DYNAMIQUE DES ROTORS EN INGÉNIERIE MÉCANIQUE

ROTORS DYNAMIC IN MECHANICAL ENGINEERING

Lecturers: Laurent BLANC, Fabrice THOUVEREZ

| Lecturers : 12.0 | TC : 10.0 | PW : 0.0 | Autonomy : 6.0 | Study : 4.0 | Project : 0.0 | Language : AN

Objectives

The purpose is to acquire knowledge about rotating machines design. Application domains are turbojet engine dynamics, shaft dynamics, micropumps, electrical turbines... Notions seen in UE MSS and GM are extended: technological, modelling and experimental knowledge are given to nderstand dynamic aspects of products by Safran - Snecma, Safran - Turbomeca, GE, Siemens, Alstom Power, Rolls-Royce, EDF, Pratt&Whitney...

Keywords :

Programme

Lesson = exercices
- rotating machine design cycle, properties and tools
- modelling monshaft and multishaft rotors
- bladed disks modelling
- bearings phenomenology

Lab
- FE modelling of a bladed disk

Learning outcomes

- To know the key steps in rotating machines design
- To read a Campbell diagram
- To calculate by finite elements a rotating machine eigenmodes

Independent study

Objectifs : To get informed about rotating machines state of the art

Méhodes : Research paper analysis, by binom + presentation to the group

Core texts

M. Lalanne, G. Ferraris, *ROTORDYNAMICS PREDICTION IN ENGINEERING.*, John Wiley and Sons, 1998
D. W. Childs *TURBOMACHINERY ROTORDYNAMICS PHENOMENA, MODELLING AND ANALYSIS*, John Wiley and Sons, 1993
F. F. Ehrich*HANDBOOK OF ROTORDYNAMICS*, Krieger Publishing company, 1999

Assessment

Final exam, presentation on a research paper