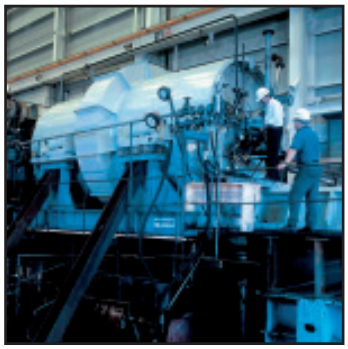
DURATRON® T4540 PAI

Increased Efficiency and Output in Severe Service Centrifugal Compressor Seals for Chemical Processing



TRENDS

As increasing world demand for petroleum and chemical products push manufacturing facilities to maximum capacity, engineers are searching for ways to improve efficiency and increase output. Pump and compressor manufacturers and equipment re-builders are exploring the use of advanced polymer materials as replacement for traditional metals and exotic composites to extend the life and efficiency of seals. However, the materials used must withstand extremely severe conditions of temperature, pressure and aggressive chemicals.

QEPP ANSWERS

Seals machined from Quadrant's DURATRON® T4540 PAI have proven to allow new seal designs that improve the output and service life in gas re-injection compressors. The material is more damage resistant during start-up and process upsets than metals, and affords greater resistance to corrosion and dynamic wear.

CUSTOMER BENEFITS

The benefits experienced with Quadrant's DURATRON® PAI materials in machined seals include significant increases in efficiency, immediately and over time, fewer repairs and replacements due to damage during upsets, and longer MTBR (Mean Time Between Replace/Rebuild).

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COMPRESSION MOLDING / MACHINING

Application requirements	DURATRON® T4540 PAI performance
High working pressures maintain rotor stability and reduce inter-stage leakage. Coupled with high temperatures, this environment can cause many polymeric materials to deform resulting in leakage.	Seals machined from DURATRON® PAI are proven to withstand high pressures and temperatures typical in gas injection compressors.
Dimensional stability of machined seals over wide temperature variations is required to maintain seal integrity and proper shaft clearance.	DURATRON® PAI delivers high strength and stiffness at working temperatures above 200°C (up to 250°C) combined with extreme creep resistance and very low coefficient of liner thermal expansion.
Shaft rubbing can occur during start-ups and operational upsets causing typical metallic seals to deform and create section-to-section leakage.	With a polymeric material like DURATRON® PAI, seal teeth will temporarily deflect with the shaft, where aluminum will deform or "mushroom over" and reduce sealing and system efficiency.
Designs are often pre-established for metal, and replacement seals must be adaptable to those dimensions.	DURATRON® PAI's extremely low coefficient of linear thermal expansion and high thermal conductivity facilitates the transition from metal seals.
Tighter clearances between seals and shafts provide higher efficiency and output. However, clearances with metal seals must be sufficient to avoid shaft rubbing and permanent damage.	Improved damage resistance, as well as high dimensional stability, allow for up to 50% tighter clearances with seals made of DURATRON® PAI. This yields a major gain in efficiency and output.

Other material candidates:

- Aluminum: Metallic seals permanently deflect during “touch off” or rub conditions which results in leakage and costly efficiency loss.

Learn more online at www.quadrantplastics.com

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