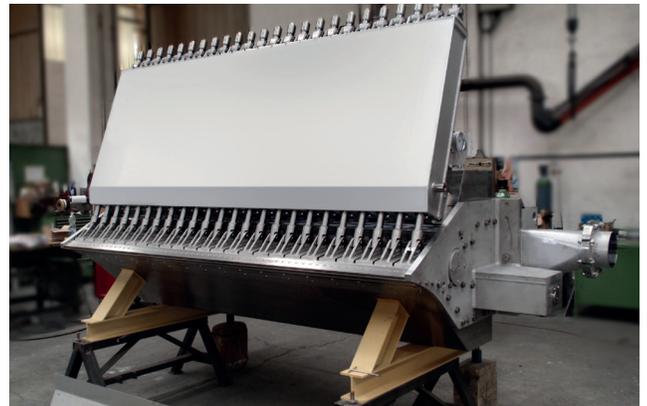
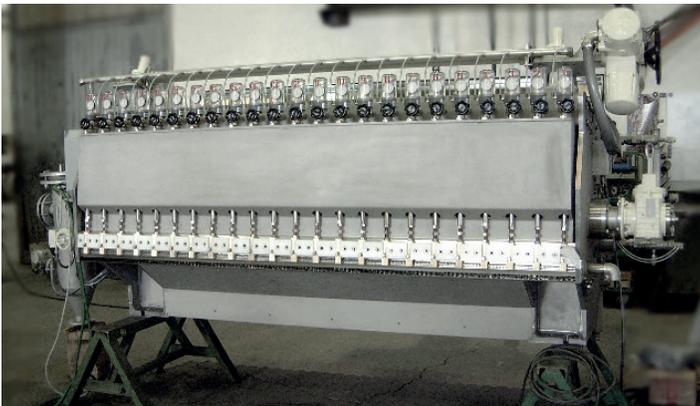
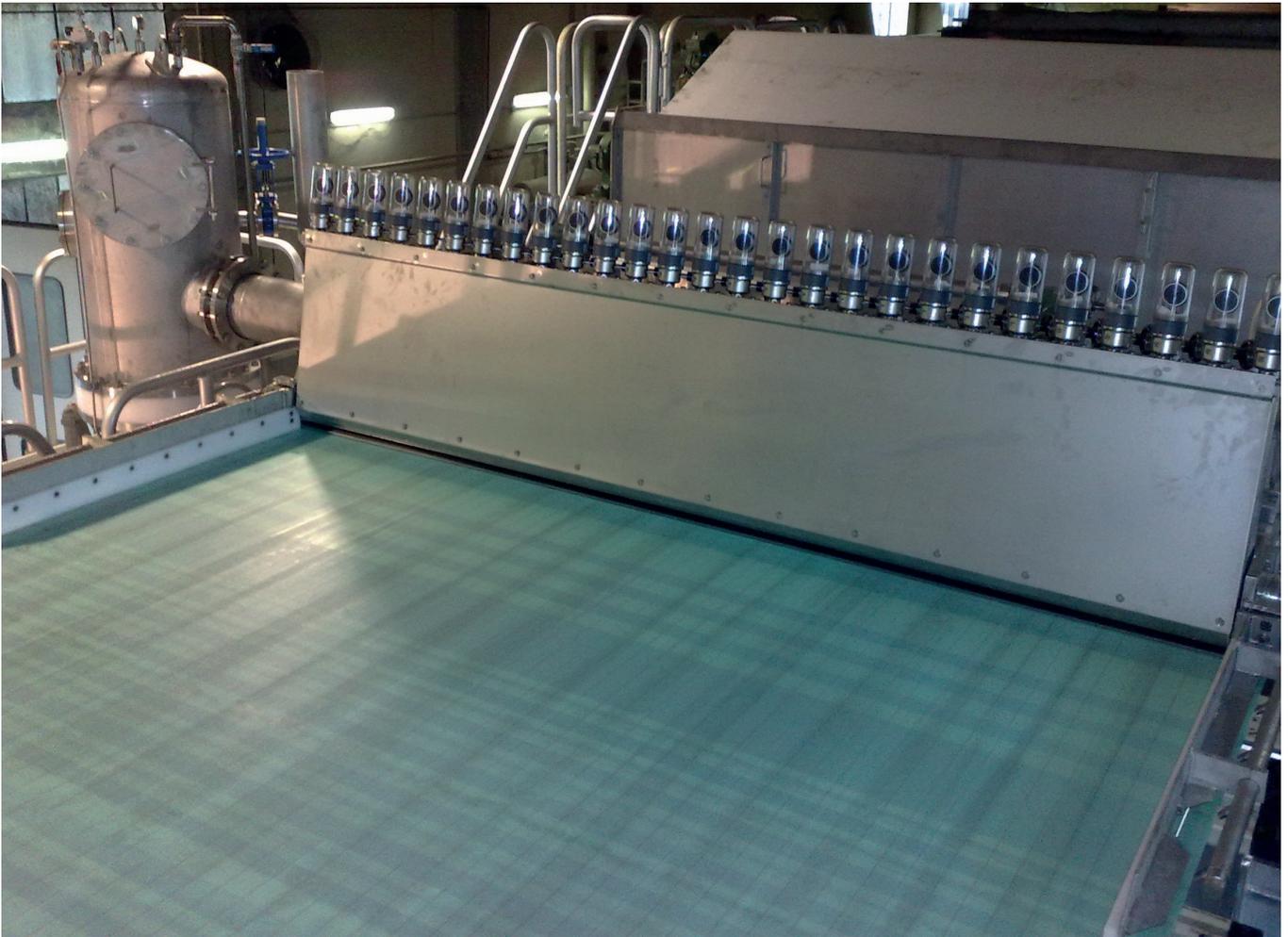
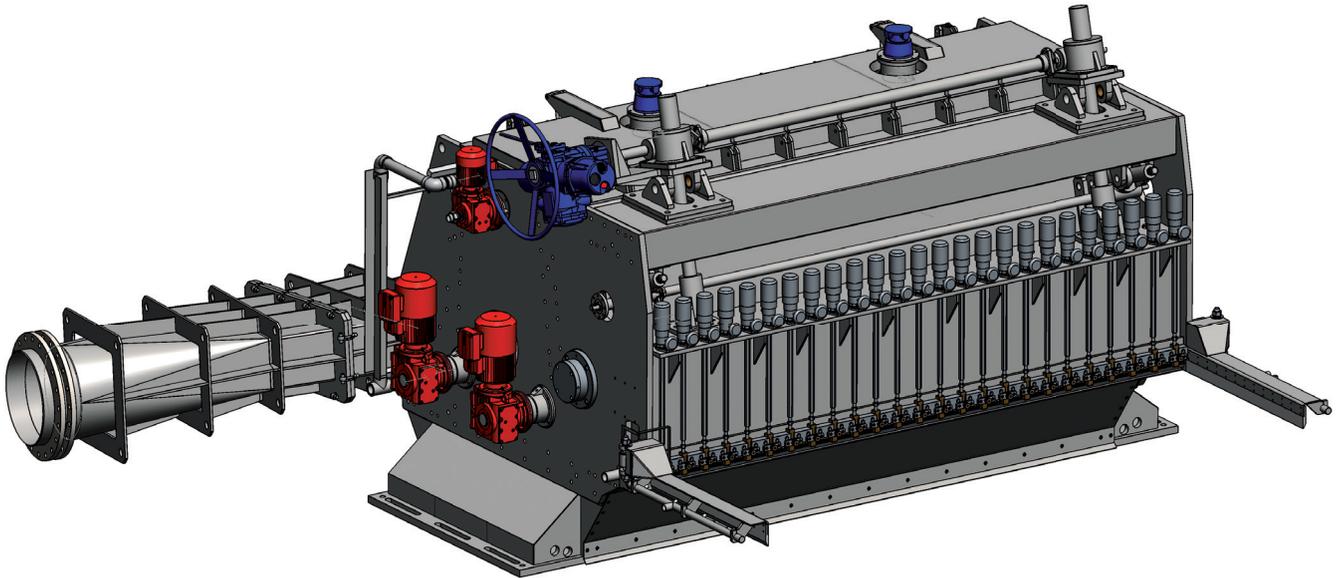


Machinery and Plants for  
**Paper Industry**  
**Water Treatment Systems**



**Head Boxes**

# Headbox Pressurized

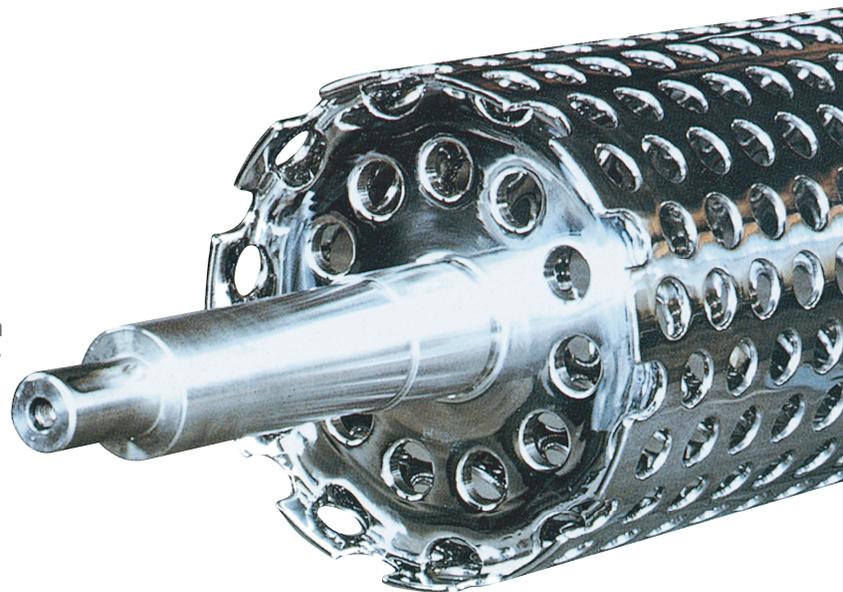


The pressurized headbox is the most flexible solution that allows to operate in a wide range of consistency and speed for fourdrinier applications. A conical header distributes uniformly the pulp to a two stages plastic step diffuser. After the step diffuser the pulp goes into an expansion chamber that is pressurized. In the expansion chamber two perforated and rotating rolls guarantee an optimal effect of fiber mixing and defloculation. After the rolls the pulp is accelerated in the nozzle until the exit from the headbox where the special geometry of the bottom lip plus the fine adjustment of the top lip allow to

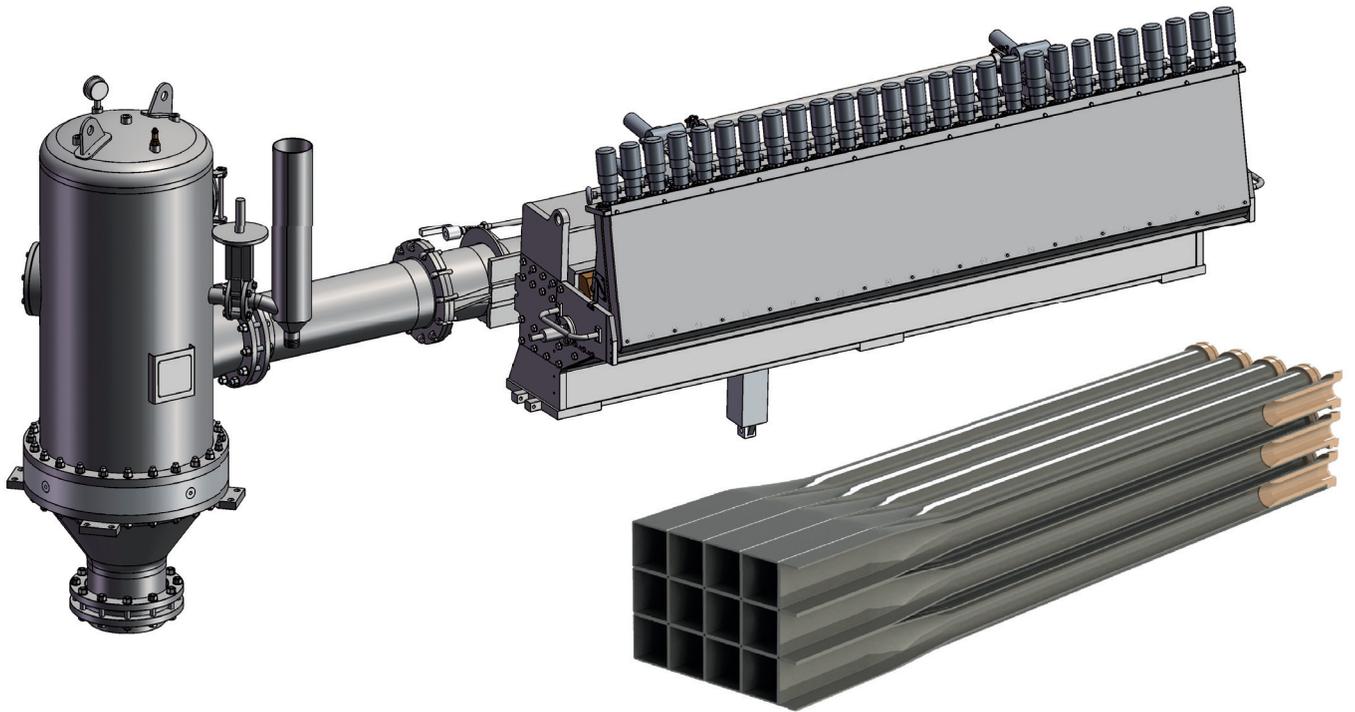
obtain a very good basis weight profile. All the surfaces in contact with the stock are mirror polished with finishing grade of  $0,2 \mu\text{m}$ . The headbox can be equipped with optional device as per foam extraction and also with a vacuum/pressure system in case of very low speed applications. Inside the pressurized chamber, not in contact with the pulp, is positioned a crossing rotating shower for cleaning purpose. As per option two side decks prevent the overflow of the pulp from the wire can be supply.

## Rectifier Rolls

We have been manufacturers of rectifier rolls for many years and are supplying the most important papermachine builders in Italy and abroad. Our high qualification and specialization, and the very large experience in this field with the most modern available equipment, allow us to realize rectifier rolls which can satisfy any particular requirement of the customers. Finishing is particularly accurate. The perfectly smooth and specular surfaces can be obtained by mechanically or electropolishing treatment.



# Headbox Hydraulic



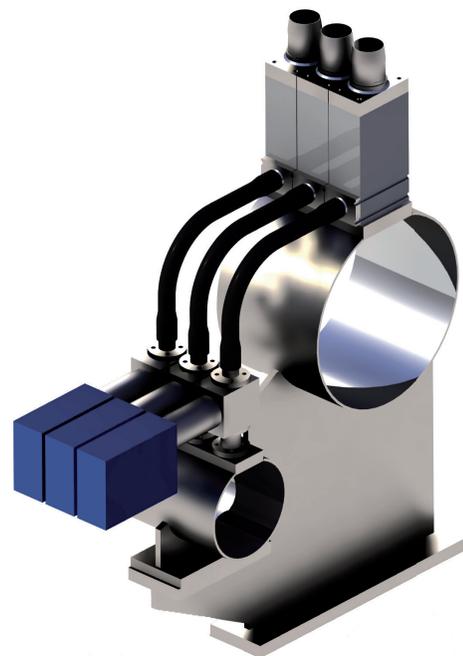
The hydraulic headbox is required mainly for medium and high speed machines for fourdrinier and former applications. The consistency and speed range is reduced if compared with a pressurized headbox, but the quality formation is increased. A conical header distributes uniformly the pulp to a three stages step diffuser that is the most technological component because induces to the pulp the micro-turbulences necessary for the fiber mixing and the defloculation effect. Depending of paper grade and quality requirements we can offer a plastic three stage step diffuser (the third step has a circular shape) or as per

alternative a stainless steel tube bank were the third step has a rectangular shape. After the step diffuser the pulp is accelerated in the nozzle until the exit from the headbox were the special geometry of the bottom lip plus the fine adjustment of the top lip allow to obtain a very good basis weight profile. In order to increase the fiber mixing our headboxes can be equipped with optional blades that are installed in the nozzle. The pressure pulsations induced by pumps and screens are reduced by the pulsation dampener tank that is external to the headbox and it is complete of a plastic two stages step diffuser.

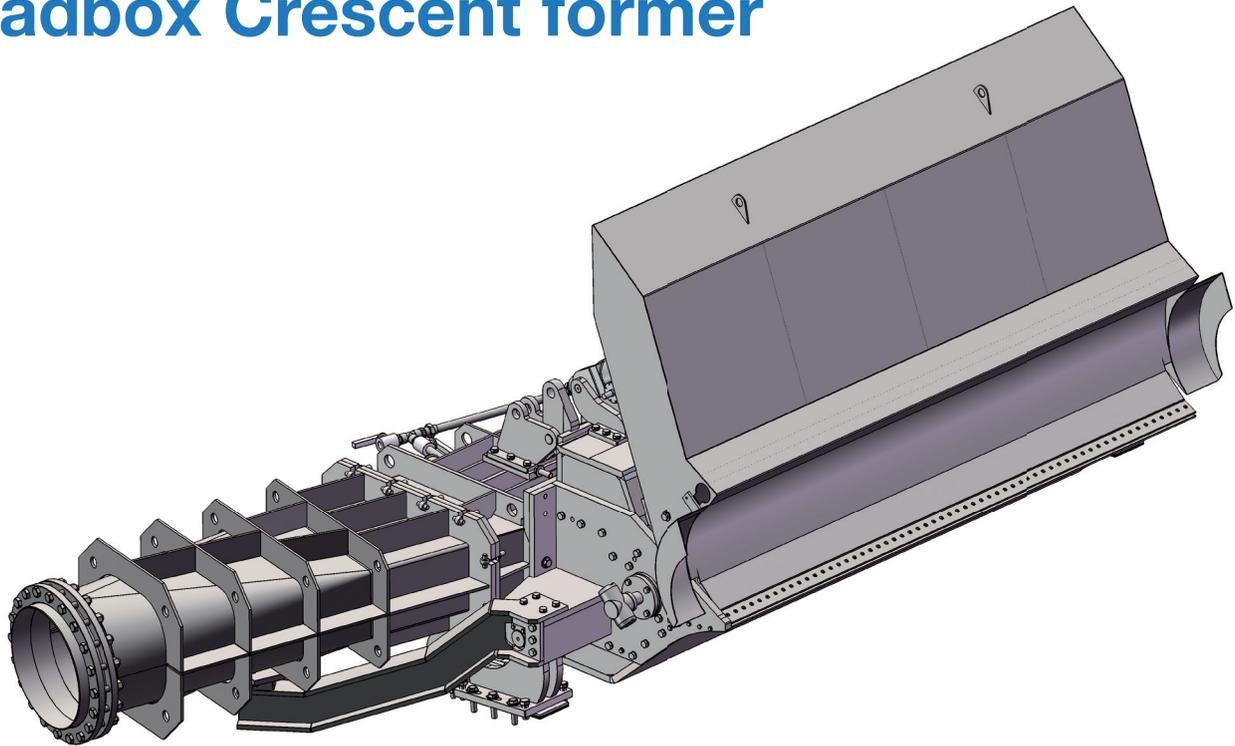
## Dilution

For the better profile control in the hydraulic headboxes we can provide the dilution solution. In this case we supply two conical headers (one for the dilution water) that are separate by the headbox. The water is dosed by the dilution valve and is injected in a plastic element were is mixed with the pulp.

Each mixing chamber is connected to the headbox with a flexible hose. The pulp goes into an expansion chamber and then to the three stages step diffuser inlet. Our dilution system can be interfaced with a wide choice of QCS brands. As option we can provide turn-key solution with software and hardware.



# Headbox Crescent former



The crescent former hydraulic headbox is used on tissue machines up to 2000 m/min production speed. All the structures are extremely robust so that the deflections are limited even at high pressures. A conical header distributes uniformly the pulp to a three stages plastic step diffuser that is the most technological component because induces to the pulp the micro-turbulences necessary for the fiber mixing and the deflocculation effect.

After the step diffuser the pulp is accelerated in the nozzle until the exit from the headbox where the special geometry of the bottom lip plus the fine adjustment of the top lip allow to obtain a very good basis

weight profile. In order to increase the fiber mixing our headboxes can be equipped with optional blades that are installed in the nozzle. In order to correct the jet angle and the impingement point the headbox is positioned on two side pivoting supports complete of screw-jacks.

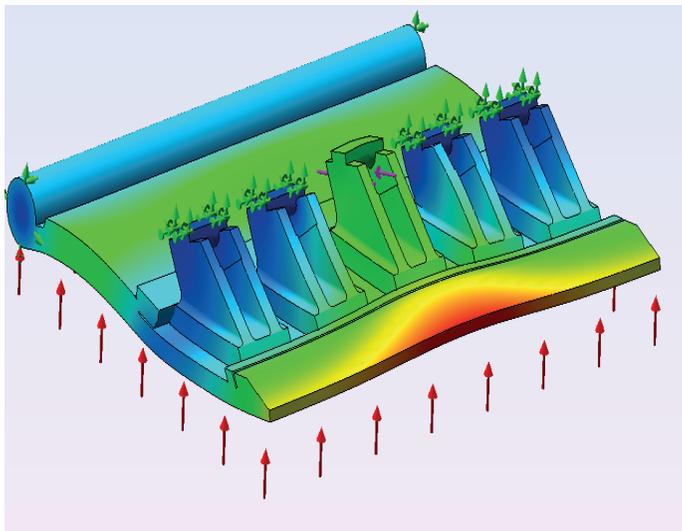
All the surfaces in contact with the stock are mirror polished with finishing grade of  $0,2 \mu\text{m}$ . A complete set of splash guards protect the headbox against the dirty accumulation from the fog. Crescent former hydraulic headboxes can also be made in the double layer configuration.



# Verification

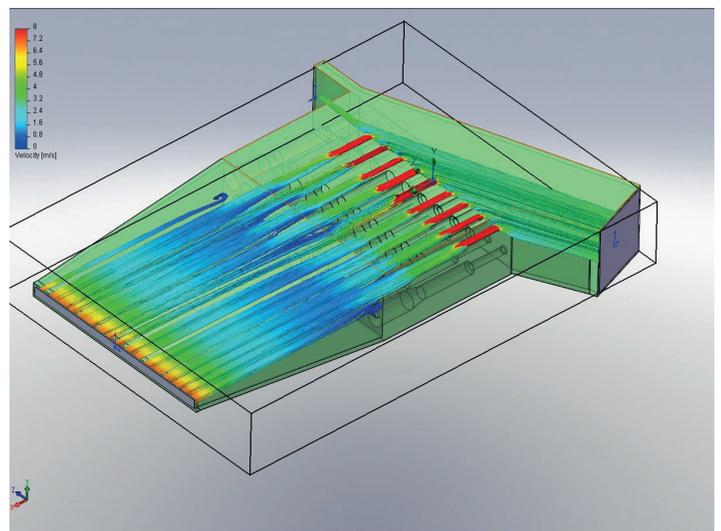
## FEM analysis

One of the main target that we aim when we design each headbox is to limit the deflections under the effect of the inside pressure. This is very important in order to achieve a good profile and also to reduce the necessity to modify the top lip adjustment during the speed changes. For this reason all our headboxes are designed using the 3D cad and the most important structured are checked by using a FEM software.



## Flow simulation

Another target that we aim when we design each headbox is to check the flow speed on each part of it. Extremely important is also to verify the entity of the micro-turbulence that is responsible of the good fiber mixing and defloculation effect. For this reason we use a flow simulation software that allows us to control pressure, speeds and trajectories of the flow.



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