

TWO-PHASE MODELLING TEACHABLE COURSE

OVERVIEW

This course offers a practical introduction to two-phase fluid modelling in Flownex, covering key thermodynamic principles, boundary conditions, and heat transfer mechanisms. Through guided explanations and hands-on exercises, participants will build a solid understanding of enthalpy, entropy, quality, and the behaviour of two-phase fluids in components like heat exchangers and turbines, with a final session dedicated to detailed solutions and practical modelling techniques.

COURSE VIDEO DURATION	MODULES REQUIRED
Session 1: 9 minutes Session 2: 11 minutes Session 3: 6 minutes Session 4: 13 minutes Total: 40 minutes Recommended time needed to complete the course: 3 hours	Flownex modules required – modules will be provided for 3 days to complete the training. • Thermal fluid module • Advanced thermal fluid module • Design and analysis module

POWER GENERATION	DATA CENTRES	PROCESS PLANT
• Boiler Design Engineer • Steam Cycle Engineer • Nuclear Thermal-Hydraulics Engineer • Turbine Performance Engineer • Power Plant Systems Engineer	• Thermal Systems Engineer • Heat Recovery Engineer • Energy Efficiency Analyst • HVAC Simulation Engineer	• Process Design Engineer • Heat Exchanger Design Engineer • Utilities Engineer • Two-Phase Flow Simulation Specialist

SESSION 1	SESSION 2
• Interpret data points from the two-phase dome • Explore how enthalpy, entropy and quality affect fluid behaviour • Apply mass and energy balances in a practical exercise to connect theory with Flownex simulation	• Explore the Homogeneous Equilibrium Model simulation model used in Flownex • Define and apply boundary conditions for two-phase flow • Reinforce understanding of two-phase pressure loss through a practical exercise
SESSION 3	SESSION 4
• Explore how two-phase heat transfer mechanisms in boiling and condensation are simulated in Flownex • Model components for heat transfer in two-phase networks • Build and simulate a basic Rankine cycle with turbine modelling in Flownex	• Review solutions from the exercises in Sessions 1-3 • Important considerations in methodology and reasoning when modelling two-phase systems • Flownex specific tips, common pitfalls and best practices in two-phase simulation