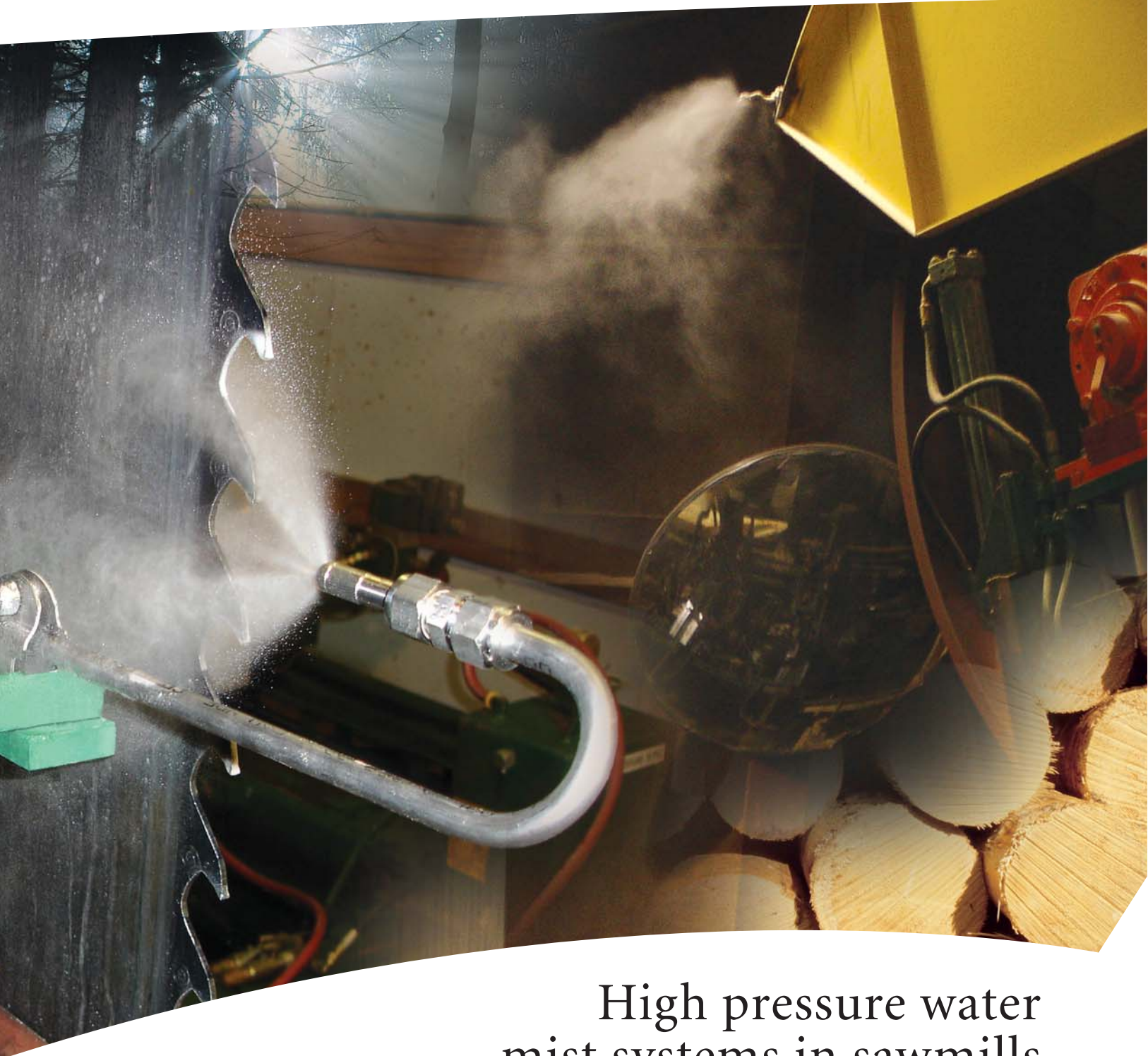


Danfoss



High pressure water mist systems in sawmills

One system does both saw blade lubrication and dust suppression

DANFOSS HIGH-PRESSURE
WATER SOLUTIONS



Facts about high pressure water mist systems in sawmills:

1. Reduces pitch built up on saw blades
2. Water lubrication cools the saw and therefore there is less cracking
3. Reduces dust in the production area significantly
4. Production area is cooler in the summer and less dry in the winter

Benefits:

1. Easier/less time consuming for the filers to sharpen and clean the blades. A clean blade reduces heat, increases feed speed and helps reduce saw kerf
2. Longer saw life
3. Less friction and less heat on saw guide
4. Better work environment (less saw dust drifting to other areas in the plant)

Picture of a saw before and after water mist system

- Before – resin on blades



- After – clean blades



A very cost effective lubricant:

- Water is inexpensive compared to oil lubricants
- Water is always available, where as with oil lubricants there is a risk of running out of lubrication oil
- Today, some sawmills have a haze throughout the mill due to lubrication oil, which would be eliminated by water lubrication

Water mist as dust binding:

- By spraying a very small amount of water at high pressure, the added moisture in the air is enough to make the dust heavy so that it falls to the ground.

- Sawmills that have installed the water mist system have all experienced a significant reduction of dust in the air (references available upon request).

How is it done?

By spraying out the water at high pressure (1400 PSI) you get very small water droplets and as a result very little water is needed to do the job. Each high pressure nozzle tip only sprays out between 1 and 4 Gallons per hour. The water will therefore evaporate before it hits the ground so there are no unwanted water puddles.

Areas that will benefit from a high pressure water mist system

- Head saw (both band and circular saws)
- Resaw /line bar
- Horizontal
- Gang saw
- Edger
- Trimmer
- Debarker
- Chipper
- Roto chopper
- Tilt hoist
- Maxi mill

Typical set up

- Band saw



One nozzle sprays directly on the saw blade to clean and cool the saw.

- Gang saw

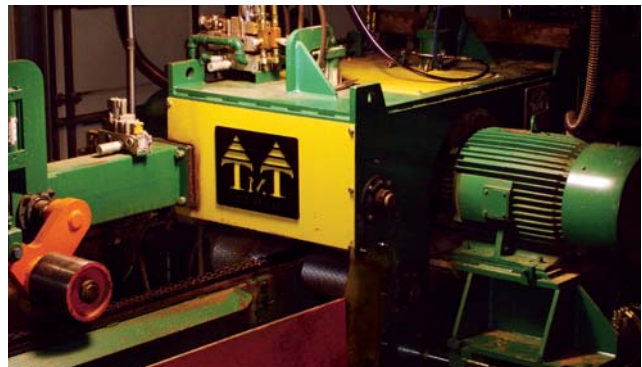


2-5 small nozzles are mounted inside the machine and spray directly on the saws to clean and cool them.

- Edger



1-2 nozzles are mounted on top of the machine to knock down the fine dust that comes out of the hood.



1-2 small nozzles are mounted inside the machine and spray directly on the saws to clean and cool them.

- Maxi mill



One nozzle can spray directly on the saw blade to clean and cool the saw. Additional nozzles are mounted on top of the maxi mill to knock down the fine saw dust.

- Trimmer



Several nozzles are mounted inside the trimmer and they spray directly on the saws to clean and cool them.

- Circular saw



One nozzle sprays directly on the saw blade to clean and cool the saw. Additional nozzles can be installed to knock down dust in the air around the saw.

- Horizontals



2-4 nozzles are mounted on top of the Horizontal to knock down the fine dust in the air. 1-2 nozzles spray directly on the saw blade to clean and cool the blade.

- Debarker



2-3 nozzles are mounted around the debarker to knock down the fine dust in the air. In addition, moisture on the logs will make it easier to turn the logs over.

- Tilt hoist



Several nozzles are mounted above the tilt hoist to knock down the fine saw dust in the air.

- Roto chopper



3-5 nozzles are mounted around the roto chopper to knock down the dust in the air.

Complete turn-key pump unit – you only need to hook up water and electricity

- The inlet filter is part of the pump unit and it prevents the nozzles from plugging up if there is impurities in the water.
- If the water quality is poor then a pre-filter system can be added.
- Prewired electrical control box comes with breakers and timers and some have their own built in PLC.
- Output valves are mounted on the pump unit.
- Automatic shut-down protection of the system if someone should try to do something that otherwise might damage the system (like turning off the water supply to the pump unit).
- Pump unit is free standing but it can also be mounted on a wall.



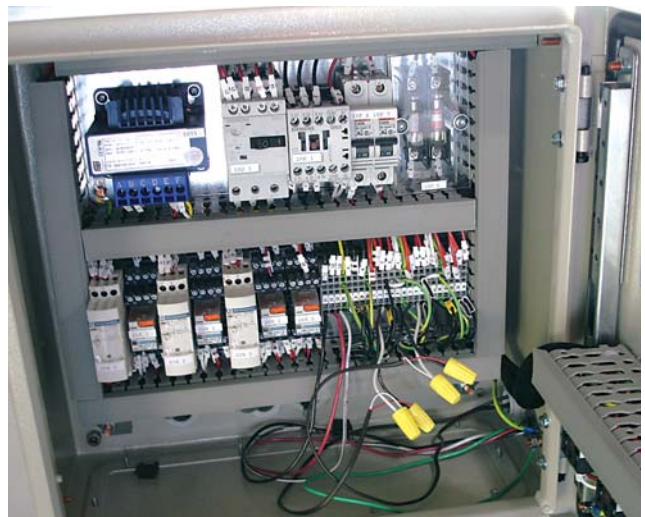
Pump unit.



Electrical control box with built in PLC.



Pump unit with output valves.



Electrical control box with relays.

One pump system can supply the high pressure water mist needed for all machines

- The same pump unit can supply water mist for between 1-8 machines as needed.
- There is one output valve for each machine so that the water mist can be turned on and off independently of what is happening on the other machines (i.e. water mist system can run on the head saw with no spray on the resaw if they are changing the saw).
- In non-heated sawmills the output valves will come with an automatic drain function of the pipes/hoses when the system is not running. To make sure all water is drained out of the system, compressed air is automatically blown through the lines 5 minutes after the system is shut down. This prevents frost damage in the lines from the pump unit out to the nozzles.
- The pump unit should be placed in a warm area. If temperatures do occasionally drop, a device is built into the pump unit to circulate warmer water through the unit until the water temperature raises to acceptable levels. This will prevent any potential frost damage to the pump unit itself.

How is the water mist system turned on?

- It is possible to connect the pump unit's electrical control box to an on/off switch on each machine so that the operator can turn it on as needed.
- Another option is to connect one of the photo eyes on the machine to the electrical control so that water is only sprayed out when there is movement on the conveyor.

Very low maintenance:

- Danfoss' own water lubricated pump is the core of the pump unit. This pump is completely free from lubrication oil and as a result there is no oil to change.
- Danfoss' own output valves are designed to handle a very high number of activations.
- Danfoss' stainless steel nozzles with built-in check valves are designed to handle the very dusty environment.
- All parts are made of stainless steel to ensure a long life in the harsh and sometimes acidic environment.

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