

# Termis District Energy Management

2019 Training Guide

## Training Offerings

The Educational Services team is pleased to offer publicly scheduled training courses in Ballerup, (Denmark) and Lake Forest, (California, USA). We also offer customized on-site training courses at your location.

### Course Locations

Ballerup, Denmark	Lake Forest, California, USA
Schneider Electric Education Centre, Europe Operations Lautrupvang 1 2750 Ballerup Denmark	Schneider Electric Software, LLC 26561 Rancho Parkway South Lake Forest, CA92630, USA

### Course Times

Unless otherwise indicated, all instructor-led classes at the training centers run from 9:00 a.m. to 4:00 p.m. local time.

### Course Materials

Course materials are included in the registration fee.

### Course Schedule

Ballerup, Denmark				
Course	Duration	Start Date	End Date	Price
Termis 8 Fundamentals	3 Days	25 Mar 19	27 Mar 19	EUR 1,870
		17 Jun 19	19 Jun 19	
		23 Sep 19	25 Sep 19	
		09 Dec 19	11 Dec 19	
Termis 8 Advanced - Topology	1 Day	28 Mar 19	28 Mar 19	EUR 670
		20 Jun 19	20 Jun 19	
		26 Sep 19	26 Sep 19	
		12 Dec 19	12 Dec 19	

Lake Forest, CA, USA				
Course	Duration	Start Date	End Date	Price
Termis 8 Fundamentals	3 Days	29 Apr 19	01 May 19	USD 2,000
		15 Jul 19	17 Jul 19	
		28 Oct 19	30 Oct 19	

Termis 8 Advanced - Topology	1 Day	02 May 19	02 May 19	USD 730
		18 Jul 19	18 Jul 19	
		31 Oct 19	31 Oct 19	

## Course Registration Process

Registration is completed through any of the following processes:

- Self-registration through the training web portal:  
<https://industrialtraining.aveva.com/aquistermis/portal/catalog.cfm?calendarID=174>
- Requisition through the Project/Services/Sales team
- Requisition through the Aquis Support Team: [dk-hso-support@aveva.com](mailto:dk-hso-support@aveva.com)

Please contact us if you are a Specialist Solution Provider Partner with a valid SSP agreement in place or if you are a Schneider Electric employee.

## Training Web Portal

The training web portal is an on-line registration site. Each registrant needs to access the Software Training Services web-site and enter the required information. You will not be able to register if the course is full for the available spaces.

To view the schedule and/or register for a class:

1. Paste <https://industrialtraining.aveva.com/aquistermis/portal/catalog.cfm?calendarID=174> into your web browser.
2. Browse the course offerings and select the one you are interested in. Check Details & Availability for each course.
3. Click the Add to Cart button next to the date/location you wish to attend.
4. Start the checkout process by signing in or registering for a new account.
5. Enter your purchase order number in the 'Customer Purchase Order' box. If you don't have the PO number available, type 'PO' in the box.

NOTE: The purchase order must be received before you attend the course.

6. Confirm your information and click 'Finish'. Once you have completed the registration process you will receive an email confirming your registration.

## Payment Options

Purchase Orders are the only form of payment accepted. At this time we do not offer payment via credit card. During the registration process, type the purchase order number in the 'Customer Purchase Order' box. If you don't have the PO number available, just type 'PO' in the box.

Note: The purchase order must be received before you attend the course.

**Purchase Order**

Please follow the instructions below when issuing your purchase order:

1. Address the PO to the correct vendor based on the location of the course as shown below.
2. Note the location of course on the PO
1. When the PO covers multiple registrations, it should detail the student names and the courses involved (specifying prices): example:
  - a. Termis Fundamentals - Price
    - i. Trainee 1
  - b. Termis Topology – Price
    - i. Trainee 1
2. Email a copy of the PO to the email address shown below based on the location of the course. Please send it to 'Attention: Software Training'.

Location	Vendor	Tax Rate
Ballerup, Denmark	Schneider Electric Software GB Denmark branch Filial af SE SW GB Lautrupvang 1 DK-2750 Ballerup	Local taxes may apply
Lake Forest, CA, USA	Schneider Electric Software GB Denmark branch Filial af SE SW GB Lautrupvang 1 DK-2750 Ballerup	Local taxes may apply

Location	Email Address
Ballerup, Denmark	software.denmark@aveva.com
Lake Forest, CA, USA	software.denmark@aveva.com

**Cancellation Policy**

It is recommended that you do not make travel arrangements until 2 weeks / 10 business days prior to the start of the course. Aveva reserves the right to cancel classes up to two weeks prior to the start of the class based on course registration levels.

If your plans change and you cannot attend as scheduled, be sure to notify us as soon as possible at [dk-hso-support@aveva.com](mailto:dk-hso-support@aveva.com). Class sizes are limited so tuition charges are refunded ONLY if cancellation notice is received via email at least two weeks / 10 business days prior to the first day of class.

# Termis 8 Fundamentals

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## Course Description

The Termis 8 Fundamentals course is a 3-day, instructor-led class designed to provide a fundamental understanding of the features and functionality of the Termis software. The course provides lectures and hands-on activities to supply and reinforce the knowledge necessary to use Termis to model district heating/cooling networks, including online modeling capabilities. The course covers how to configure boundary conditions at model objects, scenario creation, events definition, conditions, measurements, and other design features.

## Objectives

Upon completion of this course, you will be able to:

- Create a model and define boundary conditions (hydraulic requirements)
- Add object types (nodes, pipes, plants, and so on)
- Edit data using the generic object editor
- Import external data (such as GIS and CAD files)
- Add units (physical types)
- Validate a model and run a simulation
- Apply measurements
- Work with flow-control zones
- Define conditions
- Close an area or a connection
- Insert more advanced objects such as shunts, heaters, accumulators
- Create and configure new object attributes
- Define calculation formulas on attributes
- Apply themes
- View results using graphic elements such as a profile
- Use consumer data and update the data
- Use dashboards
- Create pipe tables and pipe dimensioning
- Apply triggers and timers
- Create reports

## Audience

Engineers, Specialist solution providers, consultants, and other individuals who are new to Termis or have acquired some knowledge through self-study, but need more information on best practices, modeling processes, and sequences, including online modeling capabilities.

## Prerequisites

- Fundamental understanding and knowledge of hydraulics and district energy (heating/cooling)
- Previous experience in hydraulic modeling would be helpful

## Course Outline

### Module 1 – Introduction

#### Section 1 – Course Introduction

This section describes the objectives of the course and provides the course outline. It explains the philosophy behind Termis and discusses goals and the benefits that can be obtained with the system.

#### Section 2 – General User Interface

This section is a general introduction to the Termis user interface: menus, status line, timeline, dashboards, and multiple editing options.

#### Section 3 – Layers Menu

This section explains how to use the main **Layers** menu to properly handle the different layers that can make up the model: Background and Topology, Scenario, and Customer layers.

#### Section 4 – Editing Capabilities

This section explains how to edit data in the model and create new object attributes and model parameters to be adapted to particular customer/project needs.

#### Section 5 – Test Data Folder and Start-Up Folder

This section explains the sample model and basic template users will use when starting a new project.

### Module 2 – Hydraulics

#### Section 1 – Boundary Conditions

This section describes how to correctly define boundary conditions for simulating a model. It explains the boundary conditions needed for nodes, plants and pipes.

#### Section 2 – Other Object Attributes

This section goes through the rest of the parameters needed to configure an object, but which are not used as boundary conditions for nodes, plants and pipes.

#### Section 3 – How to Define Boundary Conditions

This section describes the different ways to add boundary conditions to objects, including linking to SCADA measurements, calculating by a formula, and defined by a time series.

#### Section 4 – Units of Measurements

This section shows how to configure different system units and how to create a new unit.

#### Section 5 – Simulation Options

This section describes the simulation menu and how to view results.

## **Module 3 – Background Information and Model**

### **Section 1 – Import Background layers**

This section describes how to import GIS shapefiles and CAD dxf files to be used as background layer information in the model.

### **Section 2 – Background Maps**

This section explains how background maps can be added to the model. It describes the map transformation process using the known coordinates of three points.

### **Section 3 – From Model to Scenario**

This section explains how to create a 1:1 **Scenario** layer from the **Model** and **Consumer** layers.

### **Section 4 – Adjusting the View**

This section describes the tools and parameters to adjust to view zones of the model and objects. These include predefined views' bookmarks, zoom tools, and display and hide limits.

## **Module 4 – Edit and Find Objects**

### **Section 1 – Selection**

This section explains the different ways to select elements in the model. It reviews Topology and Hydraulic selection.

### **Section 2 – Edit**

This section describes the different tools available in the **Edit All** menu, such as filter, sort, find and replace, copy and paste, and change all values in bulk.

### **Section 3 – Find**

This section explains the **Find** window (Ctrl+F).

## **Module 5 – Pumps and Valves**

### **Section 1 – Boundary Conditions**

This section describes how to properly configure boundary conditions for pumps and valves and the different options available. These options include Q-P curve, pump speed (definition and actual), downstream pressure, upstream pressure, flow, dP, and NRV.

### **Section 2 – How to Define Boundary Conditions**

This section describes the different ways of adding boundary conditions to pumps and valves, including static values, linking to SCADA measurements, calculating by a formula, defining using time series, and applying conditional control.

### **Section 3 – Convert Valves**

This section explains how to convert valves from the **Valve** category to the **Shutoff** category and vice versa.

### **Section 4 – Closing Elements**

This section describes the differences and tools used for closing a connection, an area, and elements using work orders.

## **Module 6 – Other Objects and Configuration of Objects**

### **Section 1 – Other Objects**

This section explains how to configure bypass, shunt, heater and accumulator.

### **Section 2 – Object Editor Configuration Menu**

This section describes the **Object Editor Configuration** menu and explains how to modify the attributes associated with an object, and define new ones. It discusses the high-level revision available for the list of functions (CALC).

## **Module 7 – Results**

### **Section 1 – Themes**

This section describes a theme and how it is created and modified. It explains how to add legends and discusses the different visualization options included in the **Layers** and **Show** menus.

### **Section 2 – Paths and Profiles**

This section explains a path and how it is used. It discusses how to create profiles.

### **Section 3 – Scenario Comparison**

This section describes how to compare two different scenarios in the model.

### **Section 4 – Export Options**

This section describes how to export model information to different formats, such as shapefile, dxf, and Excel.

## **Module 8 – Consumers**

### **Section 1 – Data**

This section describes the minimum information needed in a **Consumers** layer. It explains how consumer information can be imported into the model, and the suitable formats for importing the information.

### **Section 2 – Affiliation**

This section explains in detail how to affiliate consumer demands to model nodes.

## **Module 9 – Model Configuration**

### **Section 1 – Pipe Table**

This section describes how to create a pipe catalog and the use of the look-up function.

### **Section 2 – Pipe Dimensioning**

This section explains the different criteria that can be used in Termis for pipeline design using the auto-dimensioning tool.



## **Module 10 – Advance Simulation Data**

### **Section 1 – Using Time Series**

This section describes the two main purposes of using time series in the model: visualization and control. It explains the different ways of creating time series, including manually, by reference, by using a measurement, copying an existing time series, or by calculation.

### **Section 2 – Flow Control Zones**

This section explains the Flow Control Zone (FCZ) object. It discusses how to create the object and the benefits of having FCZ in the model.

## **Module 11 – Dashboards**

### **Section 1 – General Overview**

This section describes the Edit/**Dashboards** menu. It explains how dashboards can be exported and imported, and how the different *user levels* are used to manage access.

### **Section 2 – Working with Dashboards**

This section explains the most relevant elements that can be configured in a model. It presents and discusses the default model dashboards.

## **Module 12 – Advanced Features**

### **Section 1 – Conditional Controls**

This section further explores conditional controls, including global and local, 7Flow conditions, how to define conditional controls, and how they are used.

### **Section 2 – Timers and Triggers**

This section explains how timers and triggers work and how they are used in combination for automatic reports.

### **Section 3 – Reports**

This section describes how to work with reports, including default reports, custom definition, and storing folders.

# Termis 8 Advanced - Topology

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## Course Description

The Termis 8 Advanced - Topology course is a 1-day, instructor-led class designed to provide in-depth knowledge of how to create a model and different scenarios. This compact workshop provides lectures and hands-on activities that explain how to use external data (GIS, CAD, and consumer databases) to create a model. Model update and scenario simplification tools are also covered.

## Objectives

Upon completion of this course, you will be able to:

- Create models based on external data, including importing network geometry, elevation, and consumption
- Create scenarios and perform scenario simplification
- Update a model and use the Smart Update tool
- Work with spatial attributes

## Audience

Engineers, Specialist solution providers, consultants, and other individuals who have fundamental knowledge in Termis, but need more information on best practices; modeling processes; and sequences in model creation, update, and simplification.

## Prerequisites

- Fundamental understanding and knowledge in Termis
- 3-day Termis Fundamentals course, which is delivered the same week (highly recommended)
- Previous experience in hydraulic modeling would be helpful

## Course Outline

### Section 1 – Model Creation Workflow

This section describes the sequence for creating a model based on external data. It covers the different sources of information, suitable file formats, data structure for attribute mapping, and parameters to ensure connectivity.

### Section 2 – Model Update

This section explains how to add additional information once the model is created. It describes how to reload data from the same source of information or from a new source. It also explains how to use the Smart Update tool.

### **Section 3 – Consumers and Elevation**

This section describes how to work with consumers and elevation in the model, both of which are relevant data, usually coming from external data sources, but which are not part of the previous Model Creation Workflow.

### **Section 4 – Scenario Simplification**

This section explains how to create a simplification scenario of the model, which is hydraulically equivalent to the 1:1 model, but more manageable and has better performance. This is especially important for the online models, which should be running in cyclic mode every “x” minutes, and where key points for hydraulic supervision are monitored.

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