3S SOLIDWORKS Flow Simulation

OVERVIEW

CLASSROOM LENGTH: 2 days / **INSTRUCTOR-LED ONLINE LENGTH:** 4 days

PREREQUISITES: Knowledge of SOLIDWORKS and basic mechanical engineering concepts is recommended.

DESCRIPTION: This course discusses the basics of turbulent fluid flow analysis, in addition to covering meshing concerns, modeling concerns, analysis, post - processing, available options, and preferences.

LESSON 1:
SOLIDWORKS BASICS

- Case Study: Manifold Assembly
- Problem Description
- Model Preparation
- Post-processing
- Exercise 1

LESSON 2:
MESHING

- Case Study: Chemistry Hood
- Computational Mesh
- Basic Mesh
- Initial Mesh
- Geometry Resolution
- Result Resolution/Level of Initial Mesh
- Control Planes
- Exercises 2-5

LESSON 3:
THERMAL ANALYSIS

- Case Study: Electronics Enclosure
- Fans
- Perforated Plates
- Exercise 6-7

LESSON 4:
EXTERNAL TRANSIENT ANALYSIS

- Case Study: Flow Around a Cylinder
- Reynolds Number
- External Flow
- Transient Analysis
- Turbulence Intensity
- Solution Adaptive Mesh Refinement
- Two Dimensional Flow
- Computational Domain
- Calculation Control Options
- Time Animation
- Exercise 8

LESSON 5:
CONJUGATE HEAT TRANSFER

- Case Study: Heated Cold Plate
- Conjugate Heat Transfer
- Real Gases
- Exercise 9

LESSON 6:
EFD ZOOMING

- Case Study: Electronics
- Enclosure
- EFD Zooming

LESSON 7:
POROUS MEDIA

- Case Study: Catalytic Converter
- Porous Media
- Design Modification
- Exercise 10

SOLIDWORKS Flow Simulation

LESSON 8:
ROTATING REFERENCE FRAMES

- Part 1: Averaging
- Case Study: Table Fan
- Noise Prediction
- Part 2: Sliding Mesh
- Case Study: Blower Fan
- Tangential Faces of Rotors
- Time Step
- Part 3: Axial Periodicity
- Exercise 11

LESSON 9:
PARAMETRIC STUDY

- Case Study: Piston Valve
- Parametric Analysis
- Steady State Analysis
- Part 1: Goal Optimization
- Part 2: Design Scenario
- Part 3: Multi-Parameter
- Optimization
- Exercise 12

LESSON 10:
FREE SURFACE

- Case Study: Water Tank
- Free Surface
- Experimental Data
- Exercise 13 & 14

LESSON 11:
CAVITATION

- Case Study: Cone Valve

LESSON 12:
RELATIVE HUMIDITY

- Case Study: Cook House

LESSON 13:
PARTICLE TRAJECTORY

- Case Study: Hurricane Generator
- Exercise 15

LESSON 14:
SUPERSONIC FLOW

- Case Study: Conical Body

LESSON 15:
PARTICLE TRAJECTORY

- Case Study: Billboard

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