

FYP: Bearing System in Turbine

MEC/MAE/TRC

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Background

gTET is an Australian technology based business specialising in developing and implementing thermal energy management solutions for business that are optimised for performance and economics. gTET's thermodynamics specialists have experience and capabilities in technologies that include refrigeration, waste heat recovery, ORC power generation, cogen/trigen and heat transfer with product and services across a wide range of clients and industries.

Problem

A turbine mounted within a turboalternator on a common shaft spins at 32000 rpm, with a permanent magnet generator producing around 170kW. Photos of a unit and an installation are shown below. One type of turbines manufactured by gTET is susceptible to bearing damage. Hence, they are not desirable to fit into products.



Objective

Develop a new/better bearing system in turbines to solve the problem. The methods include :

1. Investigate bearing options
2. Select suitable bearings from vendors
3. Design the modification to the existing turbine body
4. Have it manufactured with bearings installed
5. Experiment and test
6. Documentation

Requirements

One student in Mechanical, Aerospace, or Mechatronics