

#### عنوان مقاله:

A Numerical Investigation of the Characteristics of Porous Vacuum Preloaded Air Bearings

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#### خلاصه مقاله:

Air bearings are widely used in devices that require high-precision. Vacuum preloading is a compact solution, as it does not add extra weight to the air bearing. In addition, the usage of porous material ensures that the pressure is distributed homogeneously to the air film. In this study, a numerical analysis was performed using three vacuum preloaded porous air bearings with different diameters ( $\Delta \circ$ , Y $\Delta$ , and  $\Im \circ$  mm). The effect of applied tensile and compression loads on the air film thickness of the air bearings was determined using experimental methods. It was found that air film thickness increases with increasing tensile load and decreases with increasing compressive load. CFD model parameters were set to be the same as those for experimental conditions. It was concluded that the CFD model is consistent with experimental results. The pressure distribution in the air film and the load-carrying capacity of ...the air bearings were obtained using the CFD simulation

## کلمات کلیدی:

Air bearing, Vacuum preloaded, Load, Porous, carrying capacity, CFD

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