Case Study:
Maxalign™ Bearings Reduce Spiral Vibration On Alstom Power Turbo-generators

PROJECT OVERVIEW

With over 100 years of experience, Alstom Power is a leading provider in the power generation industry. Close to 25% of the world’s power production capacity depends on Alstom technology or services. With the industry trending toward improved efficiency, in both new and existing equipment, higher demands are placed on the equipment and the bearings.

When Alstom identified a phenomenon of spiral vibration close to the trip level on one of their 450 MVA hydrogen-cooled generators, Waukesha Bearings’ (WB) proprietary predictive tools and extensive industry experience on equipment of this size made them the clear choice to design and manufacture a drop-in bearing replacement.

More than 13 generator sets have been commissioned since the initial phenomenon was detected in 2003. In total, the Maxalign bearings have seen 600,000 cumulative operating hours with these particular Alstom generators.

FACTS AT A GLANCE
Industry: Power Generation

Application details:
• 60 Hz Turbo-generator
• Radial load 22 tons
• Shaft speed – 3600 rpm
• Lubrication – ISO VG46 at 45°C/115°F inlet

Products solutions provided:
• 400 mm (15.75 in), Maxalign journal bearing
• Special features included electrical discharge prevention

Benefits:
• Phenomenon of spiral vibration eliminated
• Critical speeds shifted to well above the rated speed
• Drop-in bearing replacement for fixed geometry bearing without pedestal modifications
• ‘Directed lubrication’ controlled oil usage and power loss and achieved acceptable temperatures
• Ball and socket design provides superior stiffness, dynamic alignment capability, and eliminates pivot wear
• Proven design with over 30 years experience, over 150 unique designs and more than 2,000 applications

Yeast (% with X) as a function of time

Increasing Shaft Sizes

Size in mm

300 400 450 500 560 600 650 700

Years of Initial Supply


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Our Promise:
Only Waukesha Bearings has the culture, commitment and entrepreneurial spirit to drive technological breakthroughs and operational excellence that exceed our customers' expectations globally.