



**HOT, COLD, WET OR DRY, GRAPHALLOY®  
BEARINGS WORK WHEN OTHERS FAIL.**



## Fitted Pumps Successfully Run Dry With GRAPHALLOY®

***GRAPHALLOY® self-lubricating wear parts keep pumps from seizing during dry-run, low-flow, start-up, slow roll and shutdown. These are conditions that cause metal to metal pumps or plastic wear parts to fail, sometimes catastrophically.***

### ***How Difficult Can Pumping Water Be?***

A paper mill in the Pacific Northwest was experiencing failures with the operation of three identical boiler feed pumps (two motor driven and one steam-turbine driven). The pumps were 6-stage horizontal split, opposed impeller, channel ring diffuser design. Multistage split-case pumps of this design are susceptible to deflection and vibration during start-up, coast down and upsets.

These pumps were operating in 260 degrees F (125 degrees C) boiler feedwater at 3560 RPM. With the instrumentation available, the operators had a difficult time determining where the pumps were operating on the performance curve.

While attempting to bring the steam turbine driven pump online, the pump was run at zero flow until it seized. Because of a history of failures, the OEM repair center recommended that the pumps be refit with GRAPHALLOY stationary wear parts.



Engineers at Graphite Metallizing Corporation designed a retrofit solution modifying the existing metal wear parts to accept GRAPHALLOY inserts. The case wear rings, diaphragm bushing and intermediate cover bushings were all modified to include Nickel GRAPHALLOY wear parts.

### ***Failure Averted***

Soon after this conversion, the pump experienced another incident. A minimum by-pass line was plugged and, as a result, the pump operated at no flow until the users were able to discover the plugged line (located two floors above the pumps).

The non-galling, GRAPHALLOY fitted pump not only survived but continued in service. Metal or plastic wear rings would have almost certainly caused a failure. The upgrade to Nickel GRAPHALLOY stationary wear parts allowed these pumps to operate under severely adverse conditions that could cause plastics to melt and metals to seize.

The GRAPHALLOY retrofit provided this paper mill with increased efficiency and reduced downtime.

Consider the advantages of GRAPHALLOY for your next pump application:

- Self-lubricating
- Non-galling
- Engineered for your specific application
- Operates in temperatures from -400° F to +1000° F / -240° C to 535° C