



Module de spécialisation machines tournantes : turbines à vapeur [PC-3]

Objective:

- Understand the operating constraints of steam turbines.
- Determine the causes of performance losses.
- Identify operating anomalies and maintenance consequences.

Target group:

- This course is aimed at operators, foremen, technicians or engineers in operations, maintenance or process departments.
- Prerequisites: Introduction to rotating machines or equivalent experience.
- 8 to 10 people maximum per session.

Contents :

09:00 - 10:30

OPERATION

- Performance: steam characteristics, steam flow, power, efficiency.
- Influence of parameters: steam inlet temperature and pressure, exhaust pressure, rotation speed.
- Operating limits: steam temperature, exhaust pressure.

- o Material creep at intake
- o Exhaust condensation
- o Maximum continuous speed and overspeed

10:30 - 10:45

Break

10:45 - 12:15

OPERATION

- Steam turbine start-up
 - o Operating constraints, casing and rotor reheating, rotor turning,
 - o Checking safety systems and alarms
- Operating point and operating limits:
 - o Regulation: steam flow technology and control
 - o Operating range, critical speeds, overspeed
 - o Lubrication: oil circuit
- Protection and safety
 - o Steam system: inlet and outlet
 - o Overspeed protection devices: mechanical, electronic
 - o Radial vibration and axial displacement: principle, safety logic, acceptable limits

- o Lubrication circuit

12:15 - 13:15

Lunch

13:15 - 15:15

MALFUNCTION ANALYSIS

- Causes of efficiency losses :
 - o Steam quality: low enthalpy, soluble and insoluble deposits
 - o Abnormal pressure drops, clogged suction filter
 - o Condensation on last stages
- Behavioral anomalies :
 - o Abnormal rotor vibration
 - o Abnormal heating of bearings
 - o Abnormal axial displacement of rotor

15:15 - 15:45

Break

15:45 - 17:00

MAINTENANCE ELEMENTS

- Rotor inspection: non-destructive, dimensional and geometric checks
- Dynamic rotor balancing
- Periodic validation of safety devices

Implementation / working method :

Interactive, one-day, face-to-face course. Powerpoint support will be shared at the start of the course in both paper and digital formats.

A questionnaire will be sent to trainees prior to the course in order to adapt the course content to participants' expectations as far as possible.

A course evaluation questionnaire will be distributed to participants at the end of the course.

Course language and materials

French

Event Properties

Event Date	Thursday, 25 September 2025 - Thursday, 25 September 2025
Registration Start Date	Monday, 30 November -0001
Cut off date	Monday, 30 November -0001
Individual Price	Membre CHF 600.00, non-membre CHF 750.00, étudiants/doctorants/AVS CHF 320.00 (incl. Lunch)
Lecturer	Michel Huet , PRIMCO

Course language	French
Location	PRIMCO Thônex, Thônex