

# GRAPHALLOY®

## Bearings for Pulp and Paper Mills



- Agitator Shaft Bushings ■ Drag Chain Split Pillow Blocks
- Pump Bearings ■ Conveyor Roll Bushings ■ Damper Flange Blocks
- Submerged Washer Bearings ■ Burner Grate Bushings

**GRAPHITE METALLIZING  
CORPORATION**





# GRAPHALLOY® BEARINGS IN PAPER



**BOILER FEED PUMP  
CASE RING & STAGE BUSHINGS**

### GRAPHALLOY Survives Loss of Suction

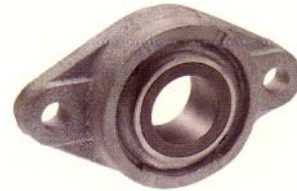
Boiler Feed pumps for industrial steam generators are frequently subjected to loss of suction flow during transients. Pumps fitted with metal and plastic wear parts fail in a few minutes of dry running, while those fitted with GRAPHALLOY survive and resume pumping when flow returns without wear parts damage.



**SCREW CONVEYOR SPLIT BUSHINGS**

### GRAPHALLOY Lasts Longer

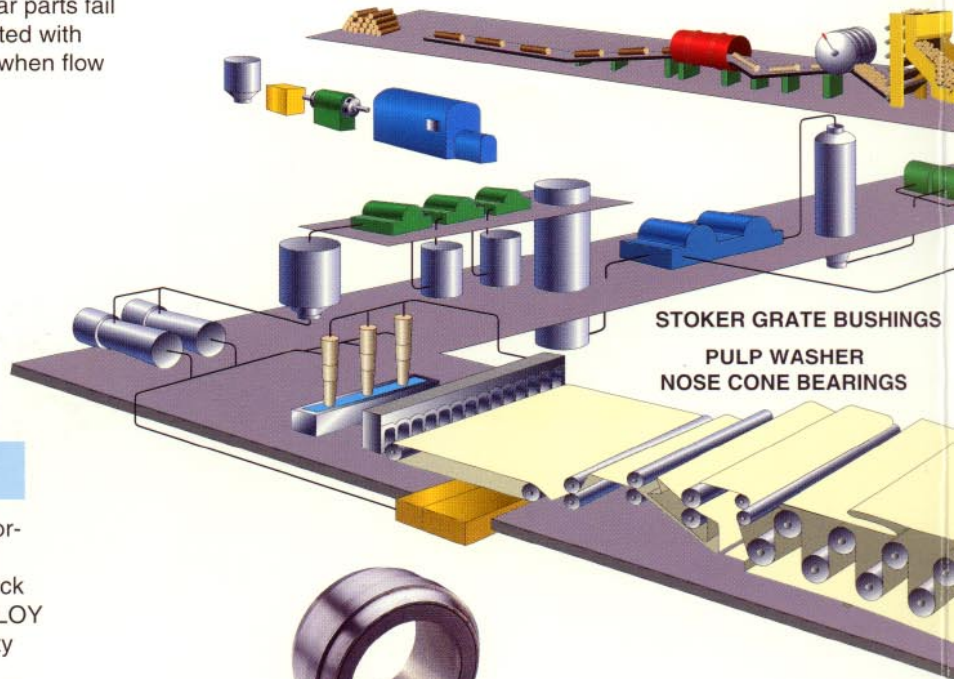
Washed pulp is fed through screw conveyors into storage tanks. The split hanger bearings which support these screws are submerged in high consistency stock and attacked by the chemicals and heat. GRAPHALLOY provides superior performance in this continuous duty application. It is not affected by caustics, does not deform under load, and maintains dimensional stability. At one tissue mill, GRAPHALLOY bearings lasted four times longer than plastic bearings.



**DUCT DAMPER FLANGE ASSEMBLES**

### GRAPHALLOY Simplifies Maintenance

Damper bearings have always caused maintenance headaches due to heat and poor lubrication practices. Changing to dry, self-lubricating GRAPHALLOY eliminates the burn-off, gum-up and hardening expected when using grease and oil at higher temperatures. At one installation, the switch GRAPHALLOY flange blocks resulted in maintenance-free operation for more than two years.



**PUMP THROAT BUSHINGS**

### GRAPHALLOY Reduces Vibration

Excessive shaft vibration is often the root cause of repetitive mechanical seal failures in process pumps. Using non-galling, close clearance GRAPHALLOY throat bushings reduces the vibration levels—thereby improving rotor stability, and resulting in fewer seal and frame bearing failures. As an added benefit, the tight shaft to bushing clearance reduces flush water consumption.

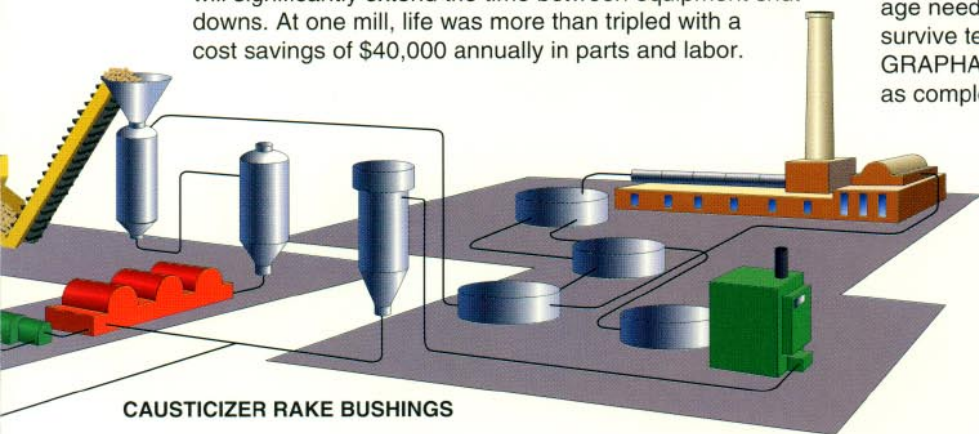
# RING APPLICATIONS MAKING



**AGITATOR SHAFT BEARINGS**

### GRAPHALLOY Increases Equipment Life

Stock agitator bushings frequently run dry because of changing liquid levels. The ability of GRAPHALLOY to operate in these constantly changing wet to dry conditions as well as resist caustic and acidic chemical attack will significantly extend the time between equipment shut downs. At one mill, life was more than tripled with a cost savings of \$40,000 annually in parts and labor.

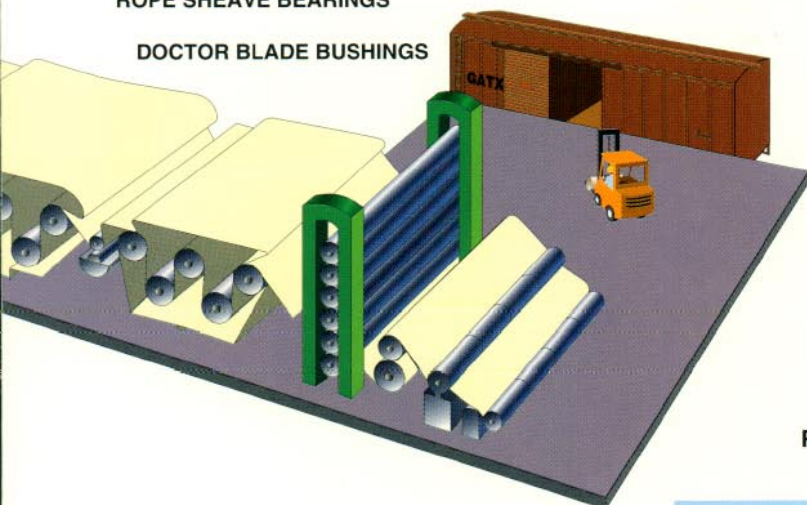


**CAUSTICIZER RAKE BUSHINGS**

**LIQUOR PUMP THROAT BUSHINGS**

**ROPE SHEAVE BEARINGS**

**DOCTOR BLADE BUSHINGS**



**HOT LIME CONVEYOR PILLOW BLOCKS**

### GRAPHALLOY Operates at High Temperatures

The conveyor that moves the hot lime from the kiln to storage needs return roller pillow blocks with bearings that can survive temperatures above the rating of grease lubricants. GRAPHALLOY material can meet this need-up to 750° F- as complete assemblies or replacement bushings.



**SALT CAKE DRAG  
CONVEYOR PILLOW BLOCKS**

### GRAPHALLOY Requires No Lubrication

Pillow block bushings in precipitator drag conveyor systems are exposed to the hot, corrosive environment of salt cake ash. Because it requires no oil or grease, GRAPHALLOY does not attract or hold these abrasive particulates and eliminates seizure caused by metal-to-metal contact. It is the preferred material for this application.



**ROLL HEADER GLUING MACHINE  
PILLOW BLOCKS**

### GRAPHALLOY Delivers Reliable Operation

Header gluing machines run 24 hours per day, 7 days per week. This continuous operation requires low maintenance, long life components. GRAPHALLOY self-lubricating pillow blocks assure this along with the capability to operate in the 400° F environment of the air release systems.

## GRAPHALLOY Bearing Solutions in Other Industries

### Case # 14 Water Quench Tank Bearings in Manufacturing Processes

GRAPHALLOY has replaced metal as the roll bearing material in the hot water quench tanks. Even though submerged, the metal bearing material needed replacement every three months due to wear. The GRAPHALLOY replacements have lasted four times longer based on a 5-day 24 hour work week.

### Case # 23 Vertical Pump Bearings in Refinery Plants

Self-lubricating GRAPHALLOY has long been the standard bearing in vertical "can" pumps in the refinery tank farm area. The typical light hydrocarbon products have poor lubricity and tendency to "flash". This, combined with recurring "run dry" operation when the tanks emptied, motivated designers and operators to search for a replacement of the bronze bearing material. GRAPHALLOY is now the overwhelming choice (confirmed by the API 610 Eighth Edition) for lower wear rates and "run dry" survival.

### Case # 45 Submerged River Water Screen in Environmental Systems

Moving screens keep fish and debris out of the generating turbines. Bearing specifications call for high loads, rough installation, plus the need for years of maintenance and contaminant-free operation. GRAPHALLOY heavy duty pillow blocks provide trouble-free service after five years on the job.

### Case # 46 High temperature Valves in Power Generating Stations

Coal ash handling equipment requires a bushing for a flapper valve to control hot coal ash in a 650 degree environment. The flapper valve must operate reliably without sticking and without lubrication. GRAPHALLOY solved this high temperature problem with trouble-free operation.

### Case # 80 Component Drying Ovens in Conveyor Installations

High temperature drying ovens use GRAPHALLOY bearings for the conveyor wheel turns. Self-lubricating GRAPHALLOY withstands the heat without lubrication, without noise, without maintenance, and without downtime.



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