

Test of a Zero Clearance Auxiliary Bearing

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ABSTRACT

An auxiliary bearing concept with no engaged clearance has recently been conceived and a prototype tested. The bearing uses a series of interconnected rollers to surround a shaft. In the open position, a clearance exists between the rollers and the shaft. When the shaft drops on the bearing due to magnetic bearing failures or shock loads, these rollers move circumferentially and radially inward to eliminate the clearance and re-center the shaft. The test results at speeds to 10,000 rpm have confirmed the expected auxiliary bearing operation including eliminating the possibility of violent backward whirl which may occur in the rolling element type of auxiliary bearings.