Headbox Process and Condition Test and Headbox Service

Servicing of the headbox has become more and more important due to needs for improved machine runnability and paper and board quality. The service concerns the mechanical condition, automation and process aspects. All types of headboxes are serviced by Valmet's headbox service specialists.

Benefits

- Improved dry weight profiles
- Elimination of streakiness problems and distorted impingement
- Decreased need for slice opening adjustments
- Improved slice control
- Improved paper quality and runnability of the whole production line

Headbox process and condition test

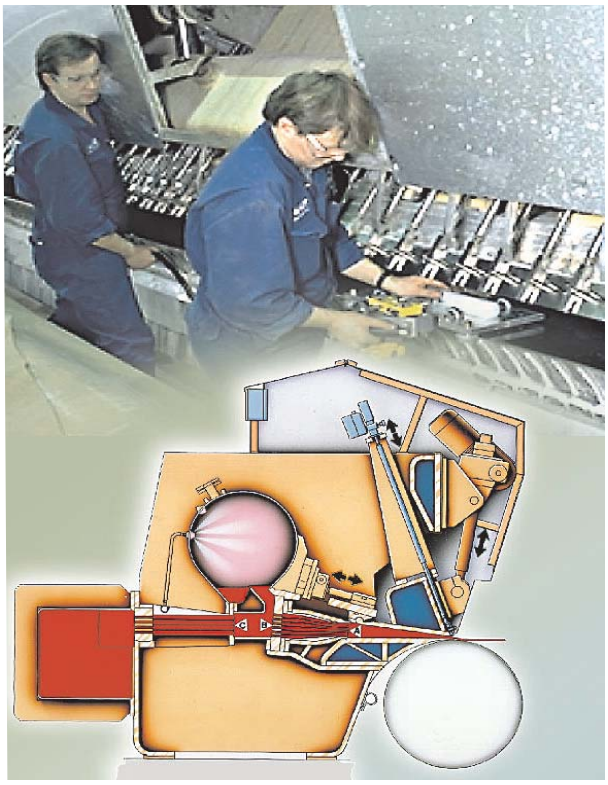
Many headbox problems appear slowly without noticing. The operators learn to live with them. However, the weaknesses they cause decrease the machine efficiency and paper quality. Without knowing the real causes for the problems, corrective actions are often adjustments which cause more problems. Regular specialist visits and remote connection from Valmet to the customer QCS are a base for continuous cooperation.

A headbox process and condition test includes measurements, inspections and interviews carried out in a shutdown and during production run. The testing is carried out in a separate shutdown or in the same shutdown with the service work. Typically it takes from 6 to 12 hours depending on the type and width of the headbox. A small service work could be done in a one day shutdown, but larger service works are usually done in an annual maintenance shutdown. The testing should be carried out at 1-2 year intervals depending on machine speed and paper grade.

Accurate measurements and inspections identify the faults and deviations and ensure the high quality service work.

A headbox process and condition test includes the following items:

- Paper samples analysis in laboratory
- Process evaluation
- Inspection of flow surfaces and leakage
- Measurements of geometrical deviations in the slice area
- Testing of controls and movements
- Inspection of alignments



In addition, trouble-shooting and machine analyses can utilize the following studies:

- Jet velocity profile measurement
- Pulsation and vibration measurements
- Process analysis of CD profile control

Headbox service actions

- Headbox realignments
- Reconditioning of top slice movement mechanism
- Reconditioning of apron on-site or in workshop
- Reconditioning of rectifier rolls
- Replacement of slice lip
- Reconditioning and tuning of slice control system
- Cleaning and MX06 treatment of flow surfaces
- Replacement of headbox seals

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Headbox performance evaluation

A quick evaluation of the headbox performance can be made by expressing the 2-sigma CD profile spread as a percentage out of the process average weight, e.g. 2-sigma of 0.6 g/m² divided by average basis weight of 80 g/m² gives 0.75%, which is acceptable.

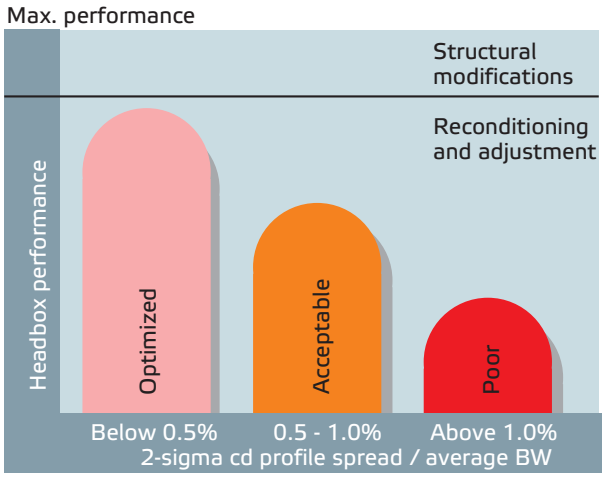

Figure 1.
Headbox performance justified by CD profile spread

Updating of headboxes

Old headboxes can be updated with the solutions of the latest technology and design. This improves the performance and the maintenance.

Typical measures are:

- Updating of slice lip design and its loading mechanism
- Updating of existing apron with a more rigid apron construction
- Replacing of manual slice control system with automatic one
- Replacing of mechanical slice position indicators with electrical ones

Upgrading of a slice controlled headbox by a dilution control one is an example of a major modernization Valmet can supply.

Case: apron edge grinding

Deformations in the flow surface, rounding of the edge and dents cause problems and difficulties in profile adjustment. Dents and scratches are usually created in the apron and its tip during fabric failures and washing shutdowns. At a fast running machine even a dent of some hundredths of a millimeter can cause a profile deviation that can not be compensated by bending the slice lip. With a grinding method developed by Valmet, the front edge of apron can be reconditioned back to the original accuracy of shape.

Figures below show a dry weight profile from a gap former. Grinding the apron edge removed the peakyness and improved the profile uniformity and control. The 2-sigma spread value improved from 0.7 g/m² (1.7%) to 0.2 g/m² (0.49%).

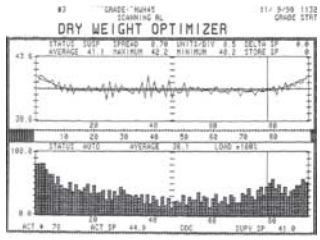

Figure 2.
Dry weight profile before grinding

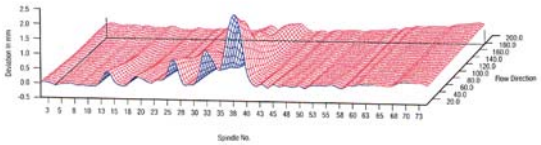

Figure 3.
A damaged headbox apron

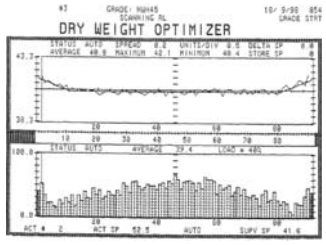

Figure 4.
Dry weight profile after grinding

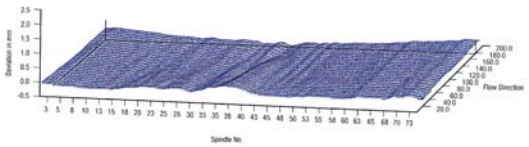

Figure 5.
A headbox apron after on-site reconditioning

For more information, contact your local Valmet office. www.valmet.com
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