SPINNAKER CORPORATION
EQUIPMENT AND PROCESS SOLUTIONS

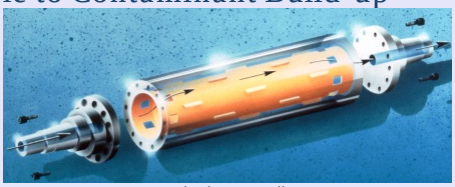
# SpinTech Newsletter

Volume 6 March 2012

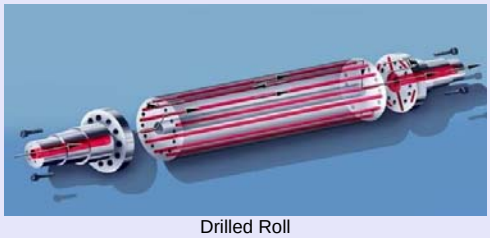
## Blockage in Heated/Cooled Rolls

### Long Service Rolls Vulnerable to Contaminant Build-up

The material used in the majority of rolls used in paper machine calendars and off-line super and hot/soft calendars is chilled cast iron. The internal construction will typically be either a displacer type roll, or peripherally drilled roll.


Displacer Roll

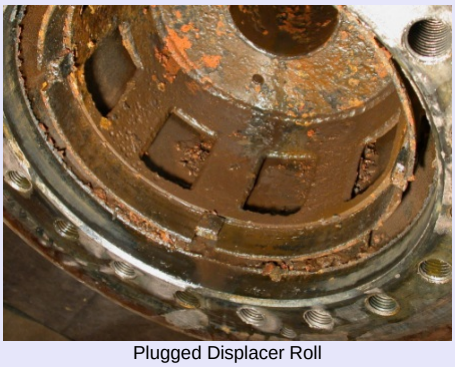
Over time both types can become partially plugged due to build up of contaminants from the liquid circulation system. Operational signs of plugging are:


Drilled Roll

- Intermittent poor sheet profile, gloss, or smoothness in the MD
- Bouncing and/or vibration due to the roll bending
- Reduced liquid flow through the roll

Note: Checking for hot or cool spots using an infra-red gun is ineffective on chilled cast iron due to the metal's emissivity.

Often, the reaction to roll plugging is to try to flush with a caustic or other chemical solution. However this is usually not effective due to the tendency of liquids to follow the path of least resistance, which is through the non-plugged areas. There may be some improvement, and there is nothing to lose by trying (annual chemical flushing may help prevent catastrophic build-ups). But, if the contamination is severe enough to cause problems that are evident in operation, this is a sign that the plugging has gone beyond the point of curing with flushing.


Plugged Displacer Roll

The photos illustrate the internals of both types of rolls after chemical boil-out. As you can see the rolls are still severely plugged even after flushing with caustic.

Plugged Drilled Roll

New Displacer

The only 100% positive cure is to mechanically remove the contaminant blockage. In the case of the displacer type roll this is an involved process requiring removal of the roll heads, cutting out the existing displacer, cleaning & honing the roll ID, fabricating, balancing & installing a new displacer(s), re-mounting the roll heads, balancing the assembly, and grinding to specified TIR and profile. This can be expensive and time required is about 12 weeks.

Peripherally drilled rolls are a bit easier to mechanically clean. The process is to remove the roll heads, mount the shell in the gun drill, and mechanically run a stiff wire brush the length of the holes. In severe cases, the holes may require re-drilling. Once cleaned the roll is re-assembled, balanced and ground.

Hole Cleaning

SHW Test Stand

SHW Casting Technologies in Torrington CT is the main N. America supplier of chilled cast iron calendar rolls. They have the procedures and equipment capable of testing a roll at speed, at temperature, and balance simultaneously. This yields definitive information to determine if the roll is plugged. The best choice when plugging is suspected is to send the roll to them for testing. They also then have the technology, skills, experience and equipment to correct it. See the article below for more information and links to their website and literature.

# SHW Casting Technologies, Inc.

Spinnaker is retained by SHW to provide technical service and sales to paper mills in the Midwest for SHW rolls, shells, and roll services. SHW is the only N. America source for:

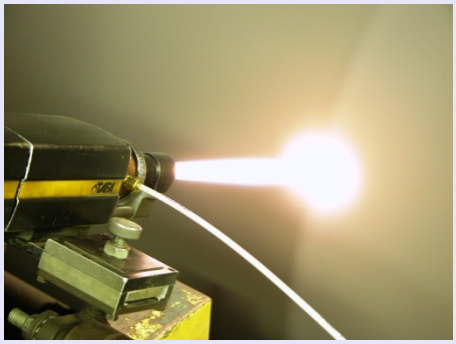
TriPass Calendar Roll

- Chilled cast iron calendar rolls: standard or temperature controlled
- Chilled cast iron swimming roll shells (Farrel, Beloit Crown Compensating, Metso Sym, Hunt & Moscrop, etc.)
- Chilled cast iron shells for zone controlled and self loading zone controlled rolls (Nipco, Metso, etc.)

Whether you purchase a new calendar roll or adjustable crown roll shell from one of the OEM's or direct from SHW, you are receiving a quality product from the world leader in chilled iron roll technology.

Roll Shell

## Calendar Roll Hard Coatings



SHW leads all other companies combined in the application of wear resistant coatings to calendar and other rolls.

The carbide based coatings increase the roll surface hardness by 100% over the standard chilled iron hardness.

The coatings are available in tungsten-carbide for use on un-coated papers. For coated paper applications, the carbides are alloyed with nickel-chrome to provide improved sheet release characteristics, reducing coating pick and roll hazing. Final surface finish can be as low as 2 Ra.

SHW's unique application process provides a coating thickness that is 30% to 60% thicker than other suppliers. This means longer usable life between re-coating and a better ROI on the coating cost.


The roll prep, coating application, and finish polishing are all performed under one roof at SHW's modern roll facility in Torrington CT. This reduces the coating cost.

Contact Spinnaker to request information on SHW calendar rolls, variable crown roll shells, and hard coatings.

You can also go to the SHW Web Site . Or click the link below to download the brochure:

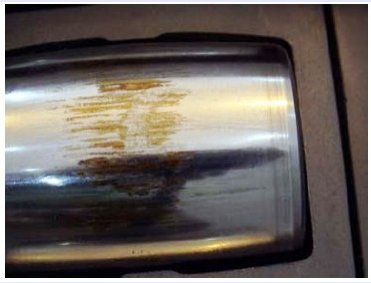
http://attachment.benchmarkemail.com/c104065/SHW_Brochure.pdf

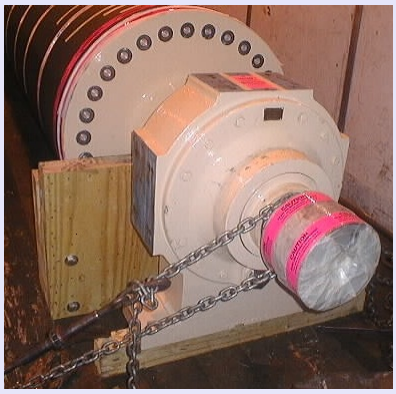
Future articles in this newsletter will cover the casting and manufacturing of calendar rolls & crown controlled roll shells, and hard coatings for rolls.

# Maintenance Tip

## Shipping Rolls

Bearings that are shipped on rolls are subject to damage such as false brinneling, spalling, scuffing and marking of the rollers and raceways. The damage can show up after the roll is returned to service at the initiation points for localized high stress areas that occurred during shipment. Bearing failure autopsies often reveal damage modes caused by transit vibration.





To avoid the risk of damage, whenever possible, the bearing housings and bearings should be removed from a roll prior to transportation. If not possible, the roll and bearing housing should both be blocked in a way to support both the roll and bearing housing to reduce the stress load and vibration transmission into the bearing.

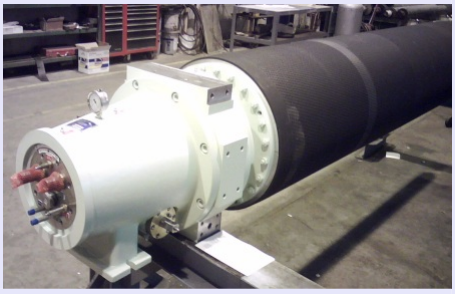
# Roll Manufacturing & Services

## Spinnaker Adds Capabilities

finishing and support equipment. But we are also a source for roll service and manufacturing.

Rolls up to 400” face length, 60” diameter, with weights up to 40 tons can be serviced, designed and supplied. The range of roll services includes:

- Manufacturing of all types of rolls including; felt rolls; paper carrying rolls; couch
- rolls; wire return rolls; press rolls; suction rolls; and calendar rolls.
- Roll grinding
- Dynamic balancing
- Repairs and rebuilding including press and suction rolls
- Suction roll shells & new suction rolls

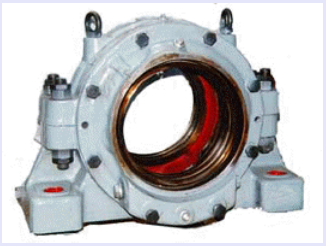


Suction Roll

Quick turn arounds and cost efficiency are what you will receive from us for any roll project.

## Spinnaker also designs and supplies:

- Bearing housings
- Roll heads
- Free-wheeling rope sheaves
- Reel spool couplings
- Custom and reverse engineered components



The ***SpinTech Newsletter*** delivers articles on rope tailing systems, headbox service & components, calender rolls, suction rolls, mechanical drives, trim system, roll covers, and operations & maintenance topics.

If you do not want to receive these newsletters, please click the Unsubscribe link . Otherwise, we look forward to providing information that we hope will be helpful to you in your job.

---

Spinnaker Corporation
3876 Whitetail Court
Hobart WI 54155
Ph.: 920-265-0941
Fax: 920-227-4178

Shipping Addresses

| Slice Lip Refurbishing | Gears & Shop Work | Roll Service |
| --- | --- | --- |
| Spinnaker Corporation | Spinnaker Corporation | Spinnaker Corporation |
| 1504 Sixth Street | 3976 Packerland Drive | N1009 Craftsmen Drive |
| Beloit WI 53511 | De Pere WI 54115 | Greenville WI 54942 |