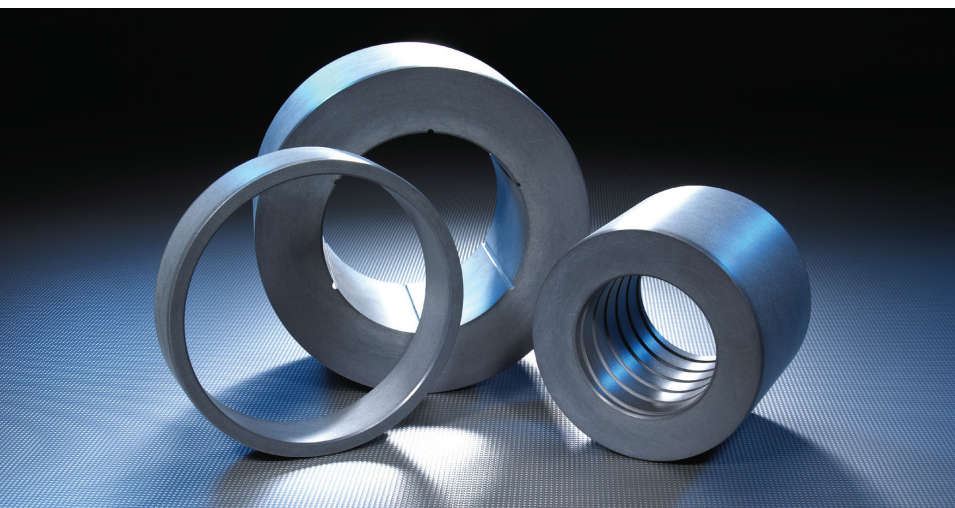




AR[®]HT Extends MTBF in German Refinery

Abrasion-Resistant Material Delivers
\$135,000 in Savings



Challenge

When pumping river or well water, abrasive particles such as sand and other debris erode hardware quickly, leading to poor performance and costly, frequent repairs. Historically, sacrificial bronze components have been used as wear materials in these applications. But the poor tribological nature of bronze requires generous running clearances between dynamic components, hampering reliability from lack of rotor support. In addition, the lack of resistance to particulates in the media stream significantly shortens product life.

A refinery based in northeast Germany struggled with this problem in the water pumps of their collector wells. Designed and built in the early 1970s, the pumps had to be taken out of service every two years due to bearing failures. In an effort to overcome this, the refinery partnered with Greene, Tweed to replace the bearings with AR[®]HT – an abrasion-resistant thermoplastic composite.

Highlights

Challenge

- When pumping river or well water, abrasive particles erode hardware quickly
- Sacrificial bronze components are historically used for this reason, but are unreliable
- A refinery in northeast Germany struggled with this problem, having to take their pumps out of service every two years due to bearing failures

Solution

- Greene, Tweed recommended upgrading to AR[®]HT, an abrasion-resistant thermoplastic composite

Results

- As of 2014, eight pumps have been retrofitted with AR[®]HT, and none has gone out of service since then
- The result is an increase in MTBF from two to over five years, leading to an estimated cost savings of \$135,000 (€100,000) over the past six years



Technical Description

- Media: Water with abrasive particles such as sand, shell and other debris
- Flow = 250 to 400 m³/h
- Pressure = 4 bar
- Impeller = Ø 257 to 335 mm
- Speed = 1480 rpm
- Motor power = 75 to 90 kW

Solution

AR[®]HT was chosen for its ability to withstand “off curve” conditions, start up, dry run, high-impact vibration and abrasive fluids. It also exhibits low friction, which was desired to prevent product flashing during upsets. AR[®]HT is thermally stable and used up to 250°F (120°C). It is recommended for stationary components such as bushings, line shaft bearings, and bowl wear rings in sump or river water pumps containing sand and other abrasives.

Results

At the refinery in northeast Germany, the first pump was upgraded to thermoplastic composite components over five years ago, and to date eight pumps have been retrofitted. None of the eight pumps have gone out of service with bearing issues since that time. The result is that MTBF has been increased from two to over five years, leading to a cost savings of approximately \$135,000 (€100,000) over the past six years.

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