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Energy Savings – Part 3 – Needle Showers

High pressure Needle Jet Showers are a proven low cost method of maintaining Paper Machine clothing in top operating condition.

Recent challenges for the Needle Jet Showers are the quality of shower water and the complexity of modern clothing. Technology has moved the papermaker away from using Fresh Water to keep a simple single layer fabric clean. Developments in Wet Felts also provide new clothing maintenance challenges.

Keeping the Nozzles open

Suspended solids, usually in the form of fines, are the biggest culprit. Screening out the fines and then using brush showers for any debris that gets by are predominant methods used today to keep the showers open. HP Needle showers used to clean Wet Felts are mostly on Fresh Water.

Non fibrous water borne solids such as sand can be handled in a shower that has a spray directed downward by adding an extension to the Needle Jet Shower. The flow rate in most shower pipes is slow enough to allow sand particles to drop out and an extension on the Needle Jet Nozzle prevent the particle from getting to the orifice. Send use an [e-mail](#) for a picture of this nozzle.

Water scale usually in the form of Calcium Carbonate will form a hard scale in most papermaking conditions. Prevention is the best method. Chemicals are available that prevent the formation of the hard scale. Please call or [e-mail](#) our factory to discuss your specific application.

Specifics for Needle Showers

The list below shows typical Paper Machine Application and associated typical nozzle recommendations. We recommend tempering these typical recommendations with actual conditions specific to your Paper Machine requirements and your specific experience.

Water Pressure

Forming Fabric: 200 to 300 psi

Wet Felts: 250 psi to 400 psi

These are conservative suggestions. The rapid development of new clothing requires that the clothing supplier be consulted on maximum pressures.

Distance between Shower Nozzle and Clothing

Forming Fabric: 4 to 6 inches

Wet Felts: 4 to 6 inches

The energy the Jet will deliver to the clothing diminishes as the distance between the nozzle and the clothing increases.

Orifice Size

Forming Fabric: 0.040"

Wet Felts: 0.040"

Some mills are using orifice sizes of 0.030" and 0.035". Smaller orifice size nozzles may well be the direction we are all headed – however for now most mills can be well served by employing the standard 0.040".

Inside or Outside

Forming Fabric: Inside for Single Layer fabrics. For all other fabrics the cleaning should be done on the sheet side.

Wet Felts: Sheet side.

Angle and location

Single Layer Forming Fabric: 90 degrees to fabric, just before a sheet side Doctored roll so any debris not completely removed from the fabric will get a chance to transfer to the roll and be Doctored off the roll and not redeposited on fabric.

Multiple Layer Fabrics: About 90 degrees to fabric just at the incoming nip of fabric and Sheet side roll surface. Roll should be Doctored to remove any dislodged debris.

Wet Felts: The most complex set of showering arrangement because of Felt design and grades produced. Please see the articles in the Library section of our website or consult with your Clothing Supplier as the subject is too broad to do justice to it in a Newsletter format.

Good luck, the jobs you save might be yours and mine!