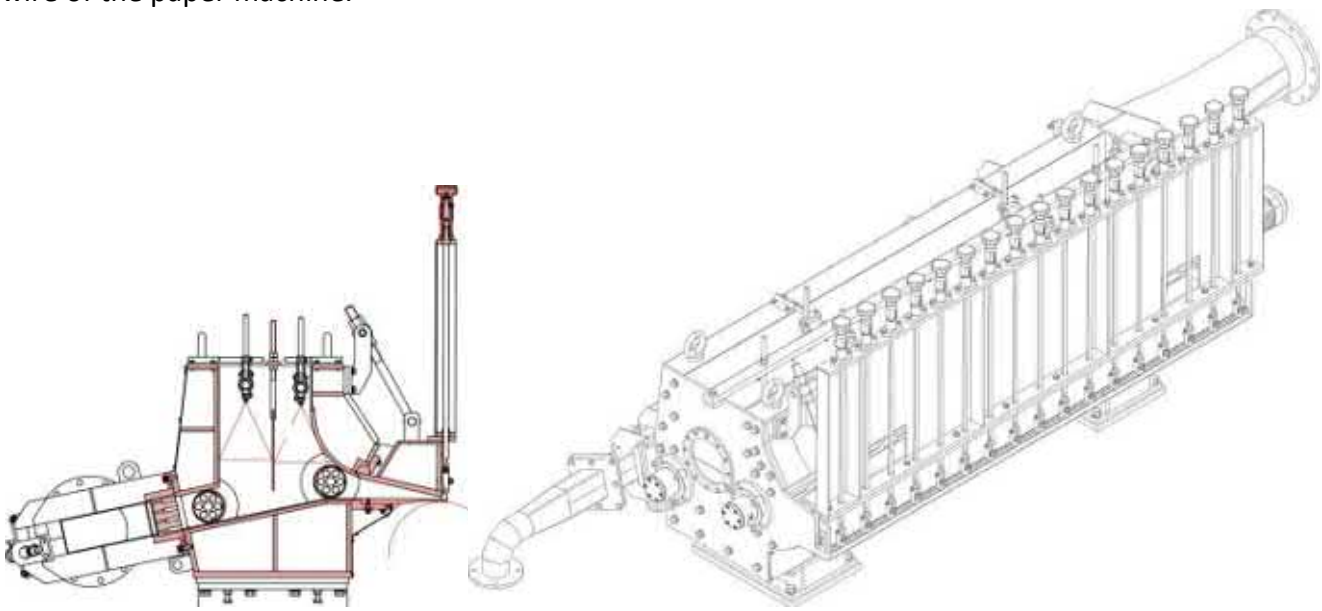
LLC PTK Ugleprom
Product Catalog

Content

EQUIPMENT FOR PAPER AND BOARD MACHINES

HEADBOXES

The headbox with deflocculating rollers is used for the production of a various grades of paper with different square meter weights. The boxes are adapted to work with different throughput capacity and consistency of paper pulp. The headbox provides a uniform flow of paper pulp onto the wire of the paper machine.



Headbox Open type

The paper machine headbox consists of a bottom part equipped with apron lip, a header with a perforated plate and the movement front wall devices (in a horizontal and vertical position to deliver precise amount of paper pulp to be flowed onto the wire with actuators and exact adjustment of the slice lip, perforated rollers with a drive, showers and defoamers. The cross machine header is equipped with turn back mechanism which is driven by a pneumatic or electric motor.

The hatches, platforms and ladders are provided to service the headbox.

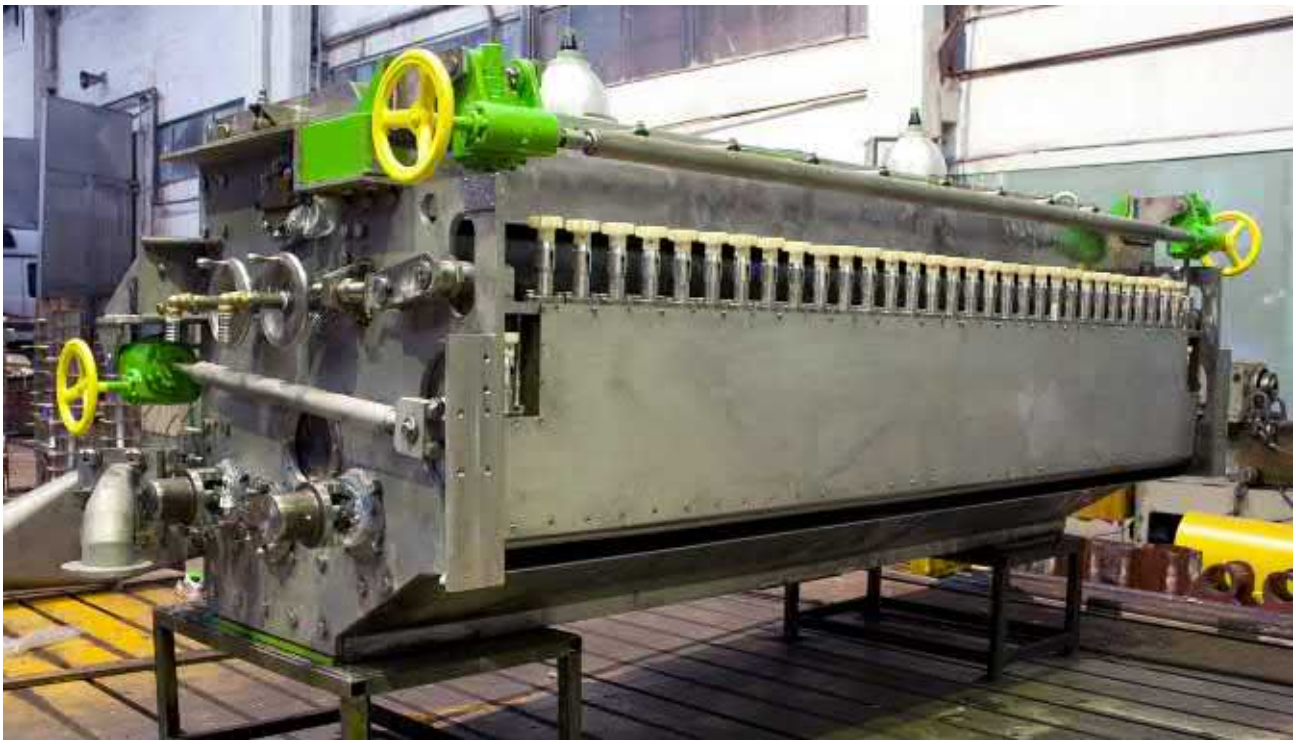
All internal surfaces of the headbox are made of corrosion-resistant steel, high purity and polished. The headbox is made of stainless steel.

The paper pulp flowing onto the headbox is distributed by a header across the width of the machine, passes through the holes of the perforated plate and then is stabilized by rotating perforated rollers. The slice provides the paper pulp flow with a smooth acceleration to the speed of the machine. The operating mode of the headbox and its components is provided by the Control system of the technological parameters of the mechanisms connected to the Automated Process Control System (APCS).

The headboxes are made for paper machines with reel widths from 1680 up to 4200 mm.

Technical data

Headbox Type	Trim width of web, mm	Grammage	Machine speed, m / min	Flow rate, m3 / s
Closed	2520	40-250	250-600	0,15-2,0
	4200			
Open	1680	40-250	50-200	0,05-1
	2520			
	4200			

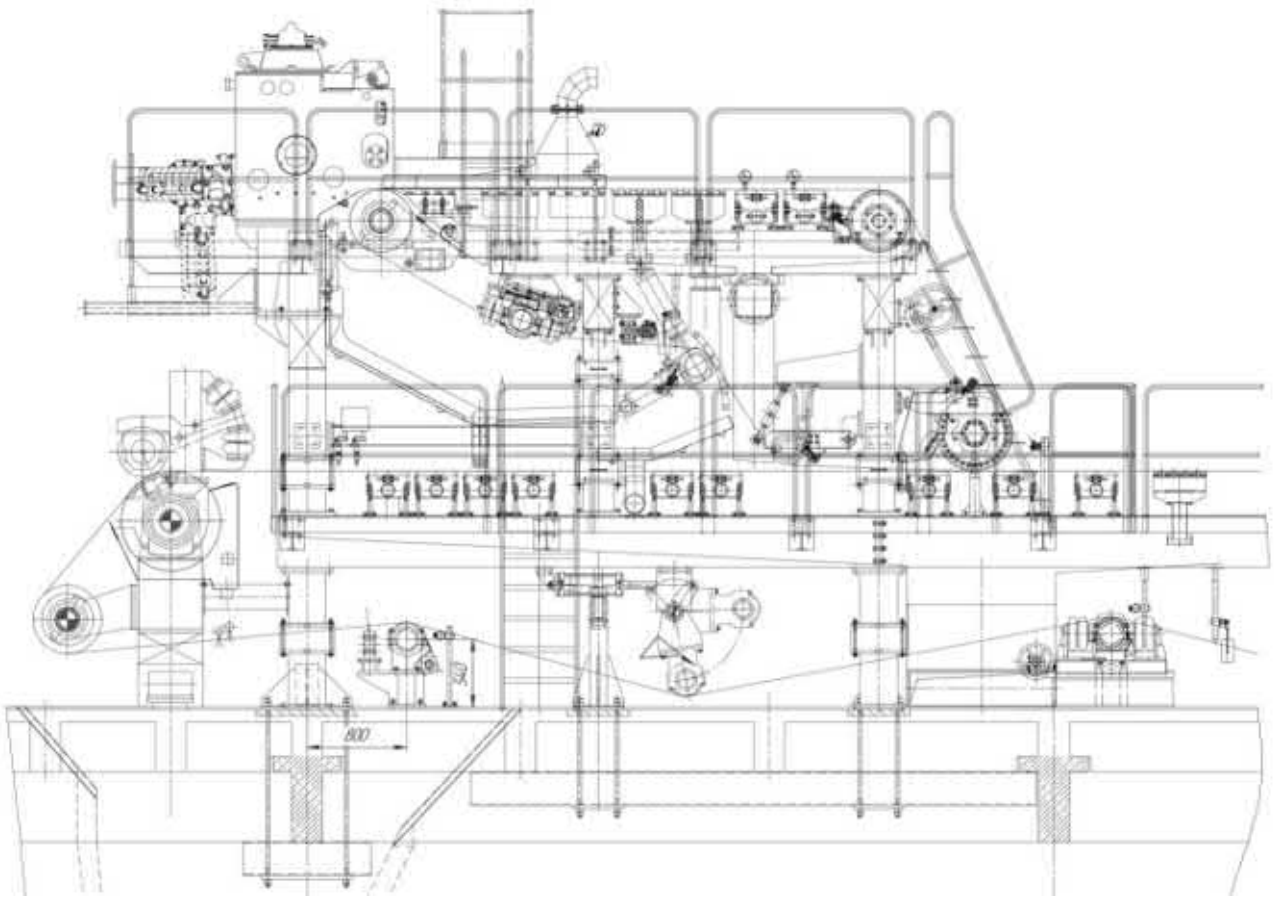


Headbox Closed type

WIRE SECTION

The wire part of the paper machine is designed to remove water from the paper pulp. The paper pulp flows out of the headbox onto a fourdrinier wire, where it is dewatered due to filtering water through the wire and a layer of settled fibers.

The fourdrinier wire is stretched from the chest roll to the suction roll (couch roll) and the wire roll on the other side. Dewatering elements are located between the chest and couch roll. They are hydrofoils types and are coated by plastic or ceramic materials. A layer of paper pulp moves along the hydrofoils, transported by the fourdrinier wire, and upon contact, the pulp is gradually dewatered.



Twin-Wire fourdrinier

The fourdrinier wire of the paper machine is moved, adjusted and tensioned by means of a set of rolls at the bottom of the wire frame. A control device for the wire movement is installed at the bottom of frame to ensure that it does not go beyond the axis of the machine. Manual or automatic wire stretchers are used to provide a available wire tension to the required value (2.5 - 8 N / mm). During back running the wire is cleaned with water showers. It helps to remove the fibers ,dirt spots, chemicals and deposits to improve machine runnability and prolongs fabric lifetime by maintaining wire or felt an air permeability.

Fourdrinier

The width of the paper is ensured by the formatted showers that cut the edges of the paper web.

The wire section is cantilever design allows for quick wire replacement.

The frame is made of carbon steel lined with corrosion-resistant steel sheets.

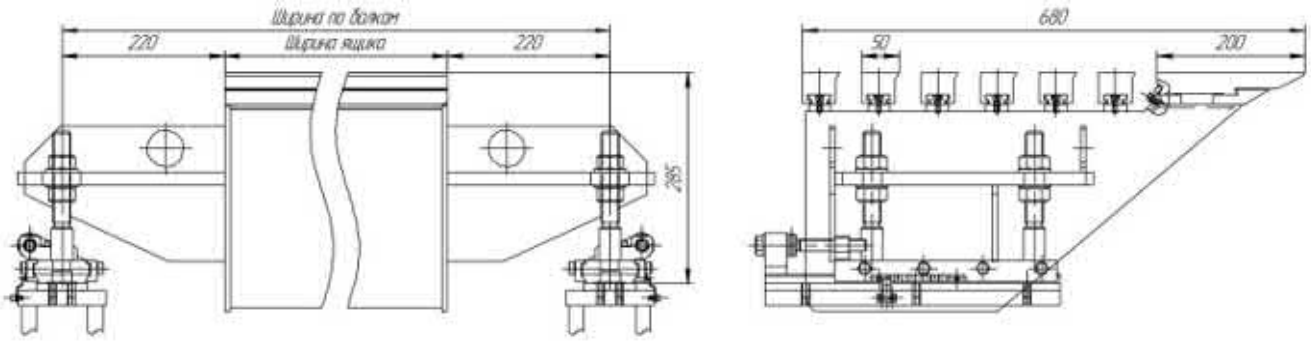
The wire section can consist of one bottom fourdrinier or two (bottom and top) fourdriniers for machines with reel widths from 1680 to 4200 mm.

It is possible to deliver a complete set of fourdrinier or separately by parts.

Twin-Wire Fourdrinier

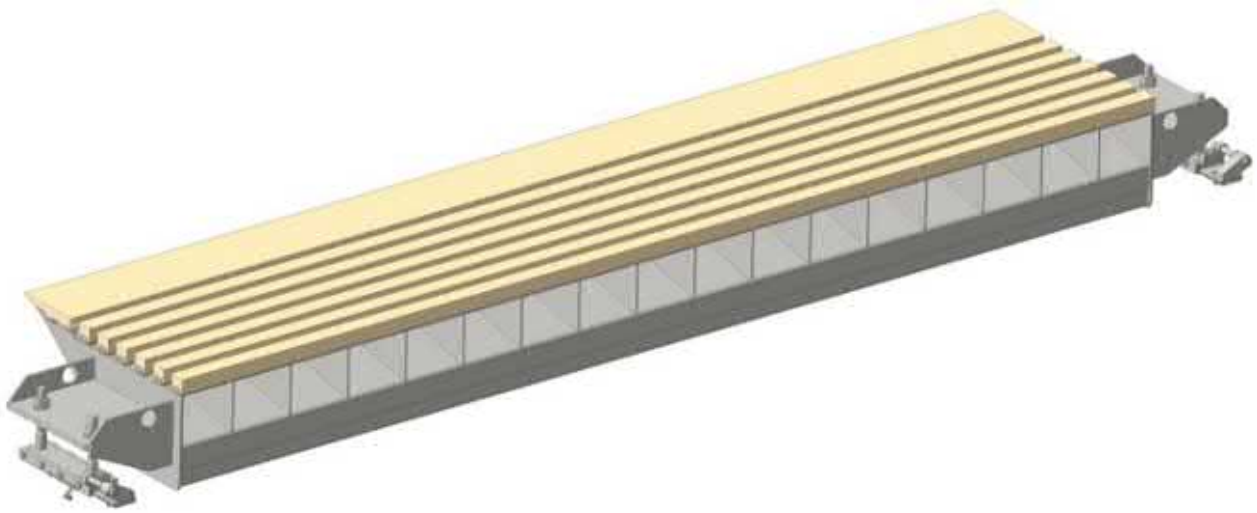
FORMING BOX

The forming box is designed to prevent the following conditions, as of the sagging of wire between the chest roll and the first dewatering element of fourdrinier, reduce the dewatering affect of the chest roll as well as to improve the spreading of the pulp along the width of the wire. The box is a welded metal structure is made of corrosion-resistant steel. The forming box is attached to the columns which allow it to be moved relative to the chest roll.



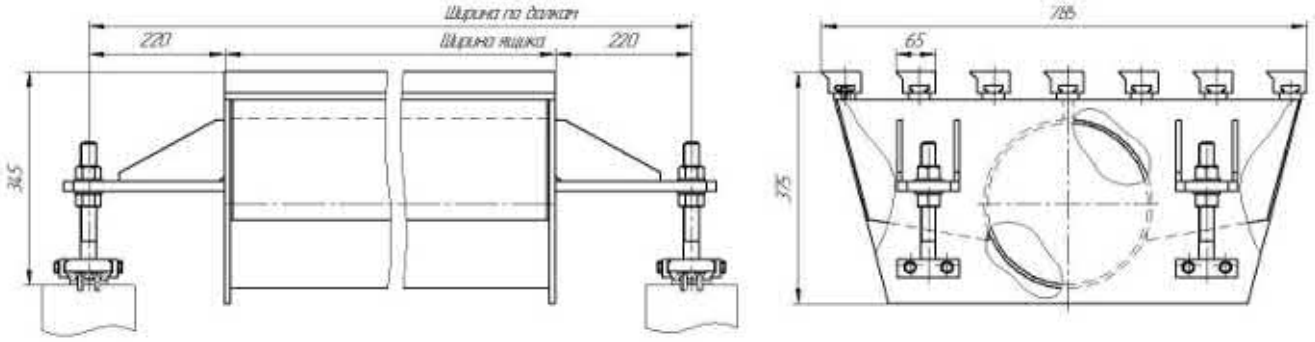
The forming box is equipped with the first wide foil and the several narrow foils (50 mm)with an angle of inclination to the wire of 0 °. The foils can be made of high density polyethylene(HDPE) or ceramic. Taking into account the wear of plates, the forming board is adjustable in height. The foils are attached to the forming board using T-rails.

The forming boxes are made for paper machines with reel widths from 1680 to 4200 mm.



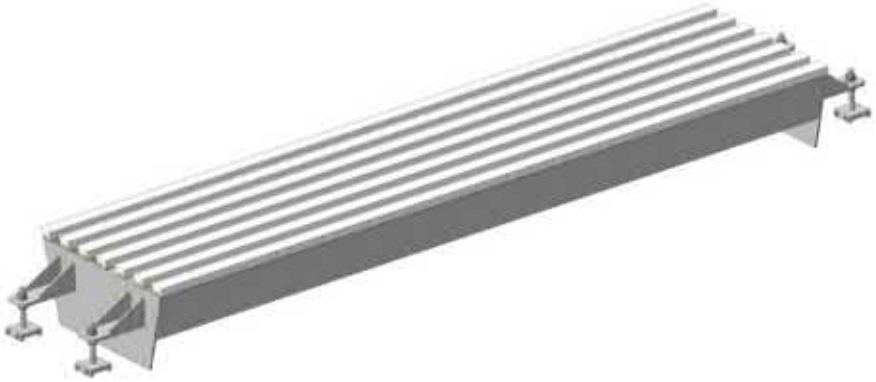
HYDROFOIL BOX

The hydrofoil box is a main dewatering element of the fourdrinier . It improves the conditions for forming the quality paper and cardboard web. It also reduces the amount of fiber and filler in a white water compared to the wire-carrying rolls. The box is a welded structure made of corrosion-resistant steel. The hydrofoil box is attached to the beams by means of columns that allow it to adjust the height of the box and reduce the coating wear of the foils .



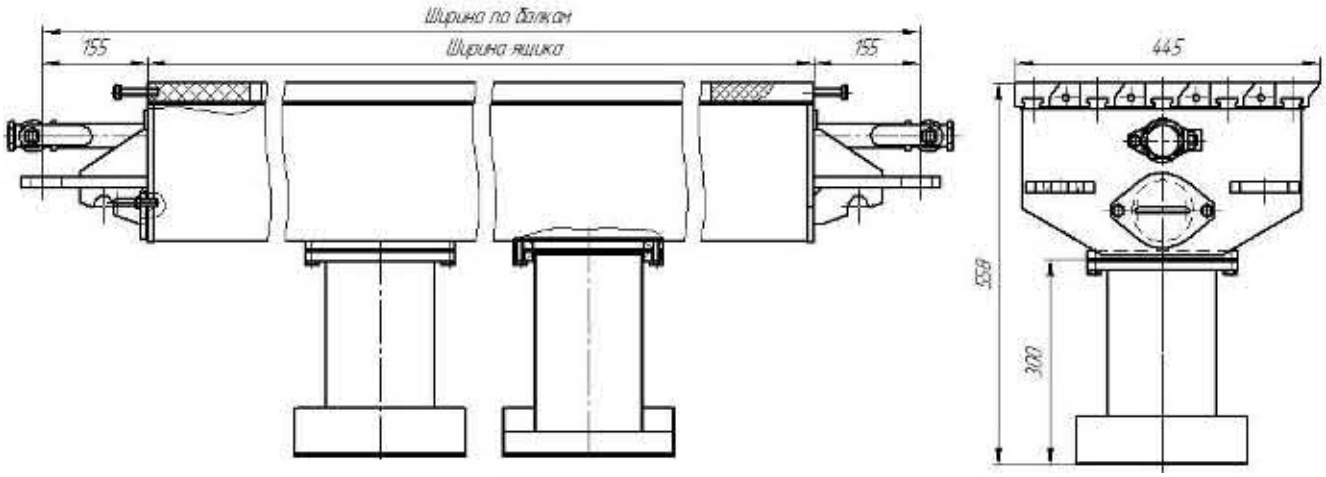
The box is equipped with 5-7 plates, each 65 mm wide. The foils can be made of polyethylene(HDPE) or ceramic. They are attached to the box using T-rails. The angle of inclination of the foils to the wire ranges from 0 ° to 3 °.

They are made for paper machines with reel widths from 1680 to 4200 mm.



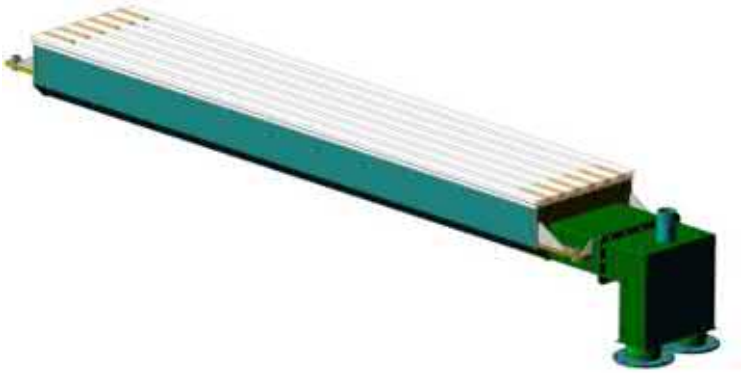
WET SUCTION BOX

The wet suction box is a welded structure made of corrosion-resistant steel. It is mainly manufactured with a removable hydraulic lock, but as an option it is possible to manufacture with a built-in hydraulic lock. The box is attached to the beams by means of columns that allow it to adjust the height of the box and reduce the coating wear of the foils.



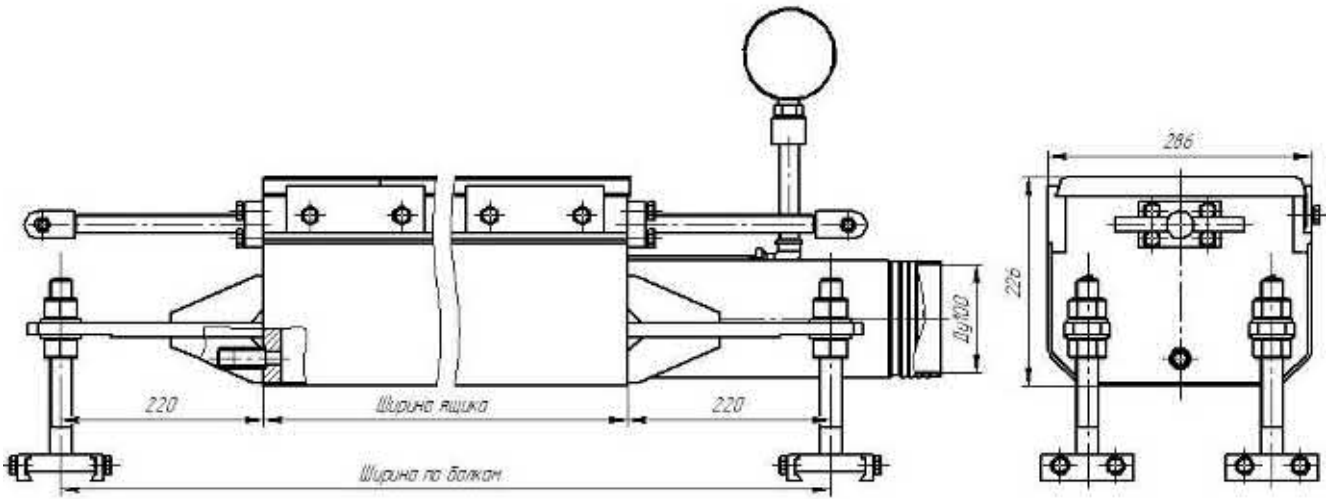
The box is equipped with 5 - 7 plates, each 65 mm wide. The angle of inclination of the foils to the wire ranges from 2 ° to 3 °. The foils can be made of polyethylene or ceramic. They are attached to the box using T-rails. The vacuum in the box is pumped by a fan. The vacuum volume usually ranges from 0 to 4 kPa. It can be adjusted using a suction valve. The width of the suction area is adjusted with movable end plates.

They are made for paper machines with reel widths from 1680 to 4200 mm.



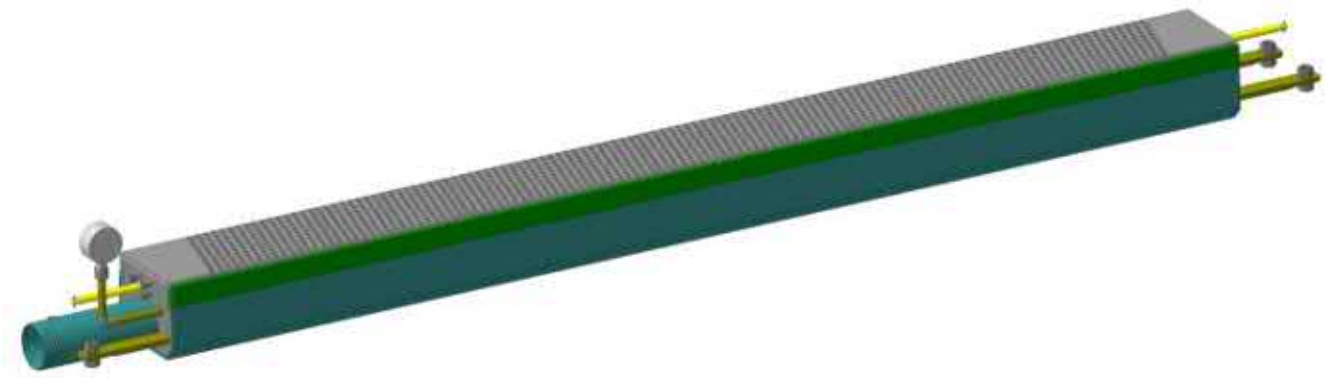
VACUFOIL BOX

The vacufoil box is a welded structure with a pumped vacuum. It consists of a device for adjusting the suction zone, a discharge pipe that connects to the vacuum system and a lid that is attached to the body. The vacufoil box can significantly increase the dewatering of the paper web. The box is made of corrosion-resistant steel. It is attached to the beams by means of columns that allow for height adjustment taking into account the wear of the coating.



The vacufoil box coating is made of high molecular weight polyethylene(HDPE) or ceramic and is usually 30 - 40 mm high. The suction gap can be slotted or circular. The cross-section open area ranges from 40 to 50% of the total area. The width of the suction area can be adjusted by the movable bars. The vacuum is generated by a vacuum-pump. The connection to the vacuum system is made with a water separator. Usually the vacuum regulation is automatic or as an option can be manual.

They are made for paper machines with reel widths from 1680 to 4200 mm.



TUBULAR ROLLS

Tubular rolls are designed to support and adjust a tension of the fabrics ,paper web in PM ,BM ,pulp-drying machine

Depending on the purpose the ubular rolls can be of the following types: chest rolls, turning rolls, carrying rolls, guiding rolls, leads rolls, paper rolls, spreader rolls etc..

The tubular roll consists of a thin-walled steel tube with pressed the cast iron or steel trunnions. The outer work surface can be coated with copper, chrome, rubber, epoxy or other material. Bearing housings with spherical or cylindrical configuration are made of cast iron.

The rolls are supplied for machines with reel widths from 1680 mm up to 6720 mm, with drive speed up to 1000 m / min and diameter up to 550 mm. The rolls are dynamically balanced for the required speed.

Wire roll

Spreader

Wire-rotating roll

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WIRE AND FELT GUIDING SYSTEMS

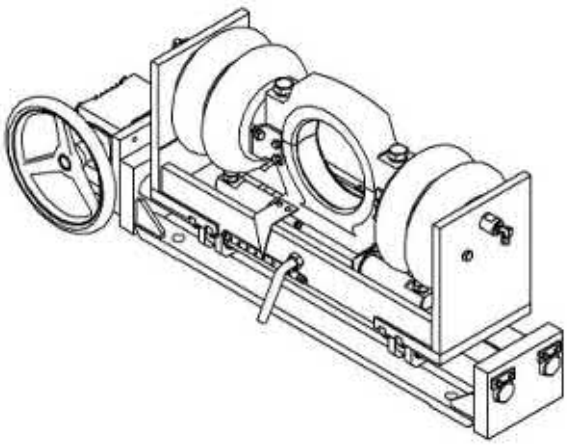
Wire and felt guiding systems are designed to maintain the position of the fabrics symmetrically to the machine axis in the wire, press and drying sections of paper and board machines with reel widths up to 6720 mm and a speed of up to 1000m / min.

The guides are made in standard designs. This mechanism is responsible for correct movement of the guiding roll to the left or right is focusing on the middle position. Usually the guides are made together with doctor blade holder.

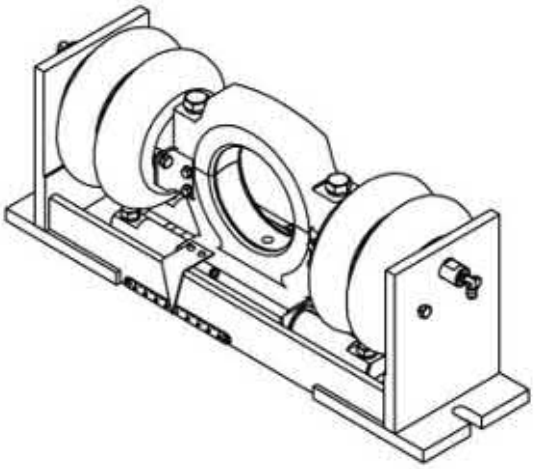
There are 3 types of guides: manual, automatic and combined. Bracket diameter up to 220 mm.

The manual guides move the necessary roll due to the screw mechanism driven by the flywheel. The stroke is ± 100 mm. They are installed on the face side of the machine. The guiding system consists of the frame , bracket, screw mechanism, gearbox with a mechanical gear transmission and flywheel.

The automatic guides move the guiding roll due to the rubber-cord pneumatic cylinders. The stroke is ± 50 mm. The guides mechanism works automatically when the air pressure in the cylinders changes, which is regulated by the wire position sensor. The guiding system consists of a frame, bracket, pneumatic cylinders, guide plate.



combined wire guiding system



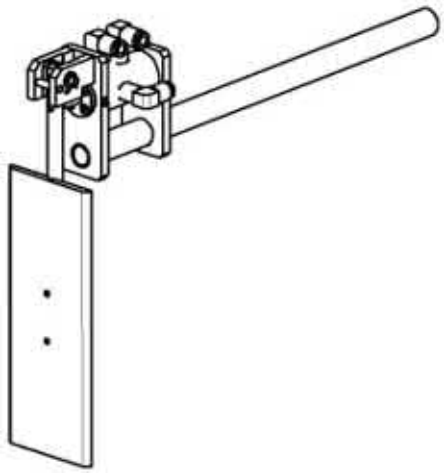
automatic wire guiding system

The combined guides move the guiding roll both in manual and automatic modes. With manual control (from the flywheel) and the automatic guide moves together with the guiding roll. The automatic and manual guides are combined in one unit and installed on the front side of the machine. It provides better conditions for maintenance and control of the wire or felt. The combined guide consists of parts included in manual and automatic guides, combined into one unit.

All guides parts are made of gray cast iron and stainless steel.

Wire guide manual and automatic

The mechanical/pneumatic edge sensor and the pneumatic circuit are part of the control system. The executing mechanism is a pneumatic regulator, which using the sensor pulses to move the driving roll. The moving edge sensor performs as a sensor for controlling the input of the compressed air into the individual pneumatic actuator of the pneumatic control system. The edge sensor deviates to the left or right from the central equilibrium position. The sensor is set in the middle equilibrium position during installation.



mechanical/pneumatic edge sensor

WIRE STRETCHER

Wire tension is one of the main tasks for best operation of the PM. Due to insufficient tension of the wire the drive roll starts to slip and, as a result, there is more wear on the wire and rolls. The wire stretcher has been designed for correct operation of the wire , which is become longer during operation time and it is necessary to compensate.

The wire stretchers are installed on the lower side of the wire, inside or outside of it, and fixed to the longitudinal beams of the wire frame or to the foundation beam of the machine. They provide a wire strength of up to 8 kN / m by moving the wire roll.

The design of the wire stretcher provides the installation of a doctor blade holder and a shower with brush for cleaning the surface of the stretching wire roll. The wire stretcher consists of levers, a connecting roll, brackets, and drive units (pneumatic cylinders-actuators).

Wire stretcher material: gray cast iron, corrosion-resistant steel.

Wire stretchers

HIGH PRESSURE SHOWER

High pressure shower with electromechanical oscillation is used for high-pressure cleaning of wires, felts, cylinder mold, perforated jackets of the suction rolls. They are installed in the wire and press sections of the paper machine.

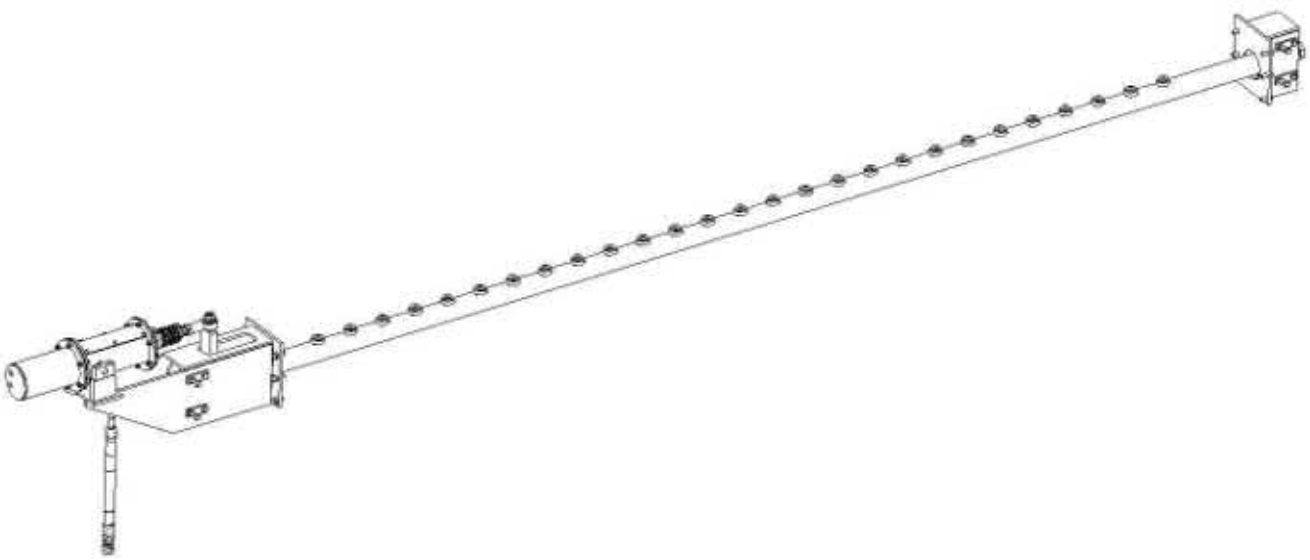
The shower consists of a shower pipe with hard-alloyed needle nozzles, an electromechanical drive with a step-by-step motor and a high pressure flexible hose for water supply. The drive imparts a reciprocating motion to the motor. The pipe movement speed is smooth ajusted . The shower tube can rotate relative to the drive, which ensures the necessary position of the shower on the machine.

Water is supplied to the shower from the drive side through a flexible high pressure hose and ending with a lug for welding into the water supply system.

All parts of the showers are made of corrosion-resistant steel.

The recommended distance of installation of the shower nozzle from the wire (felt) should be about 100-120 mm, while the water pressure should be 25-40 kgf / cm2.

The water consumption through nozzle Ø1 mm is 2.27 l / min. at a water pressure of 30 kgf / cm2.



WATER LUBRICATION SHOWER WITH BRUSH

Water lubrication showers are currently used in the wire and press sections of paper and board machines.

They are installed:

• Before of the felt washers on the outside of the press felt to saturate the felt with water.

• Shower is installed on the next to wire roll to wet it.

• As a beating shower over a couch chest for flushing the paper web under the wire during breaks.

The showers work at a water pressure of up to 0.5 MPa. They are installed permanently and work constantly. They use industrial water previously filtered from mechanical impurities as well as clarified water with a concentration of suspended solids of 5-10 mg / l.

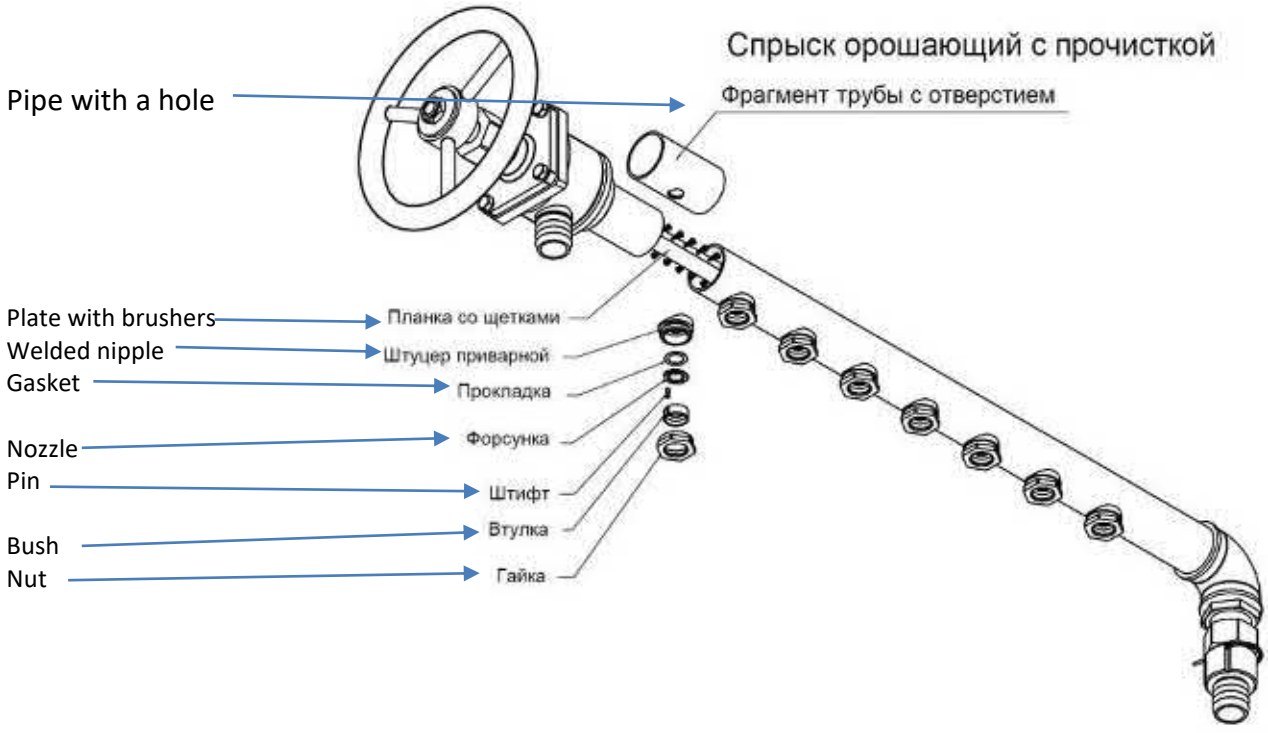
The shower consists of a shower pipe with a diameter of 40-50 mm, a welded nipple, a nozzle, a plate with brushes made of hard synthetic threads.

Depending on the type of nozzles the jet is fan-shaped or flat. The distance from the nozzle to the surface of the wire (felt) is 25-40 mm.

Water is supplied to the shower from the drive side through a flexible hose.

Brushes are used to clean clogged nozzle holes by periodically turning them over. All metal parts of the shower are made of stainless materials.

Water lubrication shower with brush



DOCTOR BLADE HOLDER SYSTEM

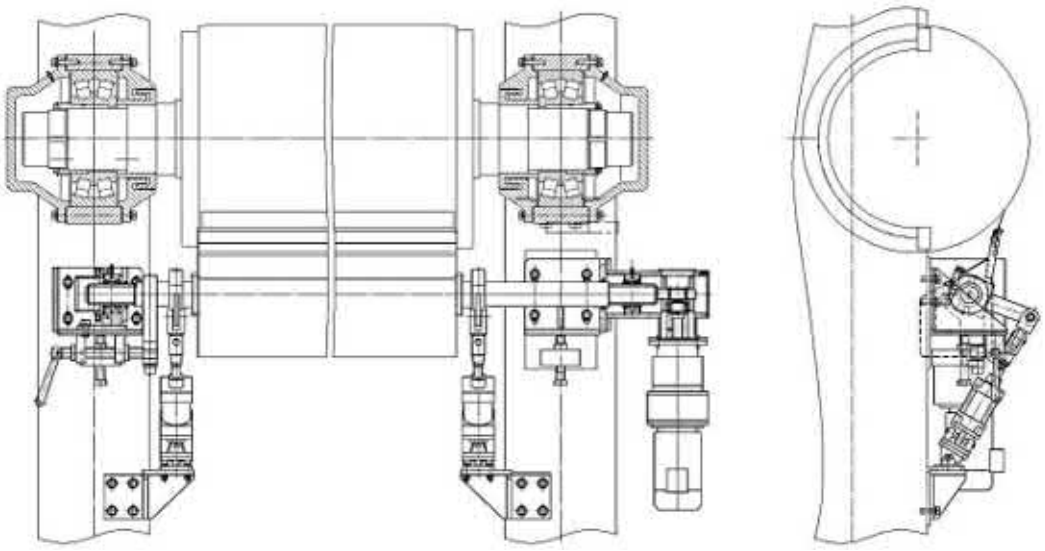
Doctor blade holders system are used to clean press rolls, drying cylinders ,coolers, and rolls of the wire section of paper machines.

Each doctor blade holder is designed for a specific application and for specific types of machines. In order to improve the work of the doctor blade holders they are equipped with an oscillating device.

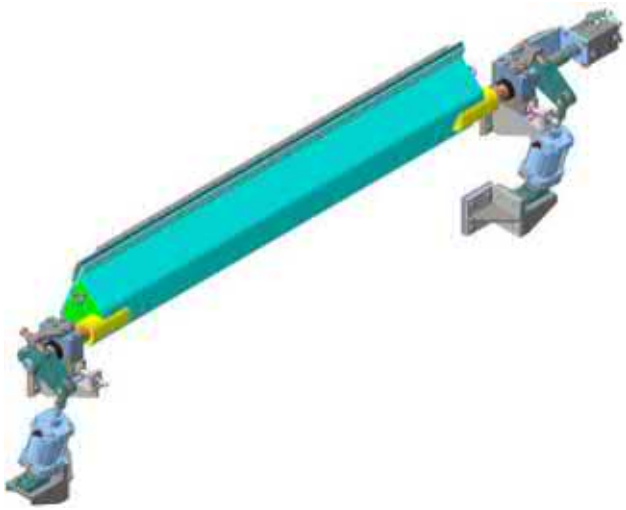
The doctor blade holder system consists of a body that is installed in a specific location in a specific section of the paper machine. The body of doctor blade holder system is made as a welded structure. A body is fixed to the bearing units that allow the body to rotate freely and perfom oscillating cycle as axial movement.

All parts of the wet section are made of stainless steel or with stainless steel lining.

In the dry section of the paper machine all parts are made of structural steel with lacquer coating.



Doctor blade holder of Press roll with oscillation mechanism



Doctor blade holder of Press roll with oscillation mechanism

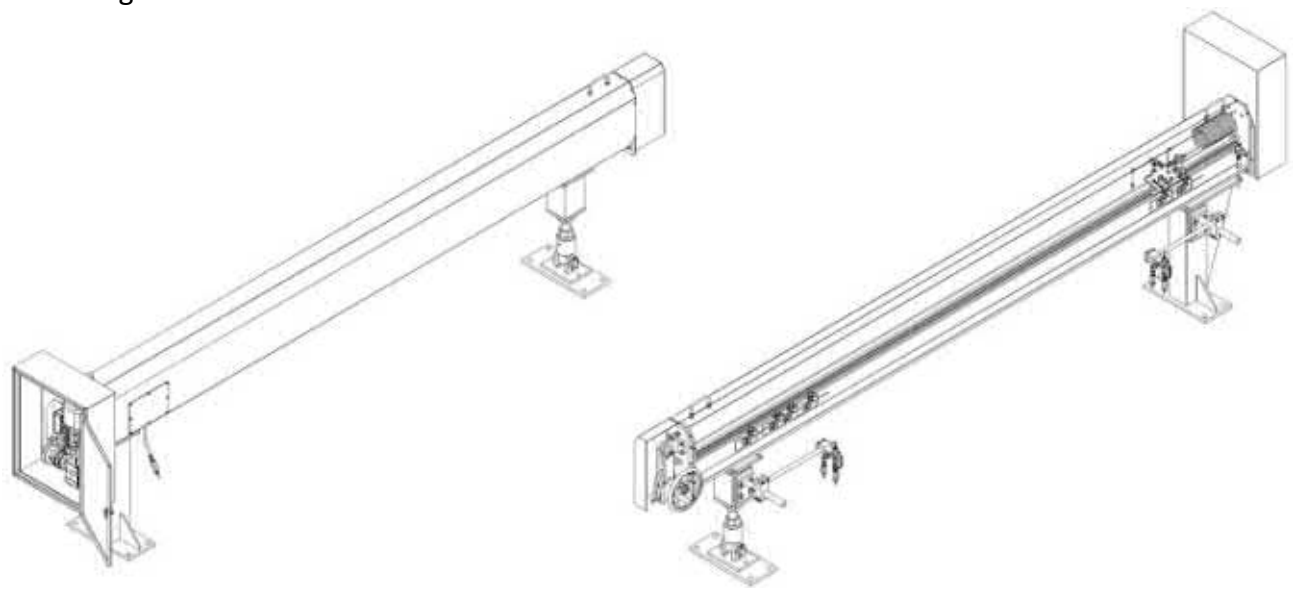
Doctor blade holder of Chest roll

WET-END TAIL CUTTER AND THREADING TRIMS

The wet-end tail cutter and threading trims are installed to create a threading strip in the wire section of the paper machine and for fast trimming the paper web in case of a break.

They are designed for use in automatic paper web threading systems. An operator can place the trim in any position to achieve of the desired web width. During operation of PM the trim located at the drive side and moves by means of a gearmotor and drive belt. The movement speed is set by an operator from the control panel.

The trim position is determined by 6 limit switches: 4 working positions, 2 for precise trim location and deceleration. The threading trim process can be done in manual mode when the electromagnetic clutch is disconnected.



The wet-end tail cutter is trimming the edges of the formed paper web to the required size (width). By two nozzles are installed on the face and the drive side. The wet-end tail cutters are installed as standalone system or on the threading trim beam as agreed with a Customer. Distance between nozzles and wire: 40..80 mm. Each nozzle can be rotated 45 ° in any direction. The water supply is set by a control panel.

The cutters and trims are supplied together with the control panel.

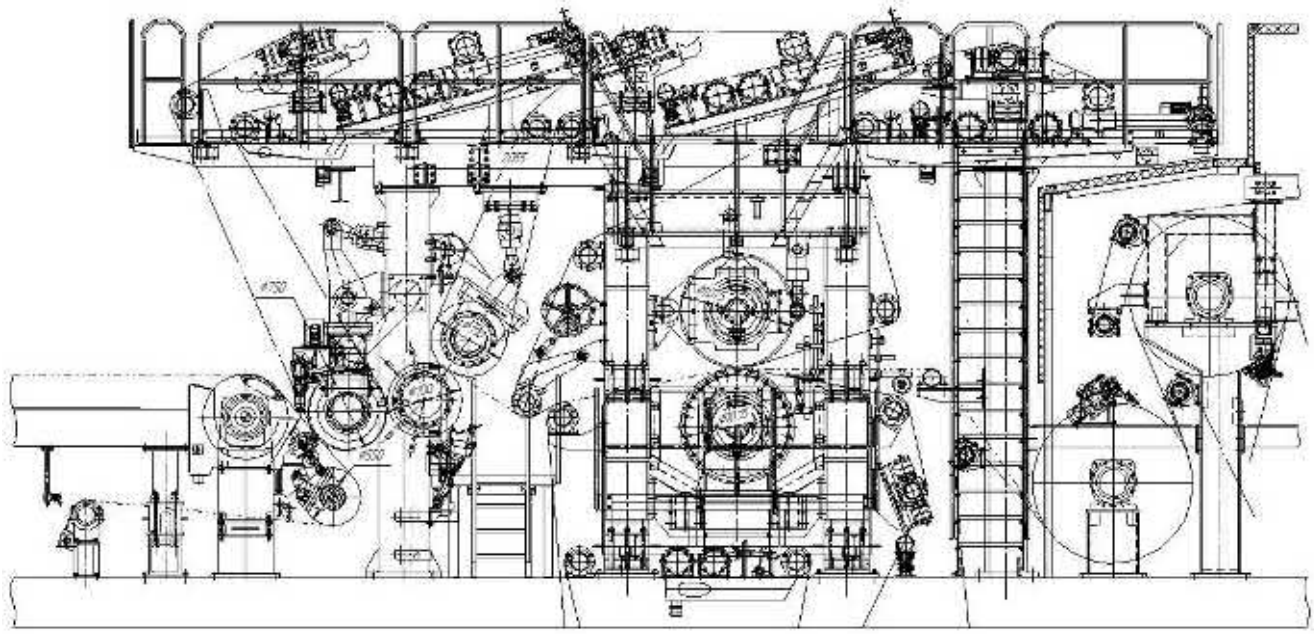
Material: corrosion-resistant steel.

Technical data:

Threading trim nozzle diameter	mm	0,8
Edge Trim nozzle dia.	mm	0,8
Water consumption of edge trim at 1.0 MPa (10 atm.)	l/min	0,6
Speed of threading trim	m/min	to 54
Drive power	kW	0,75
Working pressure of water	MPa	1,0

PRESS SECTION INCLUDING COMBI-PRESS AND JUMBO PRESS

The main purpose of the press section is to dewater of the paper web, providing the required quality characteristics of the product. A pressing process increases the dryness, strength and density of the paper web. Pressing plays an important role in the production of multi-layer paper and board. The efficiency of the press section determines the cost of drying the paper and the productivity of PM. In order to reduce the consumption of steam for drying, the papemakers strive to obtain the maximum possible dryness after the press section.



The company "Ugleprom" produces a press section of PM, which consists of two types of presses. One is the Combi-press and another is the extended nip press of the JUMBO type.

Combi-press (three-rolls) consists of a pick-up roll Ø750 mm which is simultaneously a press roll, a central smooth press roll Ø700mm and rubberized roll Ø710 mm with a "blind" perforation that provides the removal of the web from the wire section and continuous threading of the web through two press nip.

The Jumbo press is designed as a twin-roll press with a hydraulic upper press roll. The rolls have a rubber coating with a "blind" perforation.

Linear pressures in press nip:

- 1st nip - 70 kN / m.
- 2nd nip - 90 kN / m.
- 3rd nip - 250 kN / m.

The design of the press section provides continuous production of dry paper web with a density of 125 g / m² up to 45% at the exit from the press section at speed up to 600 m / min.

The trimmed web width is 2520-4200mm.

Also, the press section can be configured with a pick-up suction roll and two pcs.of the JUMBO press.

PRESS AND CALENDER ROLLS

The rolls are designed for dewatering and forming the paper web on paper and board machines.

Depending on circuit design and technical data of the machines the following types of the press rolls are used in the press sections:

By design:

• a roll made of cast iron or steel pipe with pressed steel journal and additionally fastened with bolts.

• a roll made of cast iron pipe with pressed cast iron core shaft where is inserted a steel journal. The core shafts are additionally bolted to the pipe.

By the appearance of the outer working surface:

• smooth;
• grooved;
• with blind holes;
• combined (grooved with blind holes).

The outer working surface of the press rolls is coated by rubber or other polymer material including a granite substitute (for smooth rolls). The rolls are supplied for machines with reel widths from 1680 mm up to 4200 mm and drive speed up to 800 m / min and have dia. from 400 mm (rolls with blind holes from 600 mm) up to 1075 mm(Jumbo).

It can be supplied with bearing units.

The calender rolls of paper and board machines are made of alloy chilled cast iron with flake or globular graphite for machines with reel widths from 1680 to 4200 mm and shell diameter from 250 to 550 mm. Delivery with bearing units is possible.

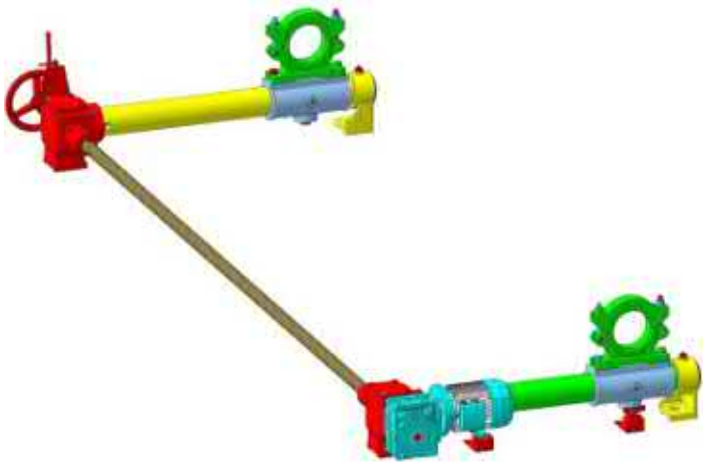
Press rolls

FELT STRETCHER

The felt stretchers are designed to provide and maintain the required tension of felt in the press section and wire in the drying section of paper and cardboard machines. Felt stretchers provide wire and felt tension up to 5 kN/ m.

The device consists of a lead screw with brackets, a guide pipe and a bevel gear on the face and drive side. Both sides are connected to each other by a shaft between gearboxes. On the face side there is a flywheel and a clutch that align the landing axis so that it is perpendicular to the PM axis.

Felt stretchers are made with manual and electromechanical drive for machines with reel widths from 1680 mm to 4200 mm.



Felt stretchers

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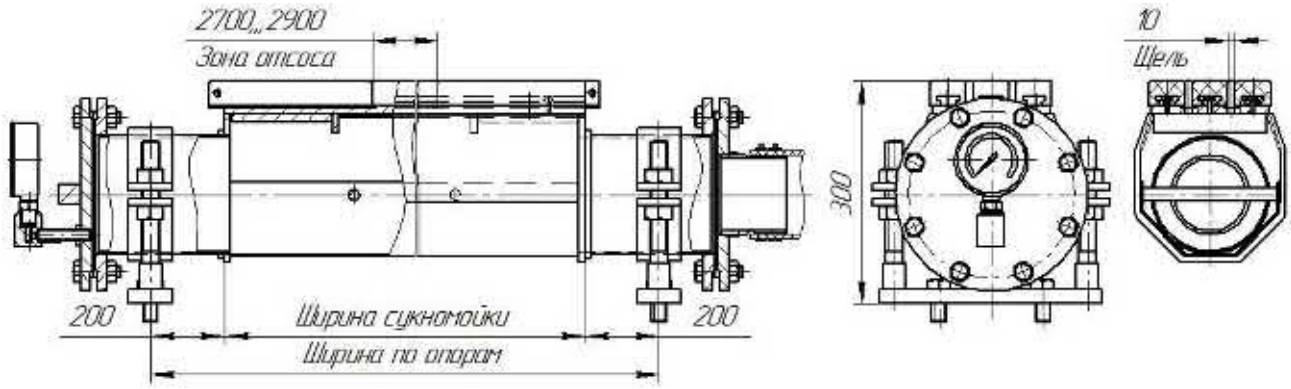
FELT WASHERS

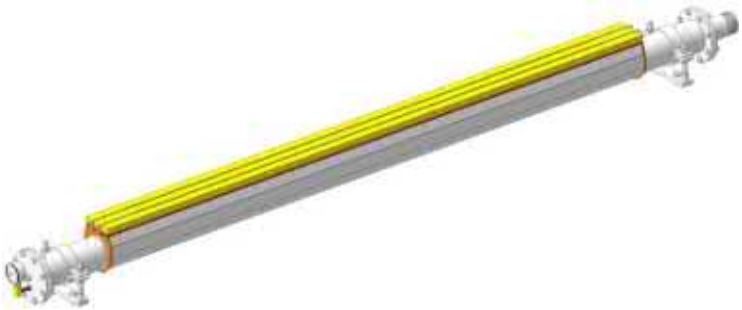
The felt washers are used for mechanical cleaning of felts on a paper machine. The felt washers use a vacuum to suck moisture out of the felt (water, chemical) which is subsequently drained from the paper machine through a suction pipe to the outside.

Cleaning results in improved papermaking quality while reducing energy consumption and increasing the lifespan of the felt and runnability paper machine.

The felt washer is made of stainless steel coated with HDPE or ceramic. The felt washer has an adjustable suction slot and an adjustable suction width with dampers. The design of the felt washer allows for height adjustment according to the felt position.

The felt washers can be made with one or two slotted and width from 1680 up to 6720 mm with or without supports.





Two-slotted felt washer

SIZING PRESS

The sizing press is designed for surface sizing of paper and cardboard and is part of paper and board machines.

The press consists of two press rolls installed at an angle to the horizontal axis, a roll clamping mechanism, glue supply collectors, trays for collecting flushing water, a cone for collecting and returning to recirculation of excess glue, a drive.

The glue(chemical) is sizing to the paper web when it passes through the glue bath which is formed by the roller surfaces. Impregnation of the web by glue occurs in a press gap due to static and hydrodynamic pressure. Excess glue is removed for recirculation through overflow cones along the roll ends. The height of the glue'level is adjusted manually by dampers at the inlet to the collectors. Multilevel height across the width of the press is manually adjusted by valves on the collector nozzles.

Linear pressure between the rolls is generated by the roll clamping mechanism, which consists of a system of levers and an actuating unit. The actuating unit can be as a pneumatic or hydraulic drive. The hydraulic unit is included the hydraulic station. The shells of the press rolls are covered with rubber or synthetic resin coatings, the shells and core shaft are made of ductile iron, the journals are made of carbon steel. The drives of the both rolls are adjustable. Frames and levers are welded carbon steel. The lubrication of bearings of the press rolls can be centralized for liquid lubrication or manual lubrication for consistent grease depending on the customer's requirements. Collectors, trays and overflow cones are made of stainless steel.

DRYER-HOOD FOR PAPER AND BOARD MACHINES

Dryer-hoods are used for removing of the air-vapour mixture from the drying section, improving of the paper web drying process, reducing of heat energy consumption , preventing the spread of hot-humid air in the hall of PM and passing of the air-vapour mixture to recuperation system.

Scope of supply:

- dryer-hood cover: made of carbon steel covered with a special protective layer or stainless steel
- a set of shields: ceiling, front, stationary face side, stationary drive side, lifting with sight windows of the face side ,sliding drive and face sides;
- mechanism for lifting shields on the face side ;
- walkways for service of the shield lifting mechanism;
- ceiling with flaps to control the amount of removing air-vapour mixture from the face and drive sides to provide dryness of the paper web across the width of the machine;
- control valves , the number and dimensions of which are calculated depending on the required air exchange;
- electrical equipment complete with control equipment for lifting mechanisms and low-voltage lighting of the drying section under the hood.

Design features:

- An individual project, taking into account the structure of the building where the machine and ventilation systems are located with the technical calculations.
- Manufacturing of the dryer-hood cover in various designs using rolled steel or rectangular pipes.
- Coating of steel frames with corrosion and temperature resistant enamel.
- Shields thickness are 40 up to 80 mm, taking into account thermal conductivity and the use of basalt non-combustible insulation with almost zero hygroscopicity.
- Full tightness of shell plating due to the use of special silicone seals and increased tightness of moving parts.
- Special winch for lifting shields with smooth start-up and braking, with control of the lifting height of the shield taking into account the speed of the winch drum.
- Fast assembly and disassembly of the dryer-hood due to the use of original shell plating fasteners.

Dryer-hoods

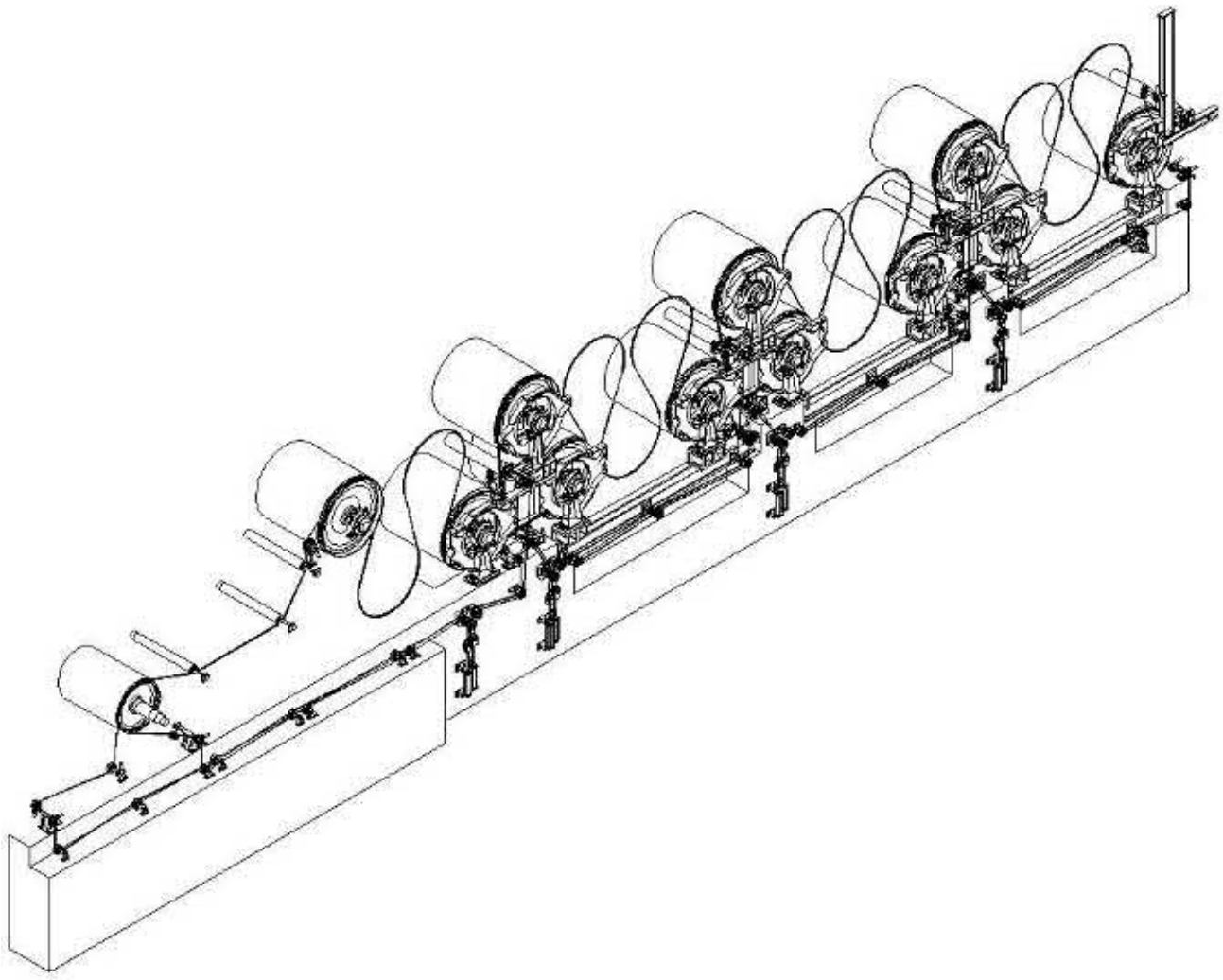
THREADING ROPE SYSTEM

Threading rope system provides an automatic threading of paper tale using threading ropes from the press section through the drying section to the reel. It operates at a paper machine speed of over 200 m / min. For this purpose a groove is made on the front cover of the drying cylinder. Two endless nylon ropes Ø6-12 mm pass along it, which cover the drying cylinders in one or more groups.

We produce the threading two-rope system **.It** consists of a set of guide and spreader rollers with holders, a horizontal rope stretcher and a protective cover for it.

The rope stretcher is mechanical type(tension by means weights) and pneumatic (tension by means pneumatic actuators controlled from the panel). The stretching stroke is 660 mm.

Spreader rolls and guide rolls are manufactured with a diameter of 180-220 mm. If necessary, they can be equipped with removable rotating pulleys that are attached to the covers of the dryers.

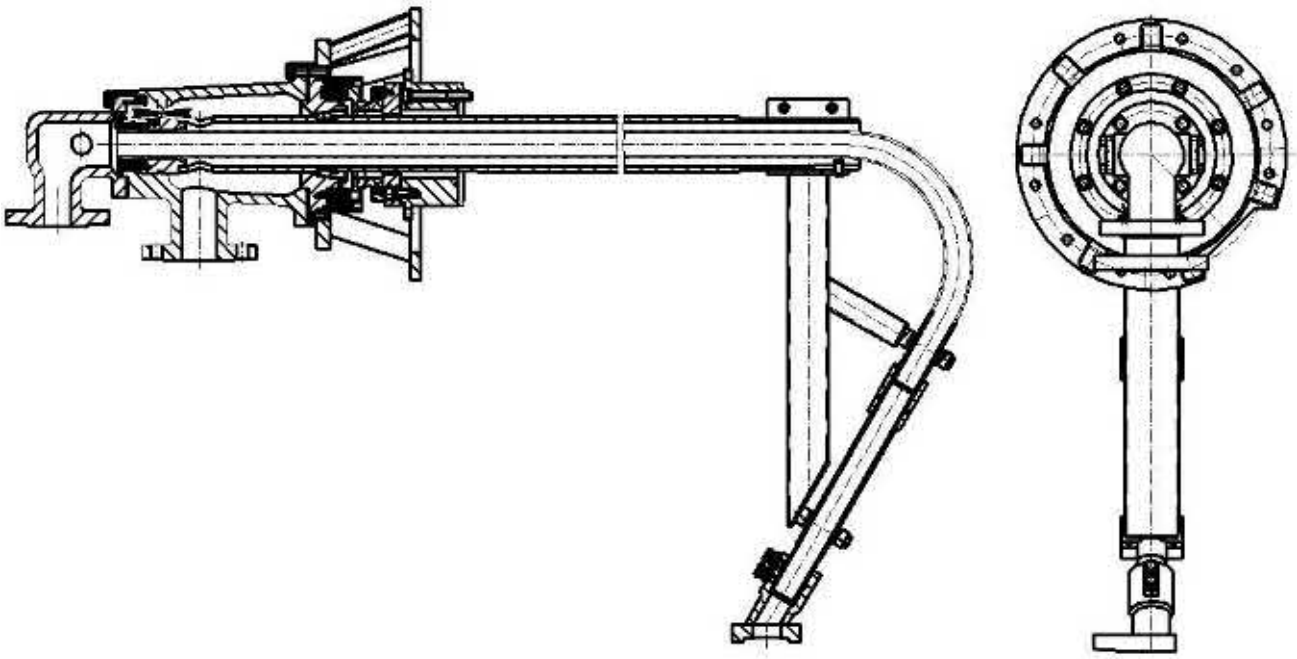


STEAM AND CONDENSATE HEADS

Steam and condensate heads are designed to deliver steam to drying cylinders and remove condensate from them using a scoop or siphon.

Steam and condensate heads of two types (GPV and GPN) designed for dryers and felt drying cylinders of paper-making, cardboard-making and drying machines with a working steam pressure of up to 0.6 MPa (6 kgf / cm2). Steam and condensate heads of the GPV type are manufactured for cylinders with condensate drainage by a scoop at a machine speed of up to 250 m / min.

	industrial standard 454.08.000	**industrial standard 454.09.000**	**industrial standard 454.10.000**	**industrial standard 454.11.000**
Pipe nominal size, DN	40/32	50/40	65/50	40/50
Weight, kg	63	66	117	65



Steam and condensate head with fixed siphon

The steam and condensate head consists of two parts: movable and fixed. They are sealed by means carbon fiber rings. The main parts are made of cast iron, the pipes are made of stainless steel. Steam and condensate heads of the GPN type are manufactured for cylinders with condensate drainage with a fixed siphon at a machine speed of over 250 m / min.

	industrial standard 454.01.000	**industrial standard 454.02.000**	**industrial standard 454.03.000**	**industrial standard 454.04.000**
Pipe nominal size, DN	40/32	50/40	65/50	100/65
Weight, kg	82,0-86,0	84,7-90,8	112,8-114,0	154,0-163,0

The design of the Steam and condensate head of the GPN type consists of two parts: movable and fixed which are sealed by means carbon fibe rings. The company supplies the necessary spare parts, compensator valves, siphons and also offers separate sealing rings made of composite material - carbon fiber. Carbon fiber rings perfectly retain steam and preserve the surfaces of mating parts.

Steam and condensate heads

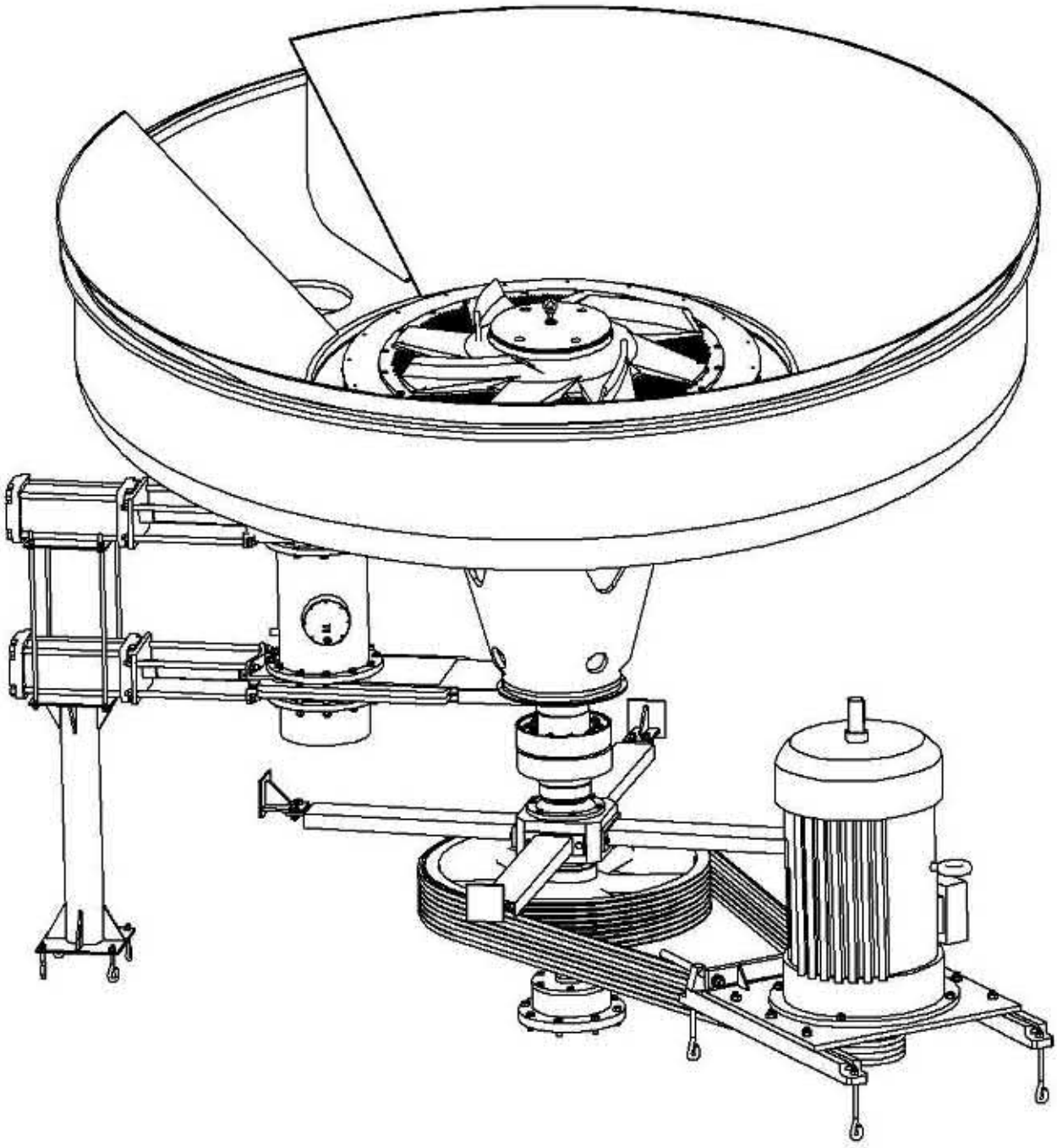
AUXILIARY EQUIPMENT

MODERNIZATION OF VERTICAL PULPER (GRV)

Most existing vertical pulper can be modernized quite easily.
Reasons for modernizing vertical pulper can be:

- pulping of unsorted waste paper to get more available pulp;
- increasing the capacity of the existing pulper;
- cost reduction compared to purchasing a new pulper;
- reduction in operating costs.

The proposed modernization is including the production of the new units for existing pulper.



The updating of the pulper includes the manufacture of:

• Specially designed rotor is made of corrosion-resistant steel. Hardened blades are made of steel 40X13 (HRC 50) which installed on the basic cutting edge blades of the rotor for increasing their service life. This solution is allow to replacement of cutting blades without changing the rotor.

• Flat screen plate instead of existing conical ones (hole diameter - at the Customer's choice (8, 10, 12, 16, 20, 24 mm)). The screen plate are made of corrosion-resistant steel with subsequent hardening to HRC 50. When one side is worn out , screen plate is turned over to the other side for further operation, which increases the lifespan of the screen plate up to several times.

• The inlet chamber with an accept pipe is made of corrosion-resistant steel and is installed in the existing pulper vat.

• Gate chamber for removing heavy rejects (sand, stones, etc.) is eqquiped with the two pneumatic valves which is made of st.steel. The gate chamber is part of a pulper vat. Installation of a gate chamber allows to reject of heavy waste without stopping the pulper.

• Crash bars are installed on the pulper vat.

The updated pulper uses the same bearing unit as the non-updated one. The updated pulper is for consistency from 3% to 9%. The pulping time of unsorted waste paper is reduced three to four times. Accordingly, capacity increases, energy consumption for pulp production decreases, and it makes possibilities to store a larger amount of pulp with a high consistency in the same volume.

Electric motors for each type of pulper are selected individually.

FIBERSORTER, SECONDARY PULPER, TURBOSEPARATOR GRS-80, GRS-200

The fibersorters are designed for further coarse screening of waste paper that has gone through the primary pulper.

The fibersorter consists of a vat, a rotor, a drive, pipe connectors for feeding and accepted out of the pulp, pipe connectors for rejecting of light and heavy waste.

The fibersorter vat is a welded construction with hinged cover. A junk trap is installed at the bottom of the vat. The body of the vat is rigidly connected to the accepted chamber .

The rotor is cantilevered on the roll. A screen plate is installed between the rotor and the accepted chamber .

The rotor is driven by a V-belt pulley.

The pulp enters to the vat through a tangential branch pipe under pressure where is takin place an intense hydrodynamic effect on the pulp. The result is a further deflaking process (of petals, bundles and fibers that were not separated in a conventional first stage pulper. The accepted pulp, passing through the screen plate, enters the accepted chamber and then is moving out under the influence of residual pressure.

Light reject are removed through a pipe connector which is located in the top of the vat .

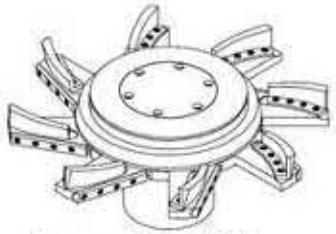
Heavy reject enter to the junk trap and are removed from it through the rotary valve.

Technical Data

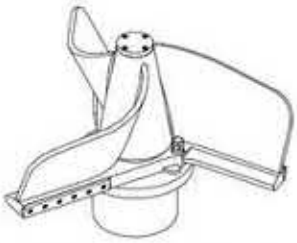
Index	GRS-80	GRS-200
Productivity, t / day	80	200
Vat capacity, m3	0,5	1
Consistency 2,%	2,5-5,0	2,5-5,0
Screen holes diameter, mm	3, 4, 5, 6	3, 4, 5, 6
Rotor: - diameter - rotation frequency, min-1	 610 650	 840 520
Consumption of fresh water supplied to the rotor seal, m3 / hour, no more	0,5	0,5
Electric motor power, kW	75	132
Weight (with electric drive and spare parts), kg	4000	5700

REPLACEABLE PULPER UNITS(WEARING PARTS)

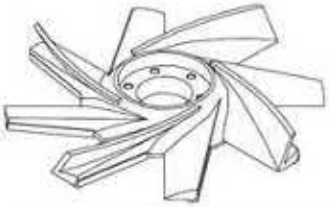
Our company has the ability to supply replaceable units for pulper and not only. These are spare rotors, blades, screens plates, bearing systems.



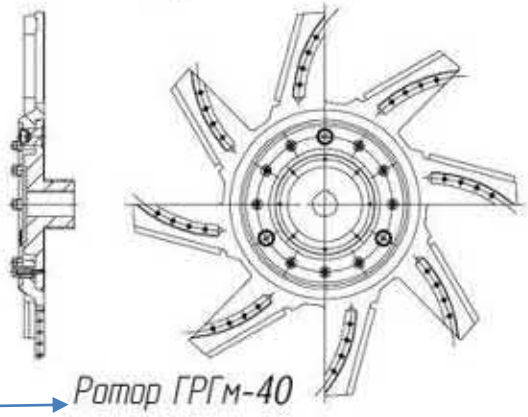
Rotor GRV-02M → Ротор ГРВ-02М



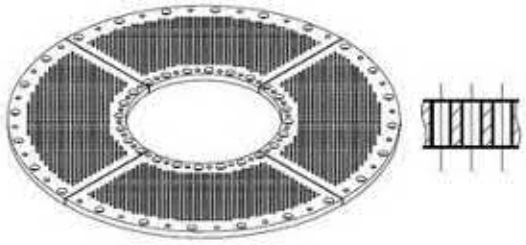
Rotor GRV-U-05M → Ротор ГРВ-У-05М



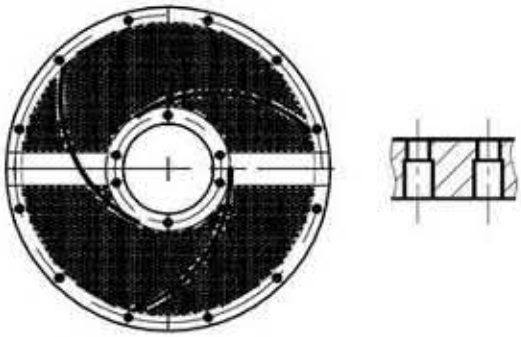
Rotor of turboseparator → Ротор турбосепаратора



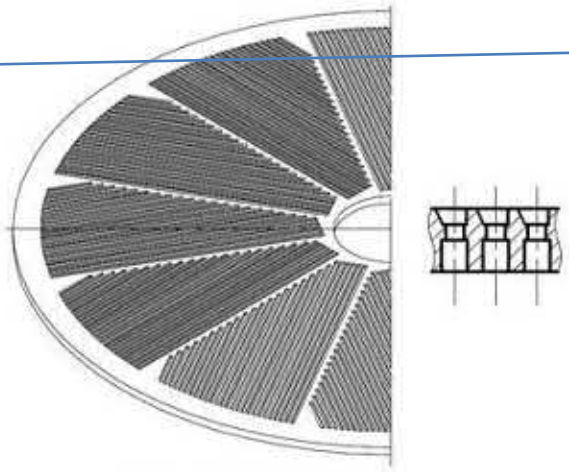
Rotor GRGm-40 → Ротор ГРГм-40



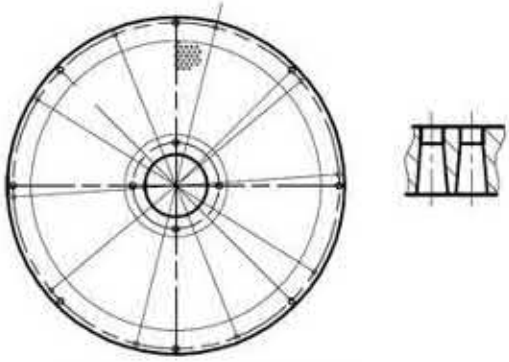
Pulper screen-05 → Сито ГРВ-05



Screen RUB.000.00.001 → Сито РУБ.000.00.001



Screen 01.804.00.00 → Сито 01.804.00.00



Screen GRS-200.22.018 → Сито ГРС-200.22.018

We are ready to supply you the screens for separators VSV-20, VSV-30, VDT-30, VDT-40, PSN-30.

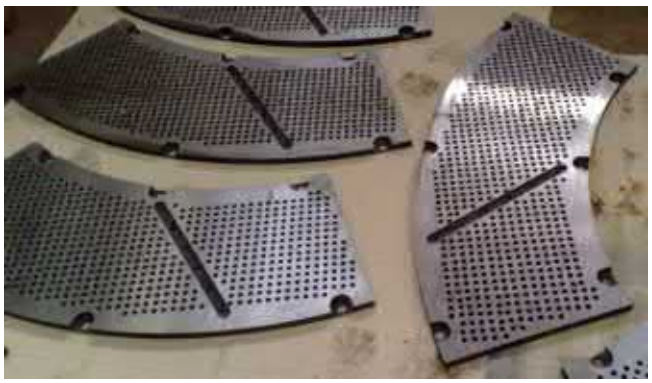
According to reviews of our partners from LLC Sukhonsky PPM , our screens have worn out less during operation (the depth of the groove lasts longer, the hole diameter does not increase), the screen does not bend under pressure, the service lifespan exceeds analogues.

The screens are perforated Ø2.2 and Ø1.8 mm, thickness 8-10 mm. It is made of steel 40X13 GOST 5632-72(EU 1.4031;1.4034) with surface hardness according to HRC 50-53 .

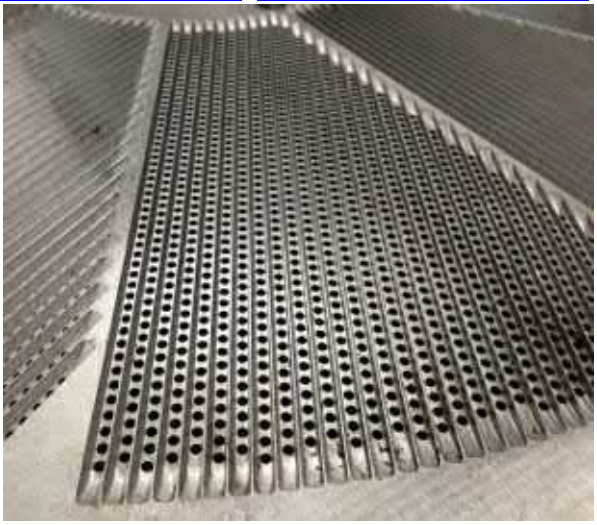
According to your drawings, we are ready to manufacture any types of screens, rotor and impellers for all types of pulper, screening unit, separator and other needed paper-making equipment.

Rotor of pulper

Rotor of screen



Pulper screens



Separator screen VSV

PERIODICAL REJECT SEPARATOR OS-4U

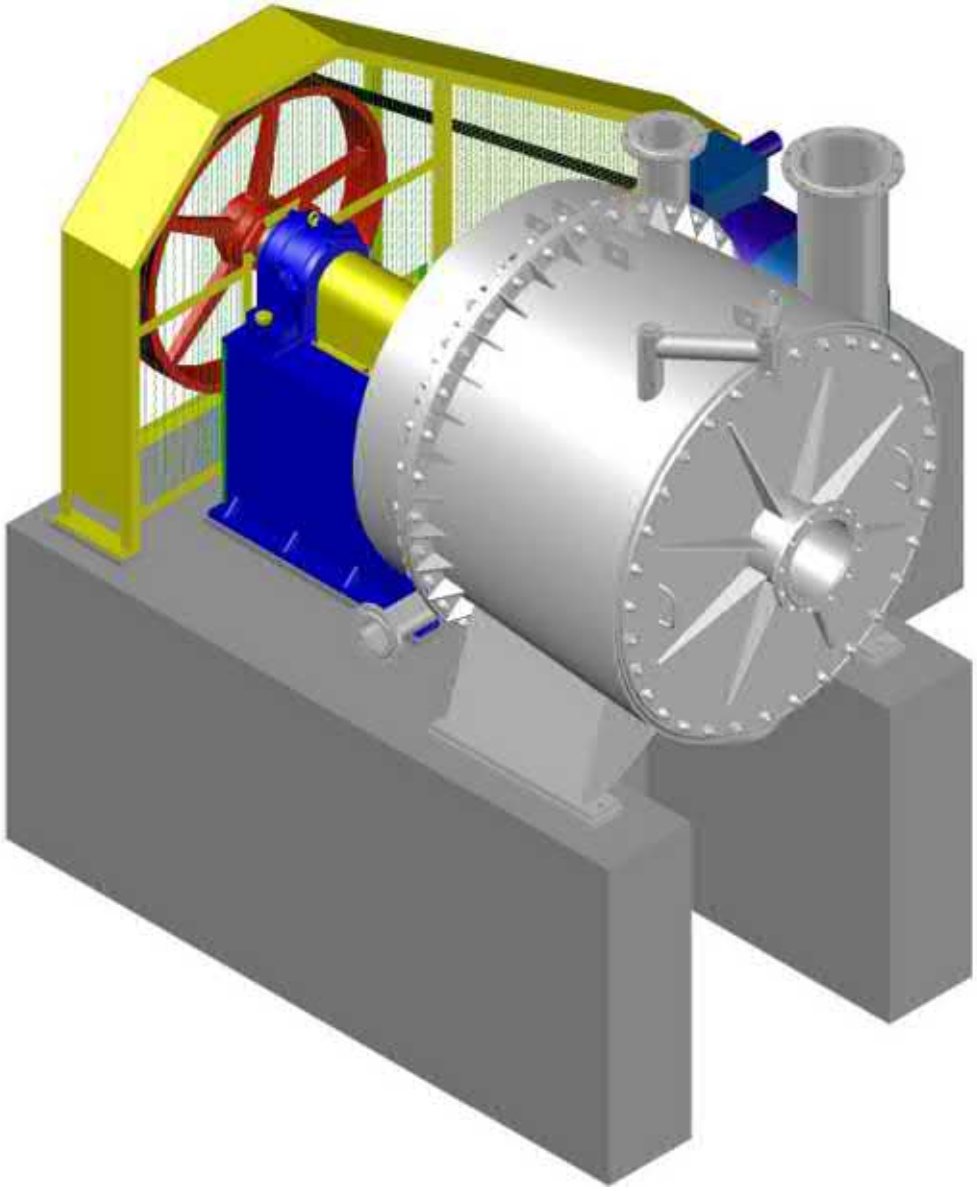
The periodical reject separator type OS-4U is designed for continuous removal of heavy reject from waste paper without fiber loss and pulper downtime.

The separator type OS-4U can be installed after on almost any pulper: vertical or horizontal with a volume of up to 50m3. The drive energy consumption is 45 kW. The volume of the vat t is 4.0 m3.

The OS-4U operates periodically in both manual and automatic modes. Each cycle consists of feeding the contaminated pulp from the primary pulper, desintegrating the pulp , returning the sorted pulp to the primary pulper, washing of reject and discharging waste.

Benefits:

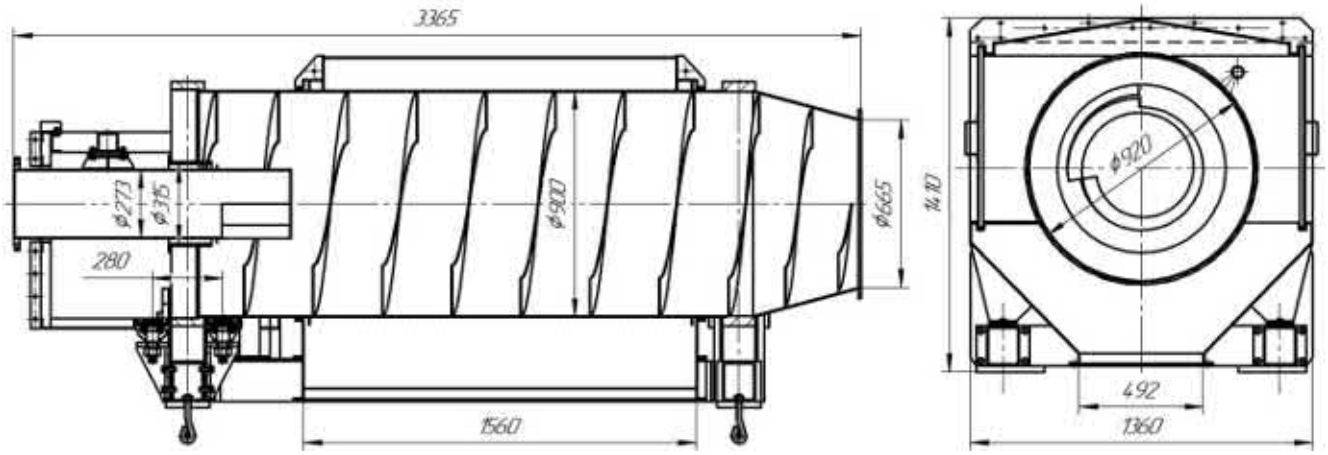
- Elimination or significant reduction in the number of periodical cleaning;
- High quality of the accepted pulp;
- Reducing wear of pulper units;
- Additional desintegration.

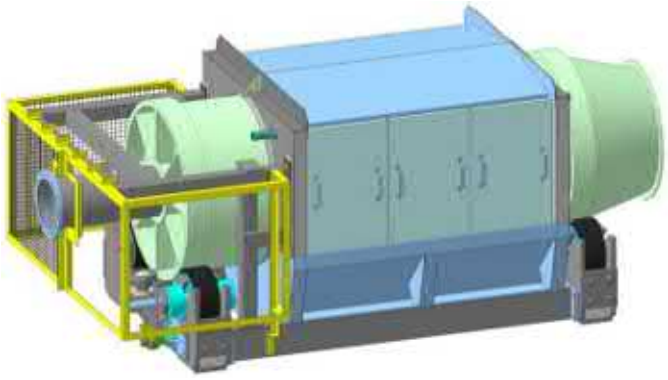


WASHING DRUM

The washing drum is designed to remove plastic and separates sand after the primary and secondary pulper/ separator.

The drum design is a perforated drum rotating with a small angle of inclination and mounted on rotating supports. The diameter of the holes in the drum is 6-12 mm. Drive is an electric motor through a gear transmission. The feeding pulp (C= 2-4%) is loading by an available device at the end of the drum. A waste washing process is carried out by a shower system with water pressure up to 0.5 Mpa. The waste (C= 10-12%) is discharged from the end of the drum and forward to further dewatered. The screened pulp from the bottom of the drum is collected in a basin and pumped into the pulper .





IMPELLER/AGITATOR AND DESINTEGRATOR OF COUCH CHEST

The couch chest is designed for continuous agitation of a pulp with water ,for slushing breaks paper web and edge tail cuts received from the wire section of the paper machine. The couch chest is usually installed under the suction couch roll at the beginning of the press section. The couch chest capacity depends on a headbox pondside , wire width, operating speed of PM and type of paper produced.

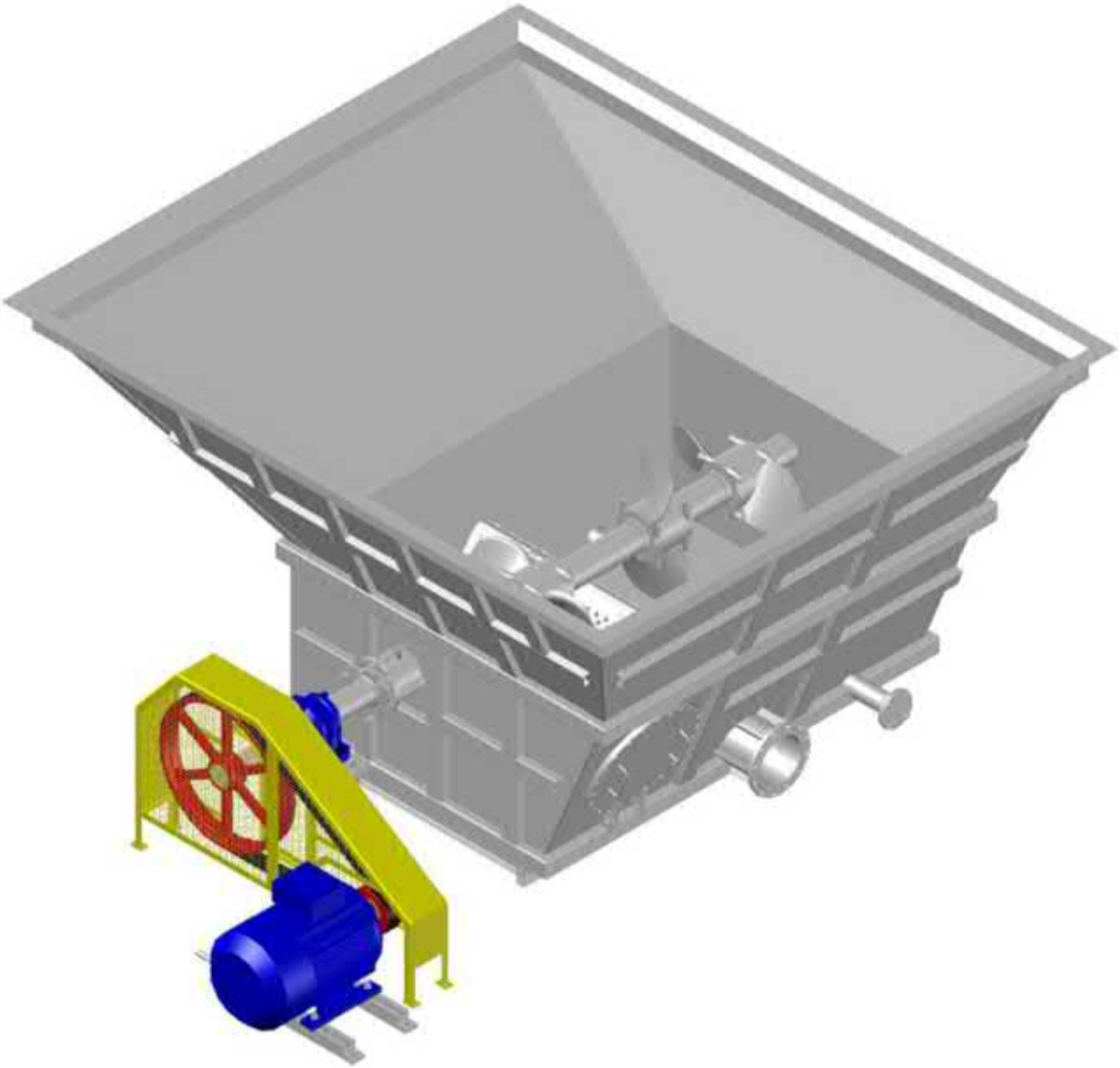
The agitation device is installed in a welded stainless steel vat.

The sealing unit is sealed on both sides with a sealing cord. The perforated plate is installed in the lower part of the vat (in the drain part).

The main units of the couch chest are:

- Vat
- Bearing housings
- Sealing
- Drive unit
- Drain part with perforated plate.
- Roll with pulp beating blades.

All parts of the equipment that contacting with the pulp are made of stainless steel.



BROKE PULPER

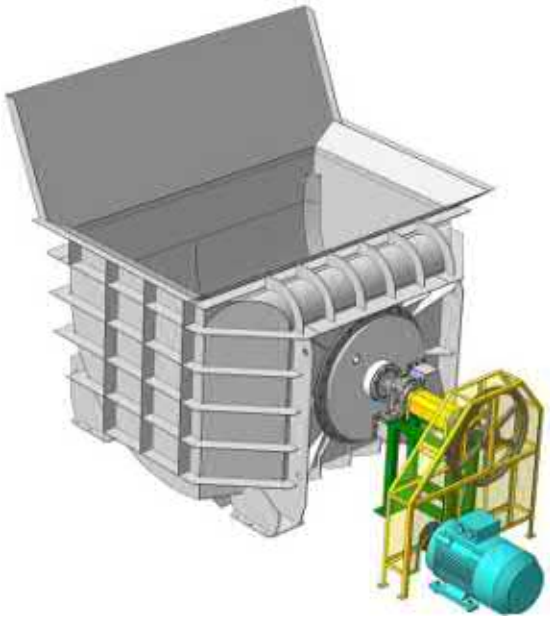
The horizontal broke pulper is designed for the deflaking of wet and dry broke of paper and board machines. The horizontal broke pulper consists of a pulper vat and horizontally arranged deflaking units with drive.

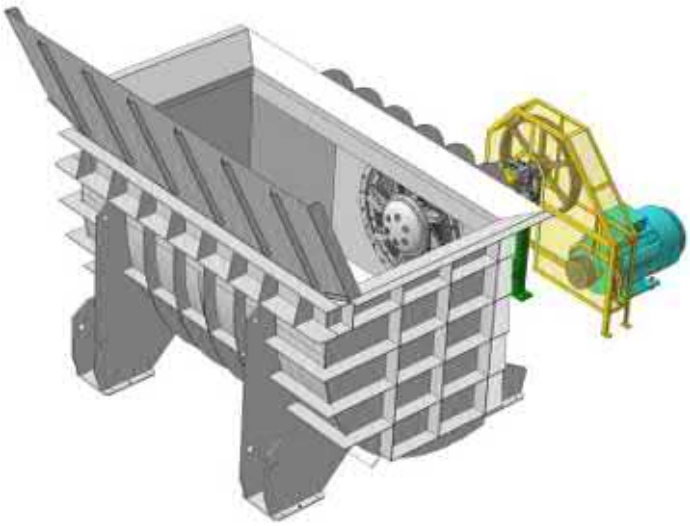
Pulpers are supplied according to the width of the paper and of capacity of the paper machine. The new rounded shape of the pulper vat increases the efficiency of the deflaking process. A deflector is placed above the rotor prevents the splashing pulp. For easy service of the pulper parts it is equipped by a hatch. Additionally the pulper is equipped with a shower spout to guide the path of paper broke.

The main units of the dry broke pulper are:

- Welded pulper vat with a hatch.
- Rotor and screen plate.
- Drain chamber.
- Bearing housing.
- Belt drive.

All parts of the equipment that contacting with the pulp are made of stainless steel.



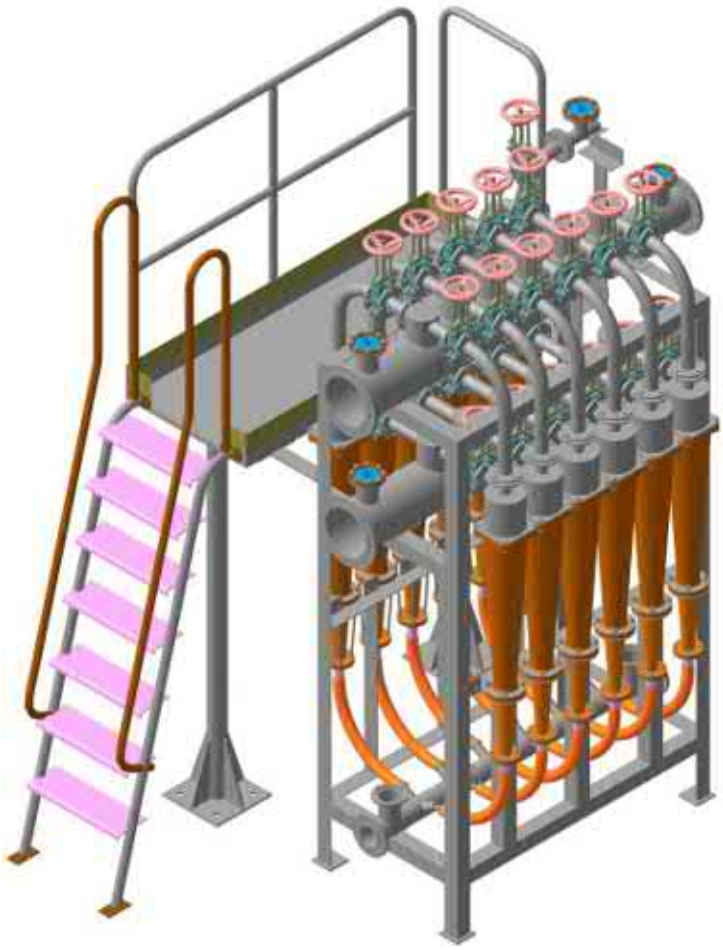


BATTERY OF LOW-DENSITY CONICAL CLEANERS

The low-density conical cleaners are designed for a higly efficient fine separation of specifically coarse ,stiky, pitch,sand and other impurities in waste paper processing line and in PM approach flow system. The battery of LD cleaners consist of three stages of conical cleaners. The number of cones in each stage according to the calculation provides the cleaning of waste paper and pulp consisting of cellulose and wood pulp from sand, bark particles and other mineral and metal impurities up to 3 mm with consistency of 5 to 15 g / l.

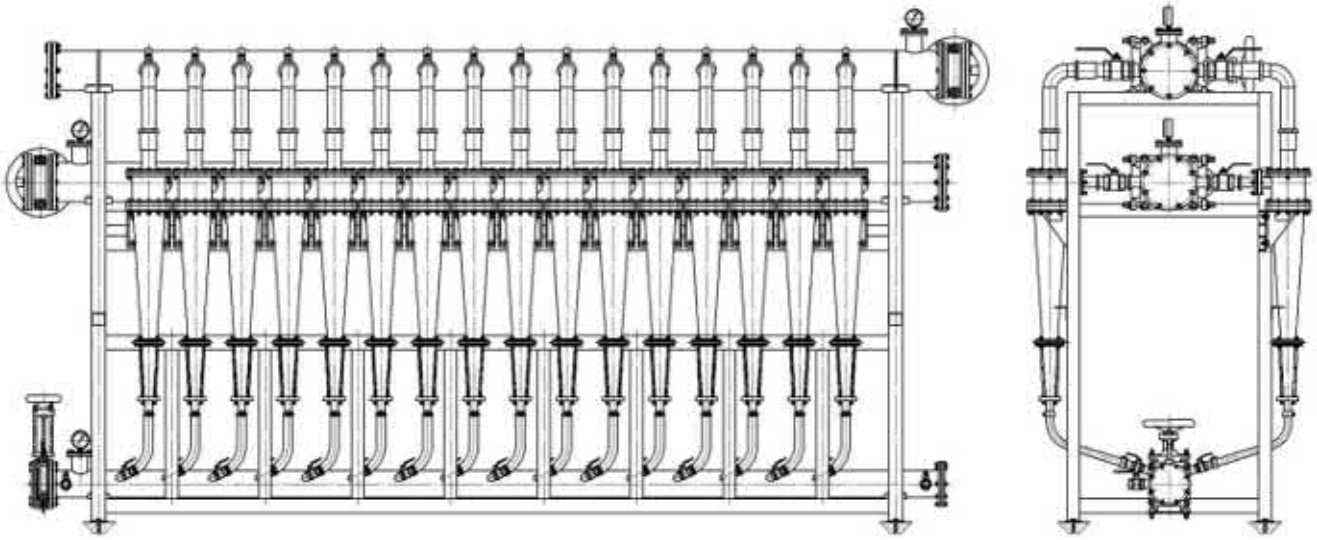
Each stage of the cleaners has: a inlet body-head, working body-cone, separating body, separating pipeline of input, output, reject . After each stage of cleaning a pulp is pumped to the next stage of cleaning (previously diluted to a concentration of 5-10 g / l). The third stage of the cleaners has a sludge pan.

Each cone of the cleaner can be disconnected autonomously by ball valves. The cones of the cleaners are made of wear-resistant polyurethane.



Specifications:

1. Stock productivity, t / day: 25; 50; 80; 120; 300.
2. Cleaning efficiency: 70-80%
3. Stock pressure at the inlet: 2.8-3.2 kg / cm3
4. Screened stock pressure at the outlet: 0.2-0.3 kg / cm3
5. Total losses: 0.1-0.25%
6. Optimal throughput one cone: 400 l / min.



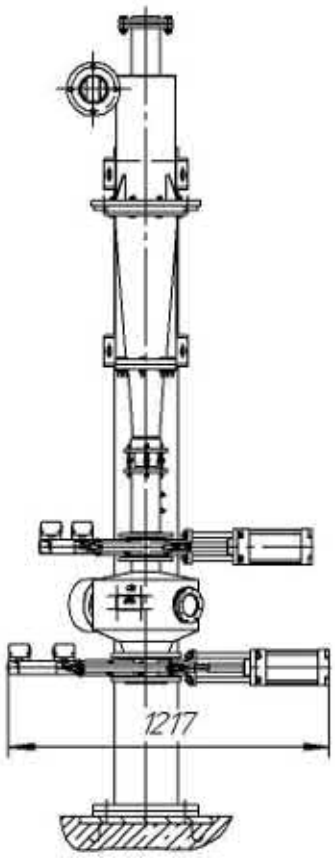
HIGH-DENSITY CLEANERS

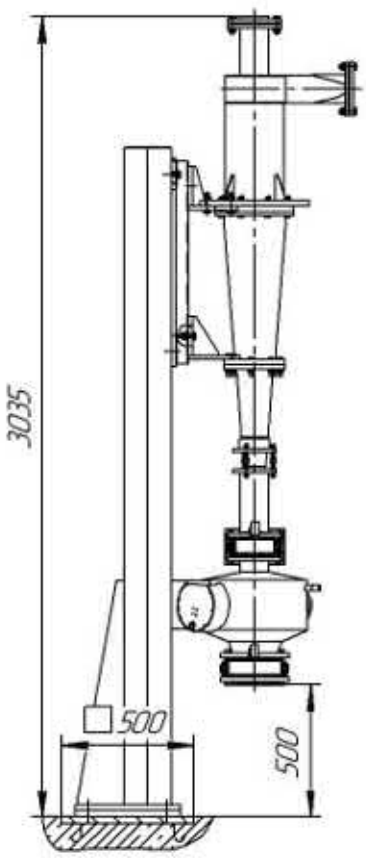
HD cleaner OM-02P is designed for cleaning of the waste paper pulp with a consistency of up to 50 g / l from impurity (paper clips, buttons, glass, rubber, etc.) with a size of its no more than 40 mm and is used in the production of various types of paper and cardboard.

The cleaner OM-02P consists of the following main units and parts: a frame with a sludge pan; a head; a cone, gate valves with pneumatic drive.

All parts of the cleaner, except for gate valves, valves, frames are made of stainless steel.

The cone is made of wear-resistant material - polyurethane, which increases its service life several times compared to the stainless steel cone. The separating cylinder body is made of organic(plexi) glass.





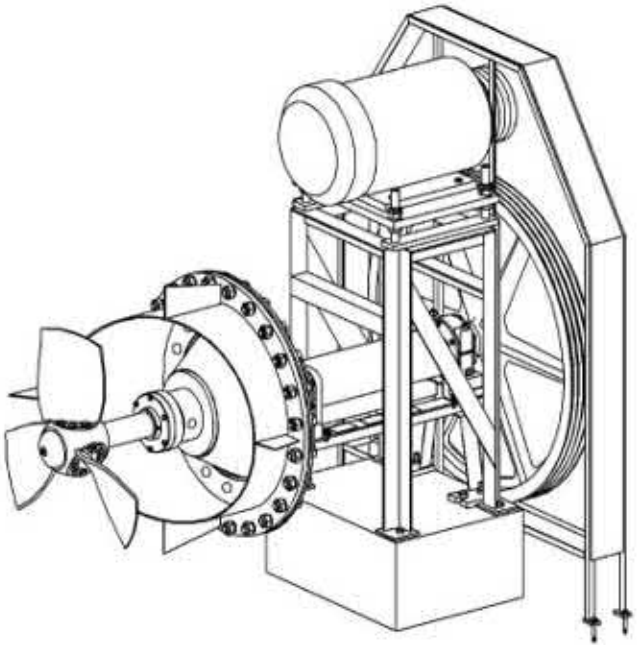
Specifications	OM-02P	OM-03K
Throughput, l / min.	1900	1800
Max.inlet pressure MPa, not more	0,24	0,24
Internal diameter of the cleaner, mm	215	405
Overall dimensions, mm - length - width - height	 500 980 3015	 1400 1300 3350
Cleaner Weight, kg, not more	400	550

AGITATING UNIT FOR PULP CHEST ASSEMBLY

The agitating unit is including a horizontally located impeller which is designed for mixing a fiber suspension with a concentration up to 5%. In addition, the device allows to mix the fillers, adhesives, dyes. The agitator keeps the water suspension in the chest in motion and maintains its uniform concentration. They are used for pulp chest from 60 to 150 m3.

Scope of supply:

- Roll with bearing supports assembled with blades (the roll is made of alloy steel, the bearing units are cast iron, the blades are cast iron bronze or steel). Impeller diameter 750, 950 mm.
- Motor support made of carbon steel
- Driving pulleys equipped by quick-release sleeves and V-belts.
- Casing for protection.
- Stainless steel roll seal assembly.
- Stainless steel tank welding unit.
- Electric motor.



BELT-CHAIN, BELT, PLATE CONVEYORS

Conveyors are made for feeding waste paper into the pulper vat, transporting waste and for other purposes.

Belt conveyors are manufactured in two versions: with belt fastening on a haulage chain and with transmission of motion by drums.

The delivery set includes a frame, a stretching station, a drive station, supports, a conveyor belt.

The overtime clutch is installed in the drive.

Main technical characteristics:

1. Ability to withstand bales up to 750 kg (up to 500 kg per lineal meter).
2. The maximum angle of inclination of the conveyor belt is 30˚.
3. Belt speed up to 12 m / min.
4. The width of the belt is up to 1400 mm., the working width of the belt conveyor is 1300 mm.
5. The working width of the plate conveyor - 1600 mm.
6. Electric motor complete with frequency control system of rotation speed.

The conveyor is designed depending on the technical inquiry.

CYLINDER MOLD MACHINE

The cylinder mold is designed for forming a web layer and removing it from the forming section, preliminary dewatered of the web use the open area of the cylinder and rider roll .After that the web is subsequent transferred to the transporting part (felt).

Description:

The cylinder is immersed in paper pulp with a concentration of 0.5 ... 0.7%. The cylinder of a welded structure consists of a central tube with placed rings with cutouts for firegrate bars. A wire diametr of 2 mm is wound on top of the firegrate bars.

A cylinder mold has an several advantages comparing with a fourdrinier

- the wire surface is used more efficiently in forming process, the index of usage of the wire surface for cylinder mold is 0.6-0.7 compared to 0.4-0.45 for fourdrinier;
- the formation of a layer on a cylinder mold proceeds under a relatively large hydrostatic head (0.1-0.3 m of water column) comparing with on a wire fourdrinier , where the hydrostatic head is at the beginning part of the fourdrinier and is equal to the thickness of the water-fiber layer on the wire;
- the cylinder mold has no shaking mechanism that simplifies the design;
- a cylinder mold takes up a little space, is simple and cheap to manufacture that was a valuable quality and determined its dominant application in the cardboard machines that produce multilayer cardboard.

REFERENCE LIST OF COMPLETED PROJECTS

Over the past few years, Ugleprom has taken part in projects for the modernization of paper and board machines (development of technical documentation, manufacture and supply of equipment to pulp and paper enterprises, installation).

Within the Ugleprom company we have own foundry-machine building plant

We would like to invite you to familiarize yourself with our completed projects and manufactured paper-making equipment for the pulp and paper industry in Ukraine, Russia and Belorussia.

One of the most ambitious projects was implemented in 2018 – 2019 years, the construction of a paper mill and installation of a BP-82 paper machine for the production of tissue in Pavlograd, Dnepropetrovsk region, Ukraine.

PM characteristics:
Productivity - up to 70 tons per day.
Reel width - 2700 mm.
Design speed - 800 m / min.
Video shortcut: https://youtu.be/CrIN_6RhX7Y.

The list of companies of the pulp and paper industry in Ukraine , where equipment made by our company was supplied and installed:

№	Customer	Year	Volume of works
1	PJSC "Malinsky paper mill-Weidmann" Malin member of the international WICOR group (Switzerland)	2018	Automatic felt guides
		2017	Modernization of the suction chamber of the press roll, hood of sizing press , doctor blade holders, sensor for wire control, automatic felt guides
		2016	Modernization of the PM BP-15 : modernization of press and dry part , installation of a new sizing press, replacement of the drying hood, installation of wire-blowing chambers, modernization of the steam-condensate system, installation of threading rope system
		2015	Forming box
2	PJSC "Kiev KBK" Obukhov	2017	Flexibar baths, tables after winder, felt guide rolls
		2015	Reel spools of BM trim width 4200 mm.
		2014	Reel spools of BM trim width 4200 mm.
		2010	Cylinder of Reel up trim width 4200 mm.
3	LLC "Poninkovskaya KBF", Poninki	2018	Rotor and screen plate of pulper, wire guiding rolls incl.bearing housings, wire control sensors
		2017	Felt guiding rolls, fibersorter, rotor of Horizontal pulper, HD cleaner, wire rolls
		2016	KADANT pulper rotor and screen plate
		2015	Fabric guiding rolls for drying part.
		2014	Press roll repair, spare parts for pulper, impeller, screens
		2013	Pulper rotor HP-16

4	OJSC "Kokhavinskaya BF", Gnizdichev	2017	Felt rolls, press rolls, oscillation drive of HP showers
		2015	HP showers, press rolls, brackets of guiding system, pulper screen, sorting screen, press roll repair, HC screen rotor, rotor knives
		2014	Spreaders rolls, bearing housings, press rolls diameter 710 mm width 2100 mm.
	OJSC "Kokhavinskaya BF", Gnizdichev	2013	Replacement of the press part, clamping force up to 90 kN / m overall width 2100 mm (Tissue). Pulper rotor HP-16
		2012	Modernization of Tissue Machine # 2 : installation of conical cleaners, modernization of the headbox, new fourdrinier, elements of the pressed felt guide system overall width 2100 mm.
		2010	Screen of turboseparator, rotor , rolls.
5	OJSC "Lutsk Cardboard and Roof felt Plant" Lutsk	2018	Wire control sensors, screen GRS-200
		2017	CBC sorting screen, pulper screen
		2015	Washing Drum and rotor repair
		2014	Sizing press rolls 4200mm
		2011	Reflector GRS-80, erection GRS-80, screen of fibersorter pulper GRS-200
		2010	Screen for GRS-200 with milled grooves for better grinding before breaking up
6	JSC "Rubezhanskiy Cardboard Plant" Rubizhne	2018	Doctor blade holders upper and lower for drying cylinders
		2017	Paper-carrying roll, brackets, doctor blade holders upper and lower for drying cylinders
		2014	Heating cylinder for corrugating production line 2100 mm, P = 10 BAR
		2013	Heating cylinder, pulling and leveling rolls for corrugating production lines
		2010	Modernization of the wire frame, screen for pulper and turbo separators of increased wear resistance, screen for HP10 pulper, holes diameter 12 mm, screen GRS -200.
7	LLC "Zhytomyr Cardboard Plant" Zhitomir	2018	Separator screen
		2017	Rolls and rotors of pulper , reel spool, wire guiding rolls
		2016	Repair of press rolls, reel drum, bearing unit for GRV-05
		2015	Units for the modernization of the wire and press parts of the PM 2520 mm. Pulleys, chest roll, wire rolls. Felt rolls and wire roll for paper machine overall width 2520mm. “Diablo” rotor and screen, glue applicator roll
		2013	Screen GRS-200, rotor, glue applicator roll and leveling roll for glue machine for corrugated board production line

8	LLC "First Donetsk Factory", Donetsk	2014	Wire/felt drive rollls 2100mm.
		2013	Impeller fibersorter
		2009	Fibersorter screen and rotor.
9	LLC "Amethyst", Chernihiv	2015	Pulper GRV-02: bearing unit, impeller, chamber, screen.
		2013	Modernization of the pulper GRV-03: installation of a flat screen
10	Papir-Mal LLC Malin	2019	Steam and condensate heads repair, press roll repair
		2018	Repair of Steam and condensate heads,VSV and pulper screen
		2017	Screens of washing separator VSV and pulper, edge control sensor, press roll repair, steam and condensate head repair
		2013	HD cleaner OM-02
		2012	HP showers with electromechanical drive and control system
		2007	Reel spools, heat recovery units, hood drying part
11	PJSC "Zhidachevsky CBK", Zhidachev	2012	Wire for vacuum forming machine "Hartmann"
		2009	Defibrers modernization; second wire; spare parts for a pulp mill, felt rolls, disintegrator; bandages for debarking drums, LD cleaners.
12	LLC "Dnepropetrovsk BF", Dnepropetrovsk	2012	Fan wheel Æ1600mm, repair of suction roll, calender roll repair.
		2007	Lifting rolls system of PM width 3200mm, modernized impeller DGV-05m.
13	PJSC "Izmail Pulp and Paper Mill", Izmail	2018	Wire control sensors
		2012	Steam and condensate heads (10 pcs.), PAPSKRIN screens
		2008	Screen GRV-U-05M, modernization of the pulper GRV-05, repair of the press roll
14	ООО «АСС-Коростышевская БФ», г. Коростышев	2018	Conveyor belt with chain
		2016	Cleaner cones, agitator propeller, waste paper feed conveyor and waste conveyor, calender roll repair.
15	LLC "Donetsk-Vtorma" Donetsk	2012	Screens for pulper GRS, automatic wire corrector with wire control sensor
		2011	Automatic wire-felt guiding system , impulse device, screens
16	PJSC "Podolsky Cement" Kamyanets-Podilsky	2015	Rotary gate rotor, tower lattices, plate chains, fork clamp, springs, buckets, suspensions, supports
17	PJSC "Rogan Cardboard Factory", Rogan	2017	Head box, replacement of the wire fourdrinier overall width 2100 mm, HD and LD cleaners, screen and rotor pulper GRS-80
18	LLC "Zmievskaya paper mill" Zmiev	2018	Washing Separator screens VSV
		2017	Vat 180 m3, stirring device, VSV separator screen

Companies of the pulp and paper industry in Russia, to which paper-making equipment made by our company was supplied and installed:

№	Customer	Year	Volume of works
1	JSC "Kondopoga" Republic of Karelia, Kondopoga	2017	Barking drum units, sections: open, blank, bandages, support rollers.
		2016	Barking drum units, sections: open, blank, bandages, support rollers.
		2015	Debarking beams, elements of barking drum (wedges, shells), nozzle disc, various types of support rollers of conveyors.
		2014	Complete set for defibrators (gear shaft, gear wheels, rollers). Vibrating sorting; shock-absorbing rollers; sections of the peeling drum
		2013	Debarking drum beams, cleaning conveyor rollers
2	LLC "Alatyrskaya BF" Alatyr	2017	GRV-05Pulper, HP showers
		2014	Units of the modernized pulper GRV-05
		2013	Felt conditioning elements of the first press
		2010	Modernization of PM (width 3200mm) "Fampa" with complete replacement of a roll-out wire fourdrinier with a console wire frame, installation of an upper wire frame for a cover layer and two closed-type headboxes with a control system, including installation and commissioning.
3	JSC «Narodnoye predpriyatiye Naberezhnochelninskiy kartonno-bumazhnyy kombinat im. S.P.Titova»	2014	Units of the modernized pulper GrGm-40, tubular shaft PM 4200mm
		2013	Starch glue hopper. Spreader roll 4200 mm.
4	LLC "Sukhonsky Pulp and Paper Mill" Sokol	2018	Screens PSN, VSV
		2017	Bearing housings of the press roll, Screens for pulper GRS-200, PSN, VSV, hood elements, cover of the first floor of the drying section
		2015	Feeding conveyor (2 sets) 500 t / day.
		2012	Waste paper feeding conveyor, reject conveyor, mixing device, spare parts for BM, pulper set 500 t / day.
		2011	Modernization of the press section of PM # 2 (2520) with replacement of presses with new ones: a combined three-roll press and a Jambo press (speed before modernization 320m / min, after modernization - 560m / min) Modernization of the bottom and top fourdrinier PM # 2width 2520 mm.

4	LLC "Sukhonsky Pulp and Paper Mill" Sokol	2010	Beams and racks, forming box, hydrofoil box, “wet” vacufoil box, chest roll bearing housings, chest roll, chest roll shower, rubberized roll supports, transmission shaft, transmission roll lifting mechanism, transmission roll drive, wire stretcher, combined wire guiding system, wire control sensor, starch feed spray, headbox parts.
		2009	Modernization of PM-2 (2520) with the installation of a closed-type drying hood, modernization of the headbox, replacement of steam and condensate heads, drives.
		2008	Modernization of PM-1 (trim width 3100) with modernization of the drying section, installation of a closed hood
5	JSC "Polygraphkarton" Balakhna	2018	Automatic wire guiding system incl.edge sensors
		2014	Modernization of Pulper-05 assembly, impellers, bearing assembly, gearbox.
		2011	Steam and condensate heads set for PM-2. Modernization of the press section. Jambo press 2750 mm, secondary pulper GRS-200.
		2010	Modernization of PM-2 with installation of a hood for the drying section (overall width 2750mm).
6	OJSC "Kamenskaya PM" Kuvshinovo	2016	Modernization pulper GRV-05, with increased productivity higher than 170 t / day, manufacturing of wire-guiding rollers for the machine 4500mm. Screen plate for a pulper with a capacity of 1000 tons.
		2014	Steam and condensate heads type GPV
		2010	Screen plate for pulper GRV-05M.
		2008	Modernization of pulper GRV-05M with changing of the drive unit to a V-belt drive.
7	IP Mukhin A.A. Astrakhan	2014	Creping doctor blade holder for tissue with oscillation
8	SoyuzProm LLC Engineering ", Belgorod	2014	High pressure showerswith mechanical oscillation
		2011	Stainless steel cone for the HC cleaner OM-02P, automatic felt guiding system.
9	OJSC "Volga" Balakhna	2015	Body of Vacuum pump NESh-9000, Body of pump vacuum pump N-115
		2013	Body of Vacuum pump casing NESh-9000
10	JSC "Paper mill" Kommunar "	2019	Impeller GRV-05
		2017	Screen plate and Impeller GRV-05
		2013	Guiding rolls /felt carrying rolls PM 2520 mm, modernization of the pulper GRVm-16.

11	LLC "L-Pak", Lipetsk	2019	Reel spools
		2017	Doctor blade holders
		2016	Tubular rolls of the drying part for PM 2520 mm. Guiding rolls for felts and felts stretcher system. Screens for fibersorters .
		2015	Rolls of dry part with bearing housings asembley.
		2013	Modernization of the wire part of the PM 2520 mm with replacement of dewatering elements and wire guiding rolls, foil boxes and vacufoil boxes.
12	CJSC "Prolletariy" Surazh	2013	Cylinders mold machine width 1250, 2520 mm
		2012	Reel spools, wire stretcher and wire guiding systems
		2010	Modernization of the vat of cylinder mold machine .
13	LLC "Voronezh papermaker", Voronezh	2019	Wire roll
		2015	HC cleaner OM-02, cones, cylinders, springs, branch pipes. GDV-03m camera, GRVm-12 vat, GRV-02 rotor.
		2013	The hood of the drying section . LD battery cleaner set.
14	CJSC "MPK" KRZ " Ryazan	2018	HP shower, steam and condensate heads
		2017	HP shower, steam and condensate heads, doctor blade holders of drying cylinder
		2012	Modernization of pulper GDV-03
		2011	Modernization of GRV-03, installation of equipment for the upper felt of the first press; Modification units for the pulper GRV-05: an impeller complete with a backing disk and plates, a receiving chamber complete with a screen, a bearing unit for a GRV-U-05M drive, installation of a slides, a MUVP 1-120 coupling, a GRV-U-05M reject system. , beams and bearing racks, wire drive roll, wire spreader roll, slotted felt washer, doctor blade holder of felt roll, high pressure shower, automatic felt stratcher system , walkways, wire control sensor, manual felt guiding system .
		2010	Modernization of PM-3 with the installation of a top fourdrinier, a headbox and a control system.
15	LLC "KBK" Tuymazy	2018	Steam and condensate heads, fourdrinier L = 17 m., 3100 mm assembley
		2017	Steam and condensate heads
		2011	Modernization of the pulper (GDV-03) with the installation of a new conveyor for supplying waste paper w. 2100 mm.
		2008	Drying part hood.

16	LLC "Paper mill" Chaltyr	2011	Impeller complete with a supporting disk, blades and plates, screen GDV - 02M.
17	CJSC "Soft roof" Samara	2011	Automatic wire guiding system incl. edge sensor.
18	OJSC "Polotnyano-Zavodskaya Paper Factory", Kaluga region	2019	Pulper-05 impeller, wire edge control sensors
		2018	Wet-end tail cutter and treading trim system , paper-carrying rolls
		2017	Agitating device, paper-carrying roll, fordrinier parts , conveyor belt with chain
		2016	Units for the modernization of PM-1: combined wire guiding system, hydrofoils, wet suction boxes, mixer for couch roll.
		2015	HP showers with drive, screens for GRV-3124, headbox lip, wire control sensor, HD cleaner OM-02P.
		2011	Screen, HD cleaner collector, shell of perforated roll Ø155 mm.
		2008	Modernization of PM-1, 2 2100mm and 2520mm with replacement of fourdrinier, press section, rolls, hood, drying section, drive, threading rope , steam and condensate heads.
19	CJSC "Yaroslavskaya paper" Yaroslavl	2014	Suction press roll PM 2520
		2011	The hydrofoil box, vacufoil box “wet” type.Couch-roll PM 2500,fordrinier
20	JSC "Velgiyskaya BF"	2015	Tubular rolls of the drying part of the PM 2520mm Rolls of stretching and guiding systems PM 2520 mm.
21	OJSC "Mayak", Penza	2018	Fourdrinier L = 15.5 m., 2700 mm with a complete set, press section with combipress and Jambo press, stands and frame of the drying section, hood, elements of the drying section.
		2017	Steam condensate system
22	OJSC "Kondrovskaya paper mill", Kondrovo	2017	Fourdrinier parts
23	OJSC SKBZ Albertin, Slonim	2018	Cylinder Mould Ø1250 mm, extractor roll Ø710 mm, automatic wire guide with edge control sensor
		2017	Cylinder Mould Ø1250 mm, extractor roll Ø710 mm,
24	LLC "VtormaCleaning NN", N. Novgorod	2018	Elements of the hood, cover of the first floor of the drying section