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## **EVALUATION OF COATINGS FOR A LARGE HYBRID FOIL/MAGNETIC BEARING**

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### **ABSTRACT**

High operating speeds and temperatures required for advanced turbomachinery necessitate the development of bearings capable of continuous operation between 3 and 4 million DN at temperatures up to 820°C. Non-contact oil-free bearings such as compliant foil bearings, active magnetic bearings and hybrid foil/magnetic bearings are alternate solutions to the current liquid-lubricated hydrodynamic and rolling element bearings, with limited life under these extreme conditions. A critical component in these oil-free bearings is the tribological coating system that must be used on the journal and the foil pads to ensure reliable operation during transient periods and start-stop cycles. The purpose of the present investigation was to assess the reliability of tribological coatings for a large (150 mm diameter) hybrid foil/magnetic bearing.