



Risks – Requirements – Regulatory Management

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Training for the use of DYMOLA (Ref DYM-01)

Duration:

2 days

Goal :

The objective of this training is to allow people with no knowledge of the language Modelica or Dymola to become autonomous in the use of the language Modelica and Dymola software.

The basics of language and associated scientific principles are discussed, as well as the implementation, parameterization, simulation and post-processing of Modelica models. The proposed exercises will be adapted to the specific needs of the people trained.

Concerned public :

Any user of Dymola, wanting to manage Dymola models.

Prerequisites:

No

Content:

1 - Modeling and simulation – Introduction

- Definitions and vocabulary
- Mathematical view
- Simulation models
- Causality and acausality
- Modelica Overview
- Overview of Dymola
- Dymola environment
- Modelica / Dymola Interactions

2 - Dymola - Graphical interface: Part 1

- Basic manipulations
 - o Exercise 1: Open and simulate an existing model

3 - Introduction to Modelica language

- Classes
- Pre-defined and modifiable types
- SI unit library
- Keywords: public, protected, replaceable, final
- Predefined functions and commands
- Heritage
 - o Exercise 2: Inertia Thermal System
- Connectors
 - o Exercise 3: Simplified Thermal Envelope
 - o Exercise 4: Creating a library of basic thermal components (trick for design a structured and efficient library)
 - o Exercise 5: Pipes and aerodynamic
- Event Management with Modelica
 - o Exercise 6: Building a Zero Order System
 - o Exercise 7: Thermostat

4 - Dymola - Graphical interface: Part 2

- Modelica Standard Libraries
- "Simulation" tab

5 - Final exercise: Construction of a simplified model of HVAC type (*eg, adaptable according to needs*)

- Aerodynamic and aerothermal part
- Load losses
- Construction of a complete model
- Coupling with a simple PID control

Pedagogy:

Participatory pedagogy alternating the presentation of formal presentations illustrated with a documentary support with interactive exchanges and discussions around case studies and tutorials.