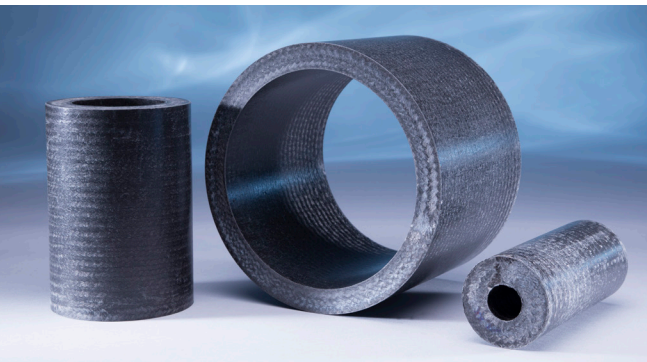




## Greene Tweed's WR<sup>®</sup> 650 Wear Ring Improves Pump Efficiency in Dryer Circulation Pumps



### Background

One of the biggest chemical plant operators in Southeast Asia came to Greene Tweed with a challenge involving one of their dryer circulation pumps. Their existing centrifugal pump was an older model, without a wear ring, and needed an upgrade to operate more efficiently.

### Challenge

The customer wanted to cost effectively increase pump efficiency – modifying the existing pump casing and impeller shaft instead of reworking the entire pump.

### Application Data

- Product: Centrifugal pump
- Temperature  
Range: 24° to 30°C (75° to 86°F)
- Media: 90% sulfuric acid
- Pressure: Suction 12.8 psi suction to 69.8 psi discharge

### Solution

Greene Tweed recommended modifying the existing pump casing (the existing pump which did not have a wear ring) to accommodate a composite wear ring to increase pump efficiency.

We recommended Greene Tweed's WR<sup>®</sup> 650 for the composite wear ring because of the material's durability in high sulfuric acid content and proven dry run capabilities. The customer provided the dimensions of the pump casing and impeller for the composite wear ring and pump hardware (casing ID and impeller shaft OD).

We also recommended the WR<sup>®</sup> 650 wear ring ID to be machined finished after installing in the casing to provide maximum accuracy and concentricity. The WR<sup>®</sup> 650 wear ring enabled the customer to reduce the diametrical clearance to 0.05 mm without risking damage to costly metal components.

### Benefits

- Increased efficiency – The reduced clearance of the composite material versus the metallic hardware improves pump performance and efficiency.
- Dry-run protection – The non-galling and non-seizing properties of WR<sup>®</sup> 650 help avoid catastrophic pump failures caused by dry-run startup or excessive vibration. WR<sup>®</sup> 650 has the best dry-run capability in the WR<sup>®</sup> family.
- Impact resistance – Its excellent physical properties allow the wear ring to receive impact from the impeller shaft without breaking and cracking during operation.

### Result

Since installation, the application has been running successfully for over a year with increased pump performance and efficiency. By upgrading the pump and controlling dynamic clearances, Greene Tweed's WR<sup>®</sup>650 wear ring has helped reduce internal loss/leakage. Initial results from the commission test show pump efficiency has increased by 9%, with improvements in discharge pressure and improvements in power derived from increased flow rates and pump capacity.

### Greene Tweed

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