

Bearings in cryogenic environments

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Bearings present engineering challenges in a cryogenic environment, both from geometric control and tribology points of view. Differential thermal strains, resulting from non-similar materials, thermal gradients, differential cooling rates or a lack of suitable lubrication can cause bearing degradation or malfunction. Thermal strain issues can be overcome using by exploiting specific design geometries, whilst tribology problems can be mitigated with dry lubrication and cryogenic compatible surface treatments. We show how these challenges were overcome in a cryogenic mechanism prototype which was recently built at the AITC.

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