



FORMING FABRIC CLEANING FOR EFFICIENCY

Introduction

An effective cleaning and conditioning program will help maintain Paper machine Clothing designed characteristics and assist in providing efficient and economic clothing life while minimizing operational costs.

Modern paper machine clothing is manufactured with a specific set of design and quality specifications for each paper machine's performance requirements. Such specifications, i.e. surface characteristics, open area, void volume, permeability, smoothness, etc. are engineered to achieve specific goals in the papermaking process.

Forming fabrics must be kept free of contaminants in order to maintain surface characteristics, adequate open area, and to prevent sheet marking. Press felts must be cleaned, conditioned, and lubricated in order to maintain void volume, caliper and prevent wear; thus enabling the felt to take water and be de-watered uniformly throughout its operational life.

Fabric cleaning is accomplished by mechanical (showering) or chemical means. An effective cleaning system can employ both methods on a continuous and/or batch basis and is designed to prevent unwanted side-effects such as streaking and fabric damage due to plugged shower nozzles or improper operation of high pressure showers.

FORMING FABRIC CLEANING

Each forming fabric is designed with a specific set of characteristics to suit a particular paper machine. Regular and efficient cleaning of the fabric will maintain these characteristics and thereby assist in achieving an efficient and economic fabric life.

Fabrics can be cleaned by mechanical or chemical means and frequently by a combination of both. The cleaning can be continuous or for short periods at regular intervals. It is also usual to clean the whole fabric with chemical means during machine shutdowns

Chemical Cleaning

Continuous chemical cleaning is possible by using a metering pump feeding into the water supply, but it can be very expensive. It is more usual to program the cleaning into one or two intensive periods during each shift

It is common to chemically clean the fabrics at machine shutdowns,

and a number of different methods for applying cleaning agents are available including:

- Agravity fed shower
A felt applicator saturated with solution
An application roll mounted under the return roll
A spray from hand held pump tank units
A foam generator to achieve a thorough exposure to the chemicals

The method chosen should be compatible with the type of chemical used. In all cases, the machine is run at crawl speed and the solution applied until the fabric has been well saturated for 20-30 minutes. It is then given a shower rinse at normal machine speeds.

Cleaning Chemicals

Cleaning chemicals fall into three main groups: Acid-based; Alkali-based; and Organic-based (see Table).

Table with 3 columns: TYPE, STRENGTH, and CONTAMINANTS. Rows include ACIDE BASE (Hydrochloric acid, Sulfuric acid), ALKALI BASE (Sodium Hydroxide), and ORGANIC BASE (Kerosene, Xylene, Toluene, Trichloroethylene, Methylthylketone, Proprietary Cleaning Agents).

Mechanical Conditioning

Mechanical conditioning of felts involves the use of various showers and Uhle boxes to form an effective cleaning system. Although specific recommendations such as the volumes of water necessary, the types of showers used and the types of Uhle boxes used vary somewhat with paper grade, here are some general guidelines that apply to all machine setups.

INDUSTRY NEWS: IIT Roorkee develops water-soluble coating to replace plastic in disposable paper. W&F has launched specific customer need concept for Forming fabric with AQUAPRINT brand for customer quality need. W&F takes necessary fumigation and safety measures in packing of fabric and screens before movement, this ensures safety at consumption end.

system and should be located so that felt conditioning is accomplished prior to contact with sheet side felt carrying rolls.

Showers

The primary functions of felt showering systems are to lubricate and clean felts. Adequate water pressure and volume are essential to satisfactory shower performance. All shower nozzles should be self-cleaning or shower inserts should be used to filter shower water. Particles like sand silt and fines which are small enough to pass through the nozzle orifice are still generally too large to be impacting the felt with a high force. A good rule of thumb is to apply water sufficiently filtered to prevent particles larger than 100 microns from contacting and abrading the felt.

There are four basic types of felt showers:

1. **Flooding Shower.** Low pressure with high volume shower used to flush loose particles and maintains the evenness of the water distribution in the fabrics. This should be placed after the high pressure shower and before the suction box. Most effective at removing contaminants when used in conjunction with the nip of an inside felt carrying roll. This requires adequate vacuum to remove water volume. Generally used in tissue applications and on bleed-thru prone fine paper pickup felts.
2. **Lubricating Shower.** Low pressure, low volume shower used to apply a thin lubricating film of water to the felt prior to contact with a suction box to reduce wear and friction and act as a seal for the suction box. Apply the fan spray into the nip of the suction box with an overlapping coverage.
3. **Chemical Shower.** Low pressure, low volume shower used to apply chemicals to the felt. Most effective at removing contaminants when used in conjunction with the nip of an inside felt carrying roll. For maximum efficiency/dwell time, this shower should be placed as close to the sheet-felt split and as far from the suction box as

possible.

4. **High Pressure Shower.** High pressure, low volume shower which will dislodge contaminants from the felt. Most efficient when placed close to a supporting roll. High pressure cleaning of felts is best accomplished with an oscillating needle jet at controlled pressures. Proper oscillation of the high pressure shower to assure uniform felt coverage is essential to an efficient felt conditioning system. Improper shower oscillation can result in a streaky felt appearance. Some sections of the felt do not receive showering and become filled while other sections of the felt receive partial or uniform showering

Correct shower oscillating speed can be calculated as:



$$R = (S \times t) / L$$

Where R = Rate of Oscillation, S = Speed of fabric, L = Loop length of the fabric, t = Jet thickness on the fabric (nominal 1 mm)

An oscillation fail safe protection system is recommended to prevent stationary needle showering and the resultant damage to the fabric.

Forming Section Doctors

Doctors are an integral part of cleaning and conditioning systems for forming fabrics. Contaminants naturally transfer to the smoother roll surface from the rougher forming fabric surface and must be doctored away from the roll, or they will build up and cause operational problems. Polyethylene, fiberglass, epoxy resin and carbon fiber are common materials used for roll doctors on the former. Forming section doctors should always oscillate and be lubricated by low volume fan showers to prevent uneven roll and eventually fabric wear. It is recommended that all rolls have a lubricating roll shower and doctor blade assembly.

QUOTABLE QUOTE	"The starting point of all <i>ACHEIVEMENT</i> is <i>DESIRE</i> ." — Napoleon Hill	
SCRABBLE email answers by 25 th July '23	Form a word :	PITY SOUL IS PVC
	First correct answer will win a gift from Wires & Fabriks (S.A.) Ltd. (Maximum two prizes for one person in a year)	
WINNER JUNE 2023	No Correct Answer	Answer : DECORATIVE COATING
?QUIZ email answers by 25 th July '23	<p>QUIZ: About 65% of the methanol and BOD is concentrated in 6% of the entire condensate stream in the upper portion of the plates just to release.</p> <p>(a) Four condensate segregation (b) Foul condensate segregation (c) Fine copper segregation (d) Free condensate segregation</p>	
WINNER JUNE 2023	<p>Quiz: _____ is a measure of the power input to the motors of the refiner based on the amount of pulp processed. It's an indirect measure of the energy spent in cutting.</p> <p>(a) Refining power (b) Actualization power (c) Compartmentalization power (d) Degree power</p>	
	<p>Mr. Ashith Andanur, E&I Dept, AV Terrace Bay Inc. Answer : (a) Refining power</p>	
 Prizes	<p>Best / first correct answer received will win one-year subscription to IPPTA Journal (Maximum one prize for one person in a year).</p>	
 Teaser	<p>What starts with 'T'; ends with 'T'; and has 'T' in it? <i>TEA POT</i></p>	
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