

MEC_8

Title of the doctoral program

Mechanical Engineering - The measurement of vibrations in rotating turbine disks for blade monitoring by tip timing Developing new underplatform dampers geometries to damp vibrations in turbine bladed disks.

Title of the research activity

Vibration damping in turbine disks.

Short description of the research activity

The dynamic behavior of the blades, the shift of their frequency out of the working range and the damping of their amplitude can be better controlled and foreseen at design stage by improving the design of the blades friction interfaces. The underplatform dampers (UPD) are small masses which in service are in contact with friction with the blade platforms. They dissipate energy during the blades vibration.

The shape of the UPDs can be optimized and new damper concepts can be studied. The research activity will include a numerical part with the simulation first of two blades and then of a disks with the proposed UPDs. An experimental activity of model validation will also be performed on the test rigs already present in the laboratory LAQ AERMEC of the Department of Aerospace and Mechanical Engineering.

Scientific responsible (name, surname, role, email)

Teresa Berruti. Associate professor, teresa.berruti@polito.it

Number of vacancies for XXXI cycle (3 years program)

1

Specific requirements (experiences, skills)

Vibration theory knowledge is required. Experience in the use of matlab is appreciated. Experience in the use of finite element codes like ANSYS is also appreciated.

Website of the research group (if any)

<http://www.aermec-dimec.polito.it/>