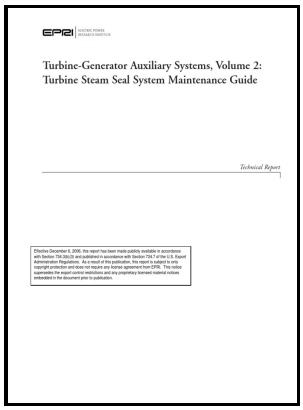
Application of brush seals to steam turbine generators

- - Brush Tip Seals



Description: -
-application of brush seals to steam turbine generators
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Theses (University of Northumbria at Newcastle)application of brush seals to steam turbine generators
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While the invention has been described in connection with what is presently considered to be the most practical and preferred embodiment, it is to be understood that the invention is not to be limited to the disclosed embodiment, but on the contrary, is intended to cover various modifications and equivalent arrangements included within the spirit and scope of the appended claims. In a preferred embodiment according to the present invention, there is provided turbomachinery comprising a rotary component rotatable about an axis and a stationary component about the rotary component and the axis, the rotary component having a maximum radial excursion relative to the axis throughout the entire range of operation of the turbomachinery, including from a start condition of the turbomachinery, a brush seal about the axis carried by the stationary component and having a plurality of bristles terminating in free ends spaced radially outwardly from the rotary component a radial distance relative to the axis in excess of the maximum radial excursion of the rotary component relative to the axis to maintain a radial clearance between the rotary component and the free ends of the bristles throughout the entire range of operation of the turbomachinery whereby the dynamic behavior of the rotary component is not affected by contact between the bristles and the rotary component.

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They are applied either as a generator drive or a mechanical drive for pumps and compressors. With brush seals which continuously rub against the rotor, it will be appreciated that the friction generated increases the temperature about the circumference of the rotor. Thus, the increase in temperature resultant from rubs between the bristle tips and the rotor 12 which effectively increase vibrations of the turbomachinery are eliminated.

Turbine

Casing drawings of the unit identified the location of four borescope inspection ports.

Brush Tip Seals

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The leakage rates for single thickness and double thickness 330mm brush seals in these tests were approximately 5% and 3% respectively compared to the leakage rate through a single fin at the same clearance. CONVENTIONAL CARBON RINGS Conventional gland sealing in general purpose steam turbines is accomplished with carbon rings. Upon complete inspection of the required repairs, and with no other outstanding issues, the unit was released to the customer for installation.

Brush Tip Seals

After extensive consultancy and analysis of your water-steam cycle, we deliver tailor-made steam turbines which fit exactly to your needs. Oil contamination and higher oil temperatures will degrade bearing performance and increase the potential for bearing failure. Typical gland box outfitted with conventional carbon rings Carbon rings have two sealing surfaces: a face seal to the downstream wall of the gland pocket and a shaft seal to the rotor surface.

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