DS-1004
Refineries

GRAPHALLOY®

Bearings for Petroleum Refineries

- Pump Shaft Bushings, Case Wear Rings, and Throat Bushings
- Reactor and Agitator Shaft Bearings
- Valve Stem Guides and Spacers
- Submerged Washer Screen Pillow Blocks
- Heat Exchanger Bearings
- Duct Damper Flange Blocks
- Burner Grate Bushings

GRAPHITE METALLIZING CORPORATION

GRAPHITE METALLIZING CORPORATION ISO 9002 CERTIFIED

GRAPHALLOY® BEAR
IN REFINING

REACTOR SHAFT BUSHING

GRAPHALLOY Increases Equipment Life

The horizontal reactor shaft bushing supports the circulating impeller and internal mechanical seal in this continuous duty application. Although the combination of a low lubricity sealing fluid, intermittent slugs of concentrated sulfuric acid, and high bearing load creates a troublesome environment for other bearing materials, self-lubricating GRAPHALLOY will provide superior performance. It resists the acid chemical attack. It does not deform under load and maintains a close running clearance. At one installation the GRAPHALLOY bushing had only .003" wear after four years of operation.

SHELL DEWAXER SPIDER BEARINGS

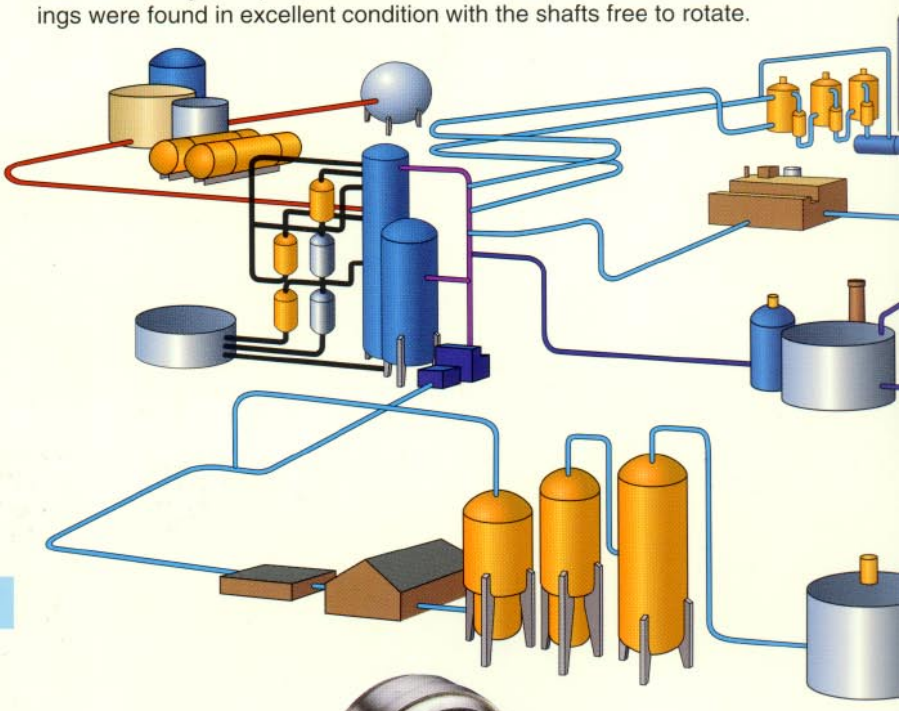
GRAPHALLOY Lasts Longer

Lube oil stock mixed with MEK and toluene is fed through the chiller to crystallize the wax in solution. The interior scrapper assembly bushings are subjected to temperature swings and attacked by harsh chemicals. GRAPHALLOY works in this environment. It remains dimensionally stable under load and close operating clearance is maintained regardless of the temperature changes. At one refinery, GRAPHALLOY bearings have run four times longer with less than one-half the measurable wear of the original bronze bearings.

VALVE BODY BUSHINGS

GRAPHALLOY Operates at High Temperatures

In the SMR process gas cooler, the flow of the 1400˚F hydrogen stream is controlled by blade and butterfly dampers. The OEM furnished bearings supporting the damper shafts often seized, making the regulation of the process difficult. They were replaced with GRAPHALLOY grade GM GDG-2 bushings. Inspected after several years of trouble-free operation in this high temperature environment, the GRAPHALLOY bushings were found in excellent condition with the shafts free to rotate.



PUMP THROAT BUSHINGS

GRAPHALLOY Reduces Vibration

Excessive shaft vibration can cause of repetitive mechanical seal failures in process pumps. A non-galling, close clearance GRAPHALLOY throat bushing lowers the shaft deflection and improves rotor stability. It also reduces flush liquid consumption. This application is recognized in the current API 682 standard.

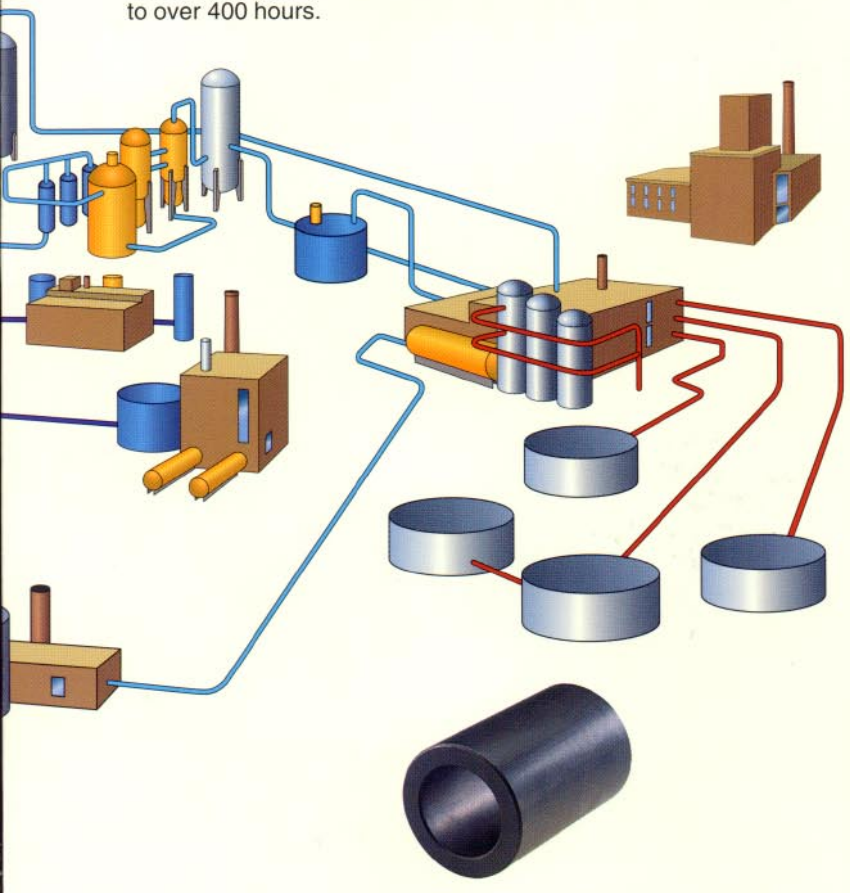
Graphite Metallizing Corporation ■ Yonkers ■ NY ■ USA ■ (914) 968-8400, Fax: (914) 968-8468

RING APPLICATIONS
OPERATIONS

GEAR PUMP INTERNAL BEARINGS

GRAPHALLOY Delivers Reliable Operation

Pumping recirculated creosote is always a maintenance headache. The liquid is hot, gritty and provides no lubricity to internal pump parts. One operator tried bronze, plain carbon and tungsten carbide for the idler bushing, but never obtained an operating period greater than 150 hours. Switching to GRAPHALLOY increased service life to over 400 hours.



LINESHAFT BUSHINGS

GRAPHALLOY Extends MTBR

Self-lubricating GRAPHALLOY is now the bearing material standard for vertical "can" pumps in the refinery tank farm area. Bronze bearings had proven unsatisfactory when pumping the light hydrocarbon products because of the liquids' poor lubricity and tendency to "flash". This, combined with "dry running" when the tanks emptied, motivated operators to select GRAPHALLOY (confirmed by the API 610 Eighth Edition) for lower wear rates and "run dry" survival.

DUCT DAMPER FLANGE ASSEMBLIES

GRAPHALLOY Simplifies Maintenance

Damper bearings in the power house have always caused maintenance problems due to heat and poor lubrication practices. Changing to dry GRAPHALLOY material eliminates the need for any lubricant which would burn-off, gum-up or harden at these higher temperatures. At one installation, the upgrade to GRAPHALLOY flange blocks resulted in maintenance-free operation for more than seven years!

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. At a Texas chemical plant, three pumps experienced 25 failures at a cost of $15,000 per failure. Following a GRAPHALLOY retrofit program, pump failures were reduced by 68% and the average repair cost dropped by over 90% during the next five years.

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GRAPHALLOY® is the Answer to Your Bearing Problems in These and Other Applications...

Horizontal and Vertical Pumps
"...GRAPHALLOY is the choice for lower wear rates and run dry survival..."

Dampers and Louvers
"...GRAPHALLOY prevents stuck assemblies..."

Agitators and Mixing Equipment
"...GRAPHALLOY triples bearing life..."

Reactors and Shell Dewaxers
"...GRAPHALLOY works in harsh chemicals..."

Submerged Trash Screens
"...GRAPHALLOY still gives trouble-free service after years on the job..."

Extrusion Machines
"...GRAPHALLOY eliminates product contamination..."

Wash Down and Cleaning Lines
"...GRAPHALLOY's life far exceeds that of metal..."

Switch Block Valves
"...GRAPHALLOY provides needed valve stem support in retrofit design..."

Screw Conveyors
"...GRAPHALLOY lasts four times longer than plastic..."

Ovens & Furnaces
"...GRAPHALLOY withstands the high heat without lubrication..."

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