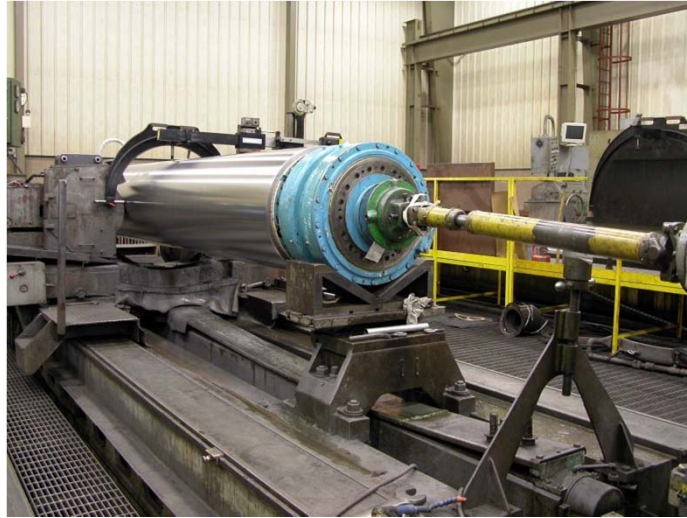




Grinding



Science or Art?



What is it?

Grinding uses the abrasive on the grinding wheel or belt to remove material from the work piece (wheel selection greatly influences the process). Factors like the abrasive, the bond holding it to the wheel, and the abrasive density all affect the grind. The process chain also consists of the coolant, dressing tool, the material you are grinding, the machine you are grinding it on, the machine's settings, the clamping of the work piece, and experience of the operators. Science or Art? A mixture of both?





Grinding Objectives

Make Good Paper

Good grinding contributes to good paper by:

- Improving paper profile, smoothness and/or gloss**
- Reduces roll induced machine vibration**
- Increases time in service intervals**



- **Roundness**
- **TIR**
- **Profile**
- **Taper**
- **Surface Finish**





Key Factors in Roll Grinding

- **Grinder foundation**
- **Grinder condition/type**
- **Grinding wheels**
- **Setup procedures**
- **Operator skill**
- **Material to be ground**
- **Housekeeping**



Single Wheel Grinder



**Good for roll face
and journals
in same set-
up.**

**Can be used with
bearings on
or off the roll.**





Two Wheel Grinder



**Produces better
roll profiles
& roundness.**

**Better than single
wheel for
long, small
diameter
rolls.**

**Can grind roll
face only.**



Grinding Wheels

- **Silicon Carbide**
- **Aluminum Oxide**
- **Super Abrasives**

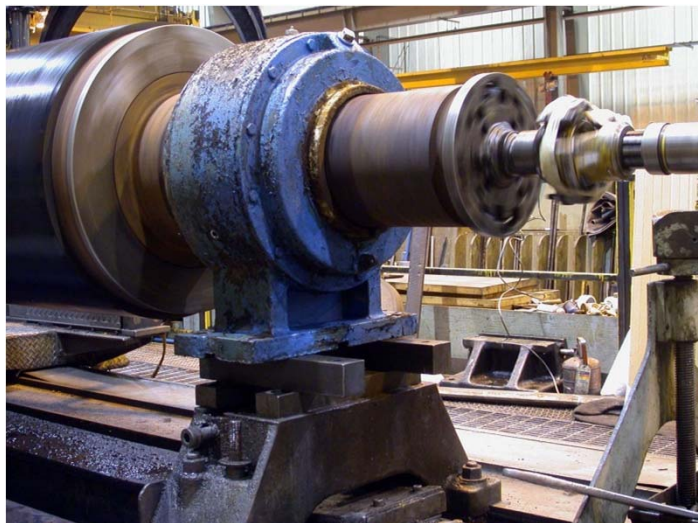


Grinding Belts

Diamond Belts

- **Less chatter potential than wheels**
- **More forgiving than wheels**
- **More expensive due to shorter belt life**
- **SHW experience is roll finish is not as good as wheel.**

Grinding in Gibs & Bearings



 **SPINNAKER CORPORATION**
EQUIPMENT AND PROCESS SOLUTIONS



Grinding in Bearings?

- **When grinding in bearings the quality and precision of grind is effected by condition of bearings, bearing class and run out tolerance.**
- **Bearings have an effect on geometrical tolerances, visual appearance of finish and rigidity of grinding process.**



Grinding on Journals

- **Rigidity of setup reduces grinding problems. (internal clearances, etc.)**
- **Tighter geometrical tolerances**
- **Better finishes**
- **Grinding surface**

Babbitt Gibs



**Select Correct
Gib**

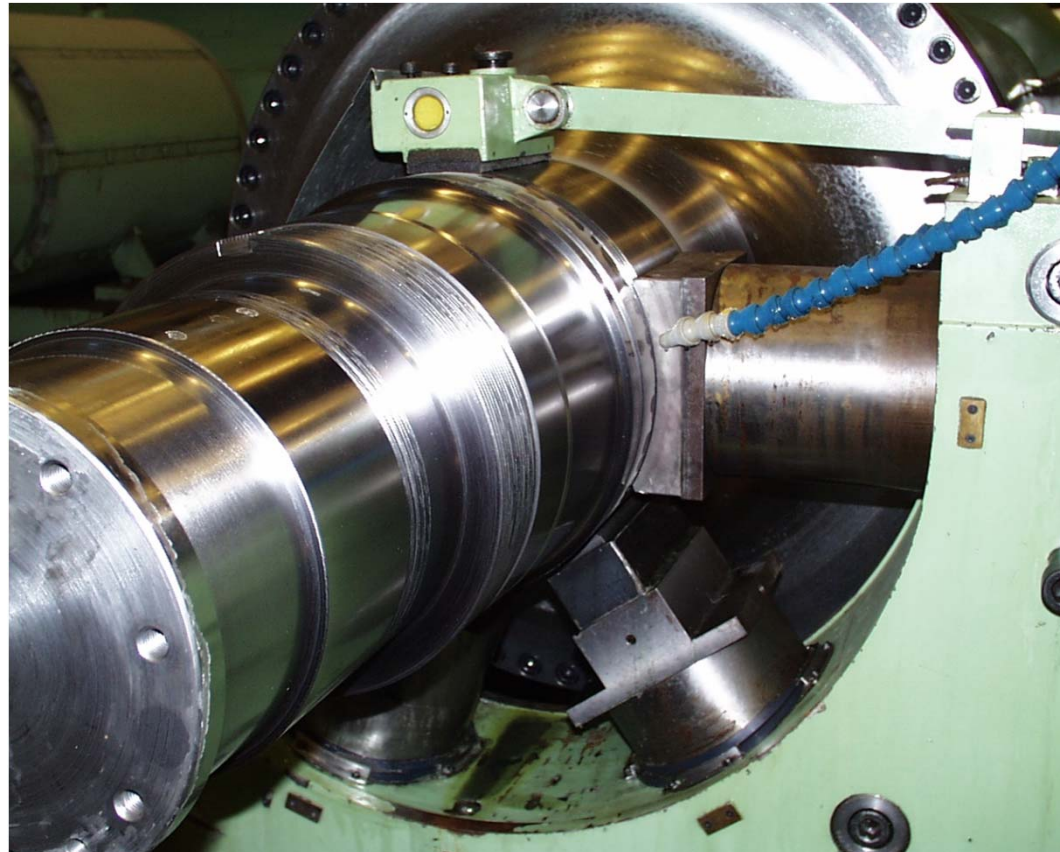
**Gib
Preparation**





Lubrication of Gibs

Journals must be lubricated during grinding process.





Set-Up

Proper Setup Reduces Grinding Problems.

- **Clean roll**
- **Center line of roll must be set equal to or slightly greater than sag in the roll**
- **Roll must be parallel to the traverse path**
- **Check roll profile**
- **Realign according to profile results**
- **Set/adjust speeds & feeds**



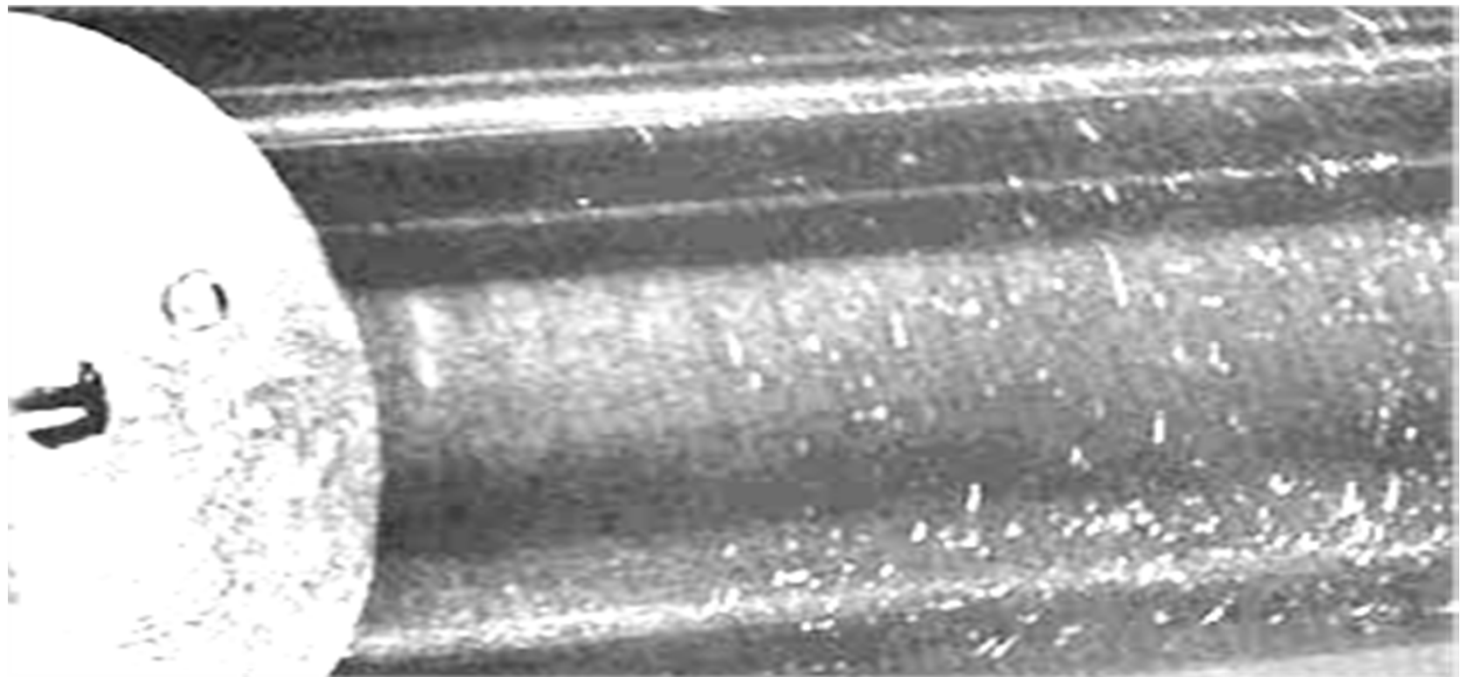
Grinding

- **Light (low amp) first pass**
- **Multiple roughing passes**
- **Reduce in-feeds for semi-finish**
- **Check roll profile: realign roll if necessary**
- **Grind to profile. Check results**
- **Reduce in-feed for finish grind**
- **Check finish with profilometer**
- **Check TIR, profile & roundness**
- **Clean roll & apply preserving medium**



Common Grinding Errors: Commas/Tails

Surface Shows Irregular, Short Scratches

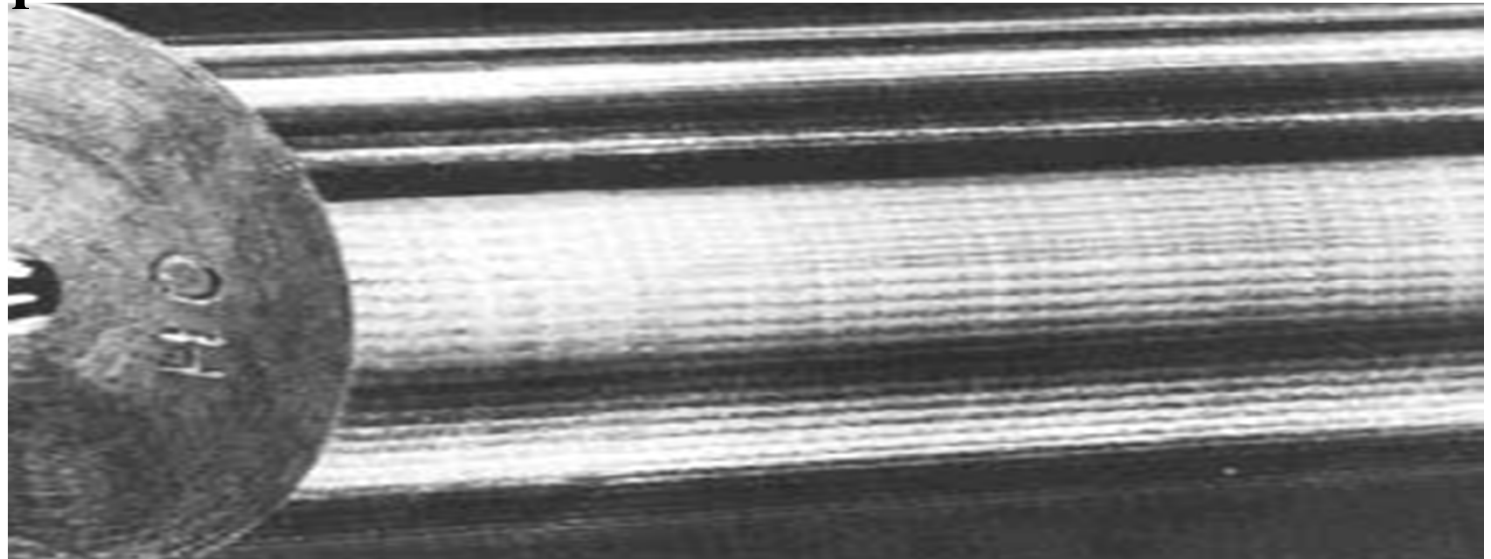


- Abrasive grains in the coolant
- Incorrect wheel grit or hardness



Common Grinding Errors: Chatter Marks

Surface shows marks that are distributed over the entire circumference and lie parallel to the work piece axis

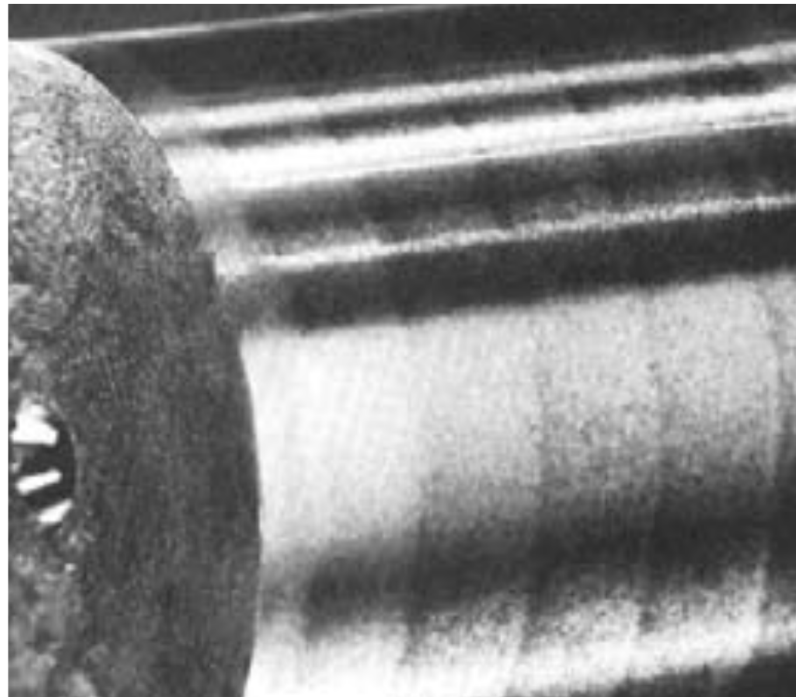


- Wheel not properly balanced
- Vibrations from outside sources (trucks, forklifts, machinery, etc.)
- Poor foundation
- Incorrect wheel and/or speed



Feed Lines

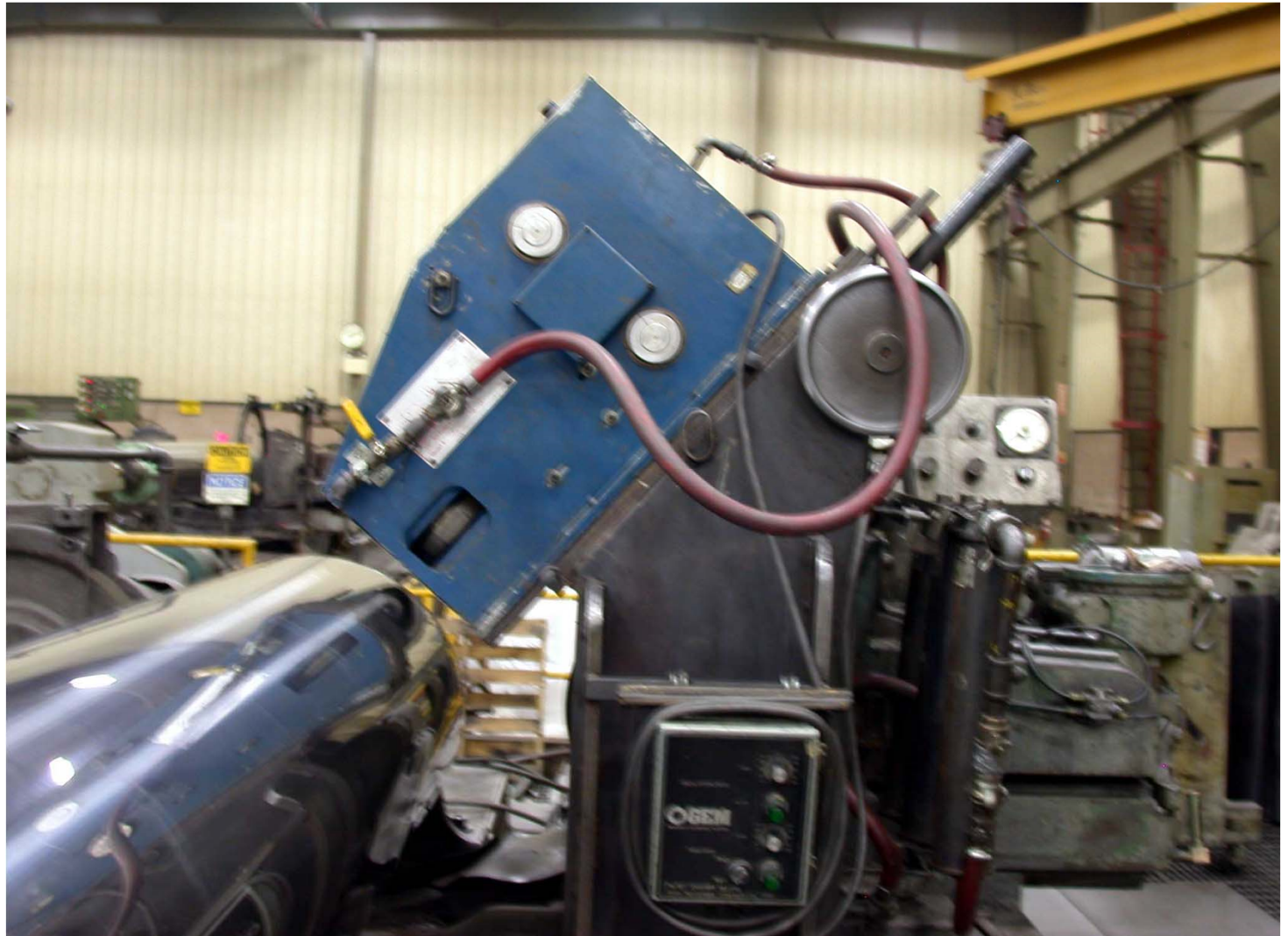
Surface shows spiral “barber-pole” effect roll face.



- **Wheel not dressed properly**
- **In-feeds too fast**
- **Removed during finish passes**



Super Finishing



SHW 
1365
Casting Technologies



Hard Coated Super Finished

SHW 
1365
Casting Technologies

