

TORLON® 4501 PAI

Longer Production Life, lower Maintenance for Rollers supporting large Coffee Roaster Drum



TRENDS

High volume production requirements of the food and beverage processing industry require equipment manufacturers to find ways to increase the life and up-time of the machinery they offer. These improvements can provide them a competitive marketing advantage on cost-in-use for their customers. At the same time, increased production often means higher temperatures and speeds for components used in their equipment, creating premature failure of components and affecting overall machine performance.

QEPP ANSWERS

Quadrant was asked by an equipment manufacturer for solutions to a wear problem that affected the sales of their commercial coffee roasting equipment. When the urethane-encased metal rollers that supported the roasting drums experienced wear and corrosion they created increased noise during operation and premature drum failure. Quadrant recommended rollers machined from TORLON® 4501 PAI. Result: the equipment manufacturer gained marketable advantages in noise reduction, production life and reliability.

CUSTOMER BENEFITS

The TORLON® 4501 PAI rollers eliminated the harsh noise being created by metal-on-metal contact. They also improved in-service life by eliminating corrosion problems and drum damage. The unique high strength at high temperatures of TORLON® PAI also easily withstood the roasting temperatures, and its wear properties eliminated the need for any external lubrication.



QUADRANT

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COMPRESSION MOULDED

Application and its requirements	TORLON® 4501 PAI performance
Rollers supporting and turning a large coffee roasting drum must withstand the high loads and roasting temperatures without significant wear.	Self-lubricating TORLON® PAI used for the machined rollers provides excellent wear properties for extended life and no risk of wear-related damage to the costly roaster drum.
Temperatures inside the drum reached 260°C to 370°C. Thermal transfer to the bearing, coupled with a loaded drum weighing up to 1812 kg (453 kg per roller), created flat spots after a very short time.	TORLON® PAI maintains its strength at high temperatures and offers the best creep resistance under load for when the drum sat idle - even at process temperatures.
Noise is a major factor in any plant environment. When the urethane cap on the metal rollers quickly wore out, harsh metal-to-metal noise resulted.	TORLON® PAI in contact with metal runs much quieter to eliminate the need for heavy duty hearing protection

Other material candidates:

- KETRON® PEEK: insufficient creep resistance under load at temperatures above 160°C.
- Vespel® SP21: Less strength at temperatures, higher wear, far higher material costs vs.

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