Title 24 2013 Compliance Software:

CBECC-Com

"California Building Energy Code Compliance for Commercial Buildings"

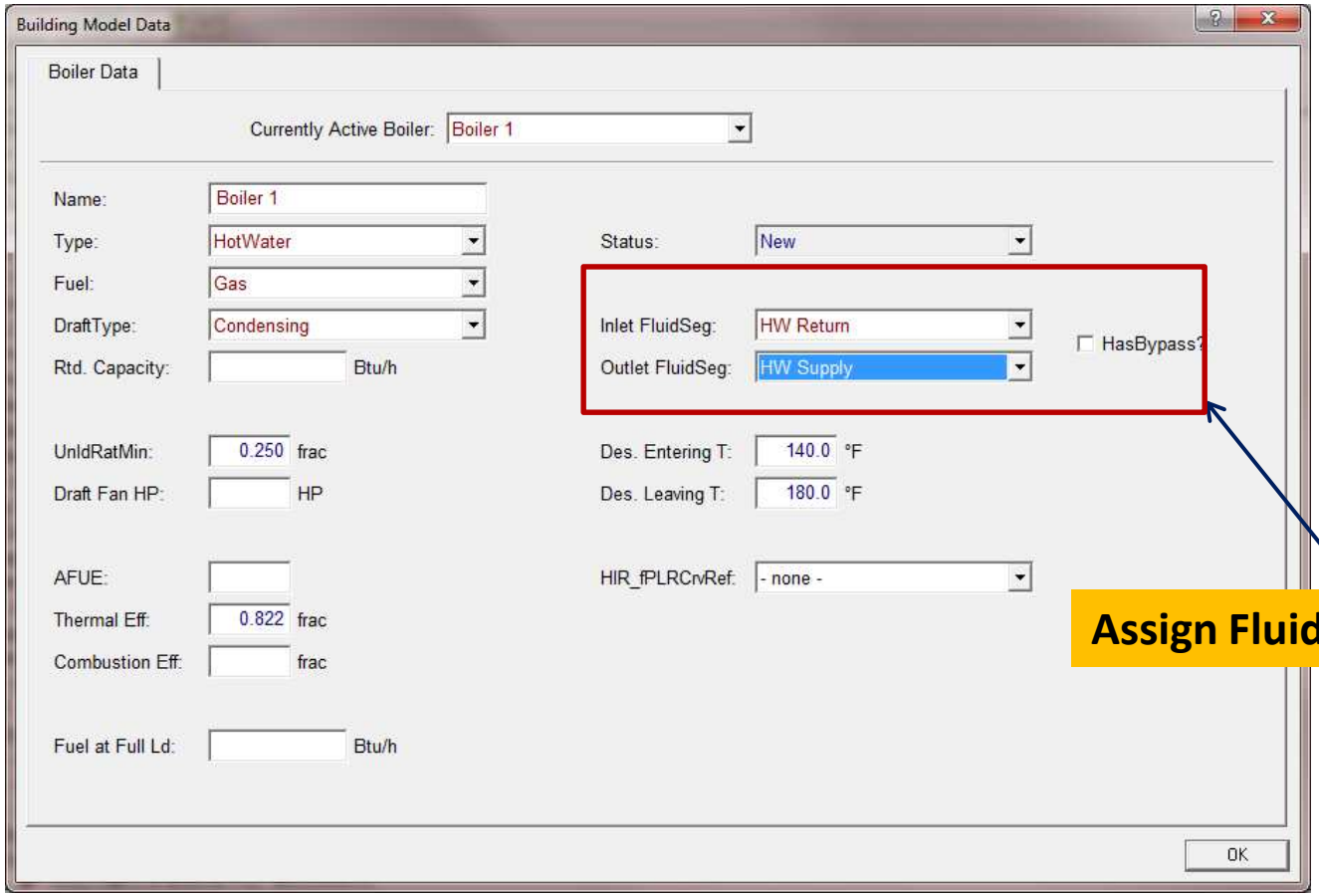
Defining Central Plant Systems

- Objective: **Create Plant System**

1. Create Boiler
2. Create Chiller
3. Create Cooling Tower
4. Create VAV System

Training Module 12: Create HotWater System

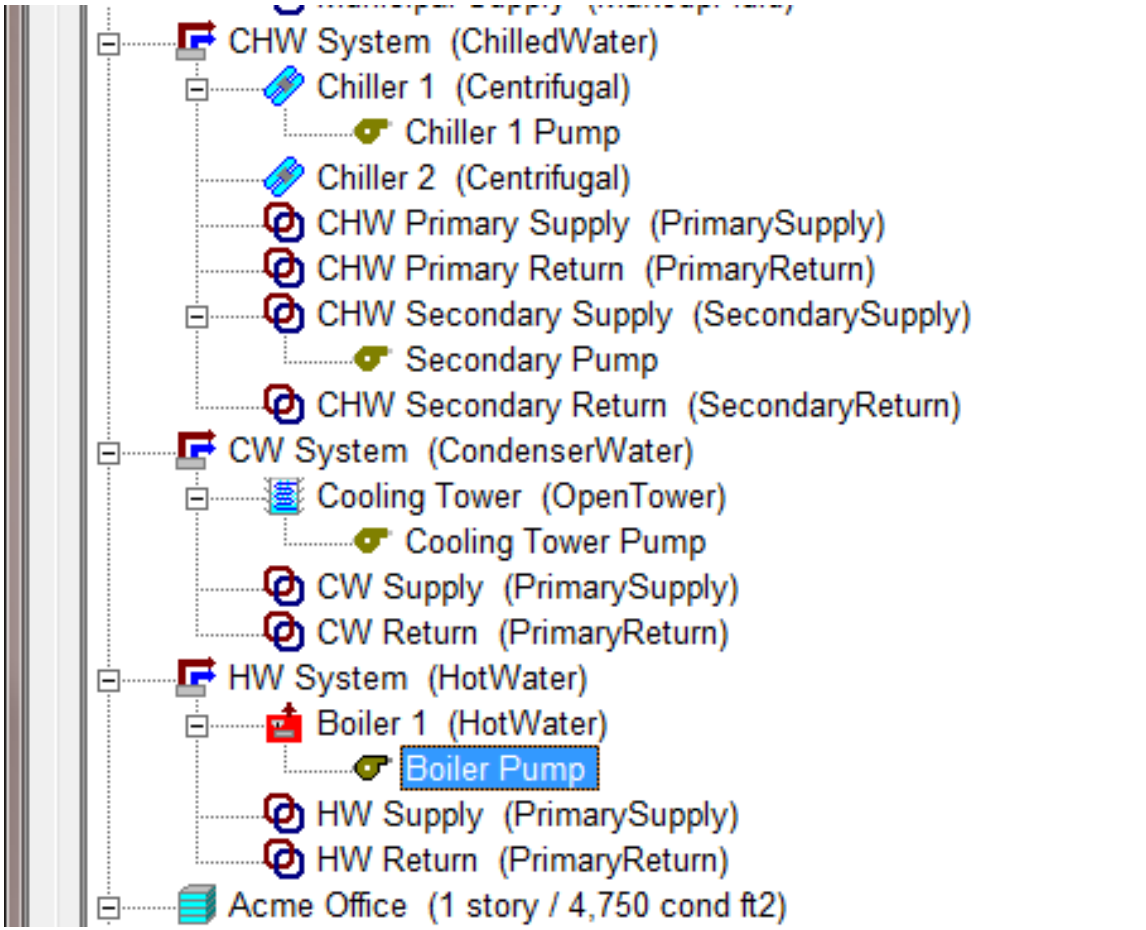
- **Create a new Fluid System , name it HW System and select type “HotWater”**
- **Create Fluid Segments- HW Supply of type “Primary Supply” and HW Return of type “primary Return”.**
- **Right-click on Fluid System Name (HW System) then select Create > Boiler**
- **A new dialog box opens – fill in the Boiler Name (Boiler 1) and then click OK.**



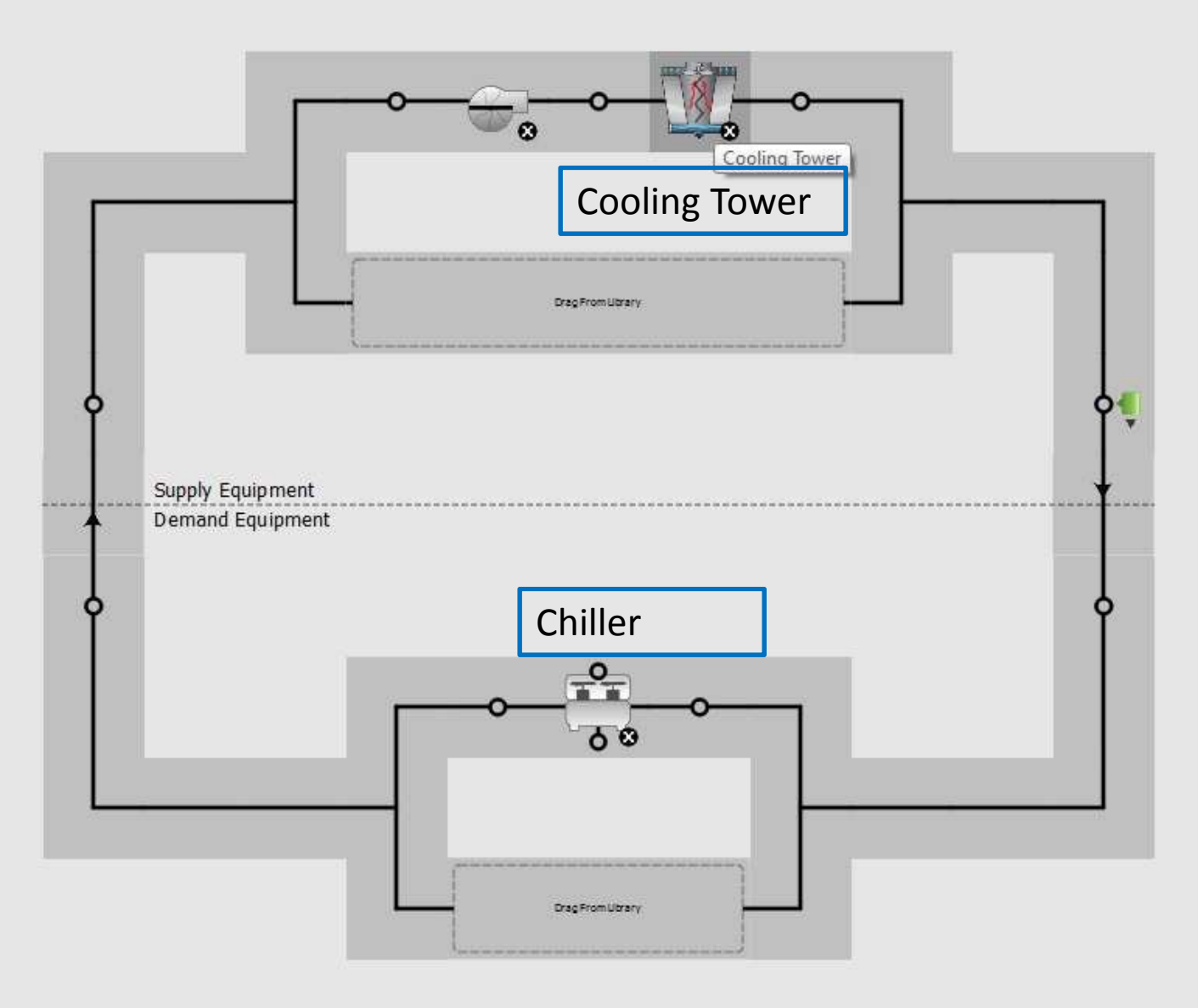
Assign Fluid Segments

Training Module 12: Create HotWater System

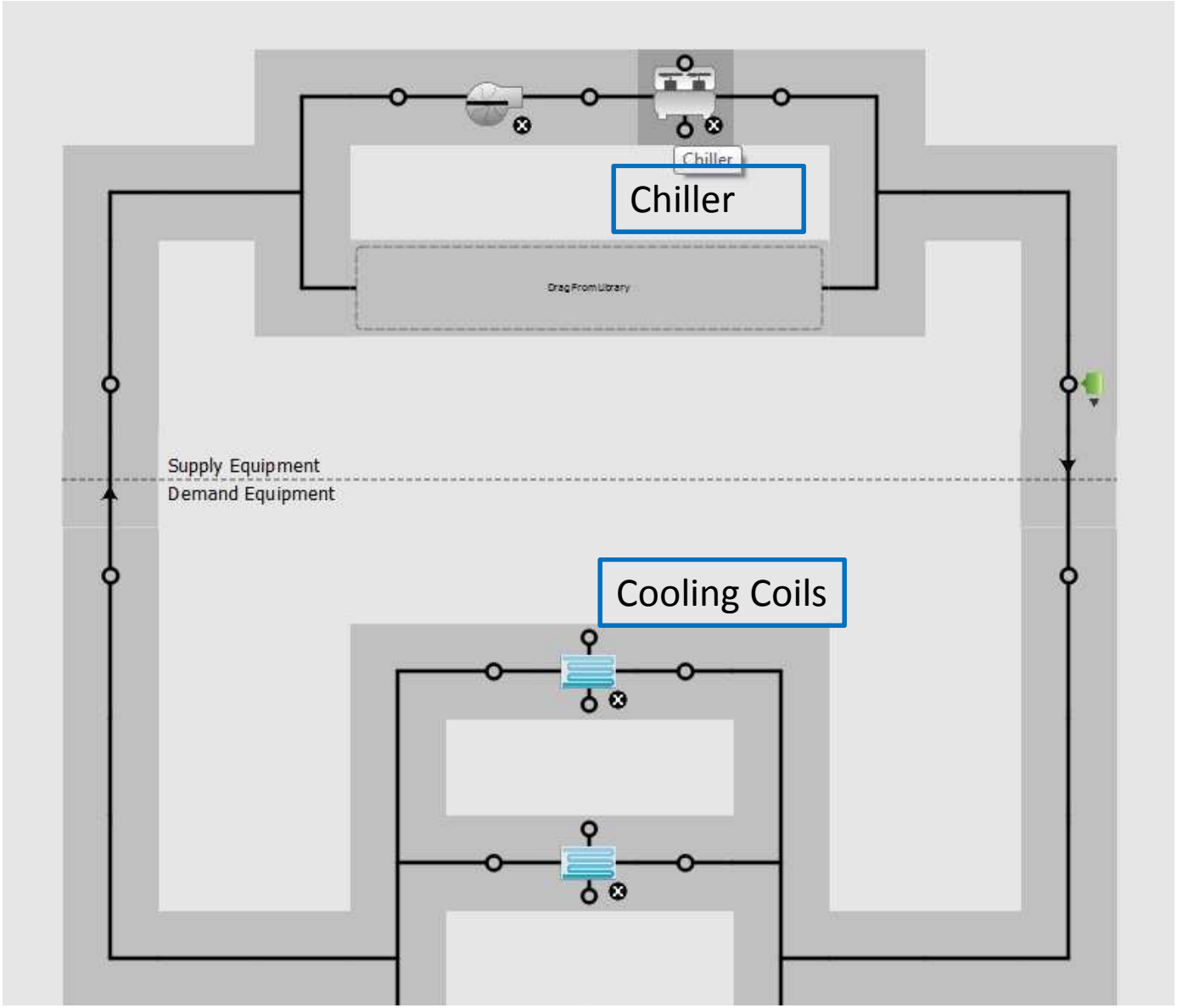
- **Right-click on Boiler Name (Boiler) then select Create > Pump**
- **A new dialog box opens – fill in the Pump Name (Boiler Pump) and click OK.**
- **Below is a tree view of all elements of the Plant Systems.**



Training Module 12- EnergyPlus Representation- Condenser Water Loop

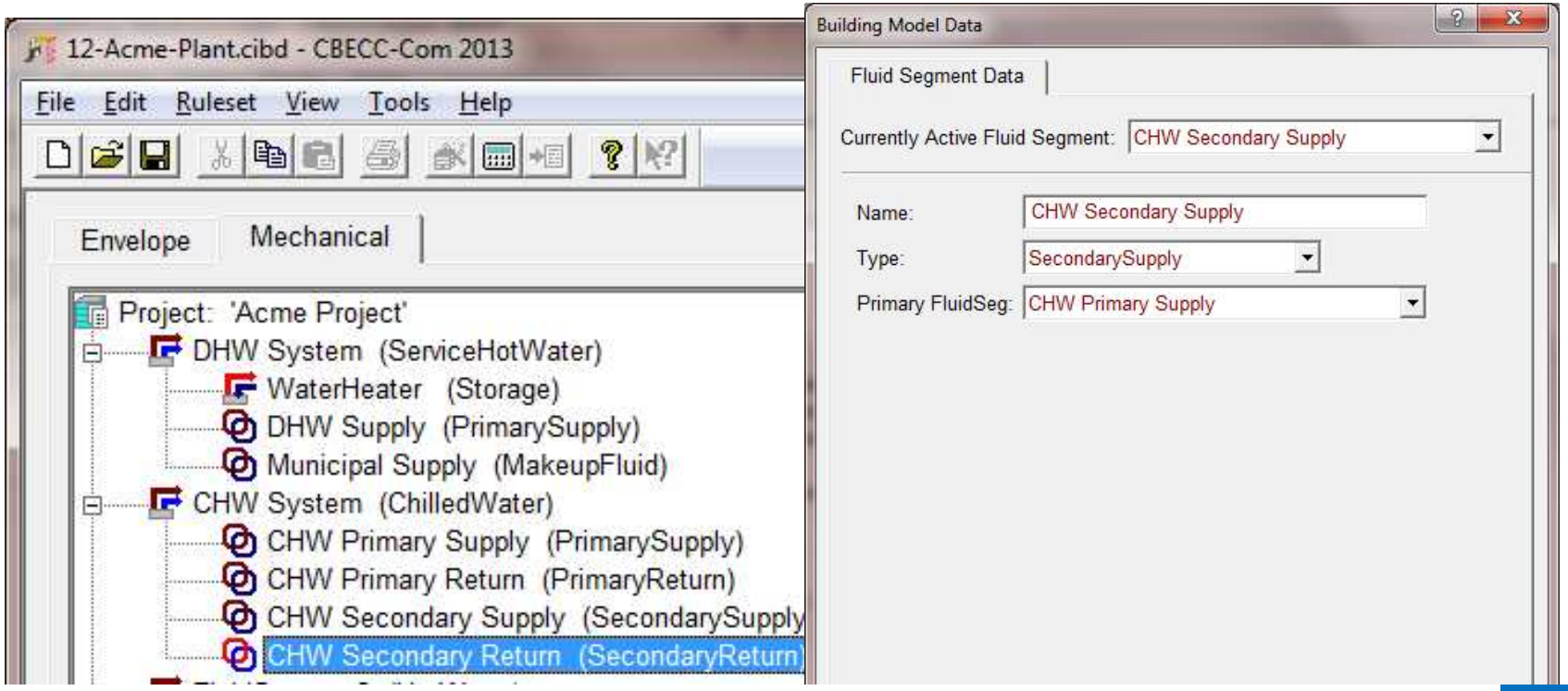


Training Module 12- EnergyPlus Representation- Chilled Water Loop



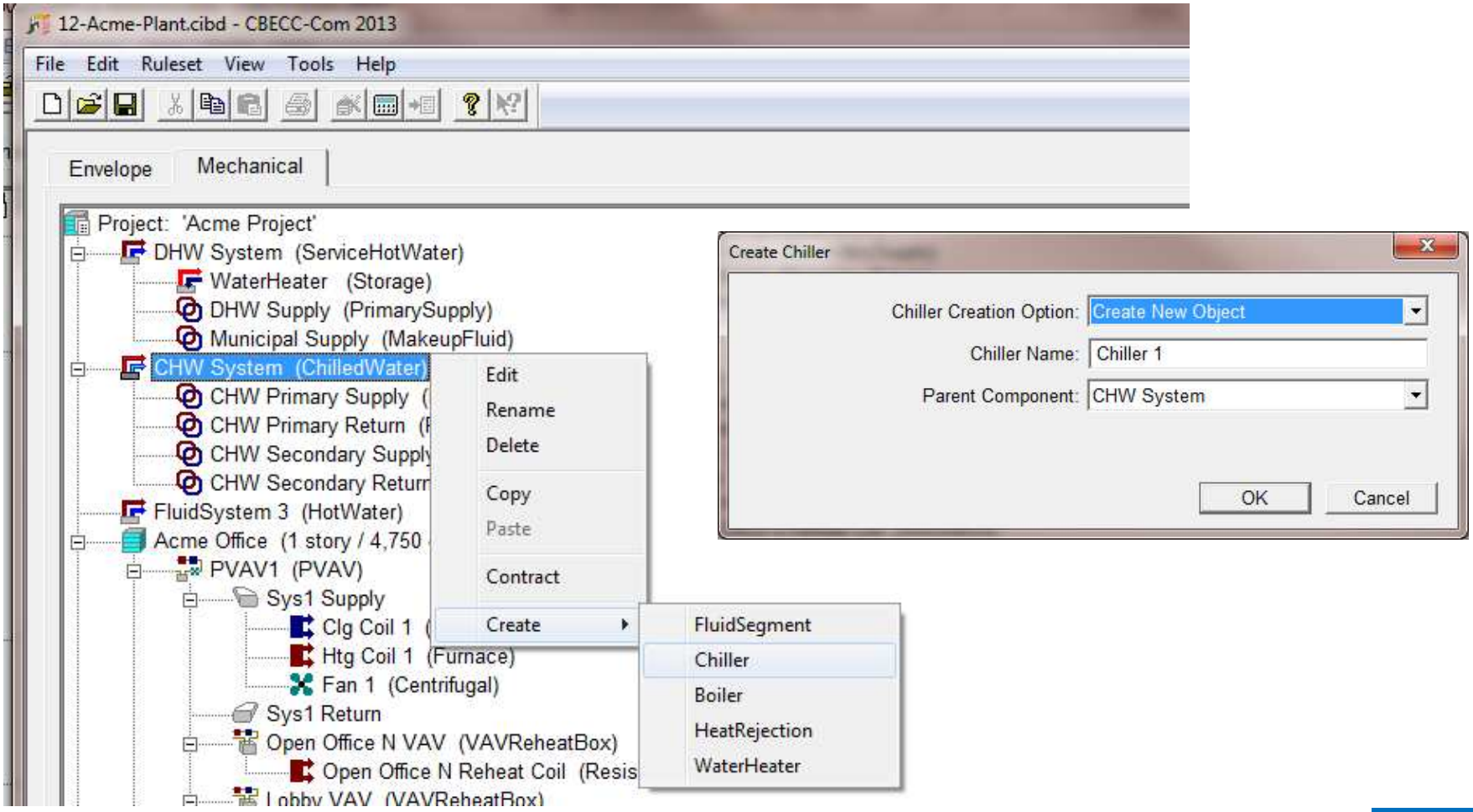
Training Module 12: Create Chilled Water System

- **Create Fluid System as explained in Module 10. Name the Fluid System as CHW System and select type Chilled Water.**
- **Create Fluid Segment as explained in Module 10. Name the segment as CHW Primary Supply and select type “Primary Supply”. Fluid Segment data box will appear, click ok.**
- **Repeat above step and create CHW Primary Return, CHW Secondary Supply and CHW Secondary Return Segments.**
- **Assign Primary Fluid Segment for CHW Secondary Supply and Return**



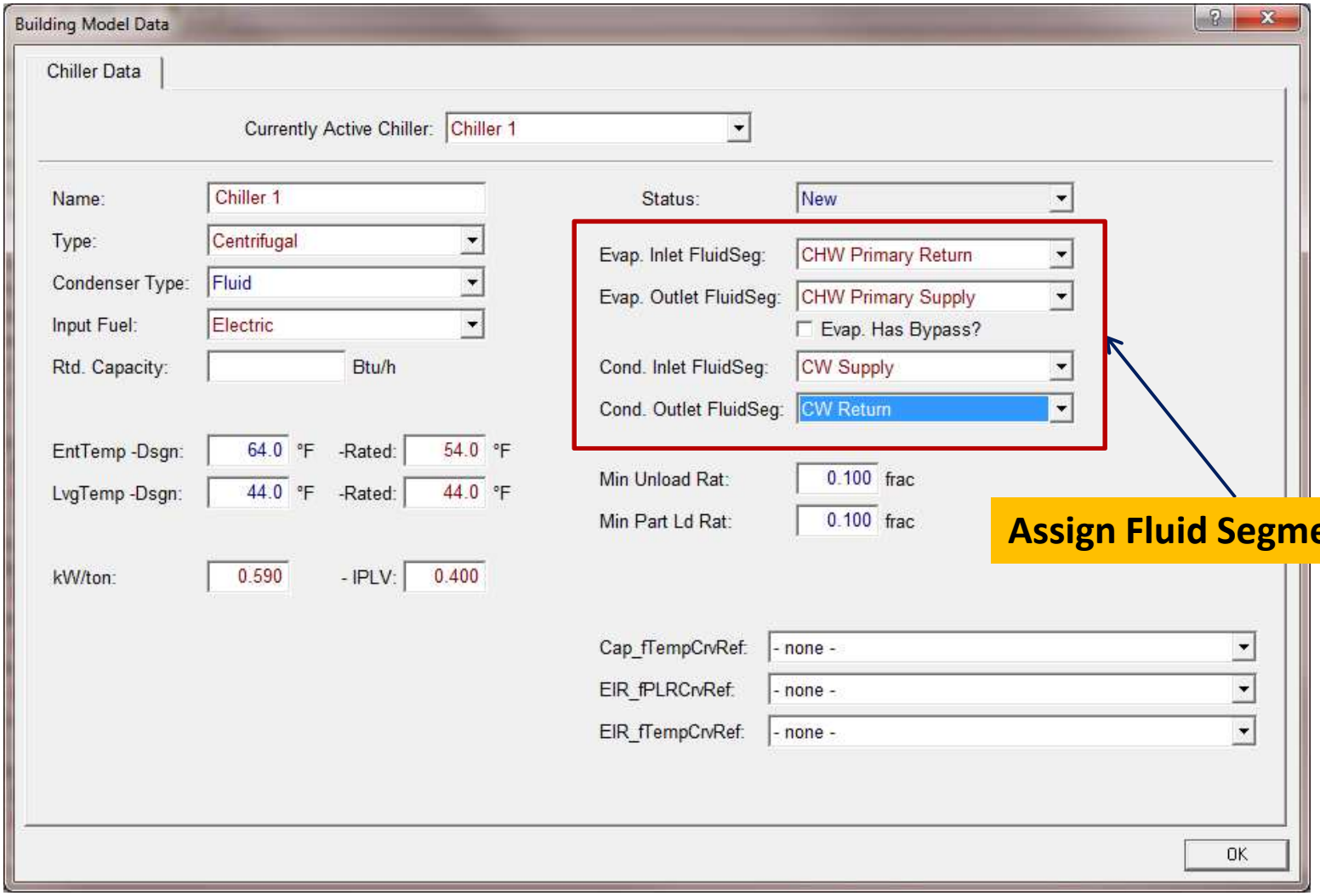
Training Module 12: Create Chiller

- **Right-click on FluidSystem Name (CHW System) then select Create > Chiller**
- **A new dialog box opens – fill in the Chiller Name (Chiller1) and then click OK**



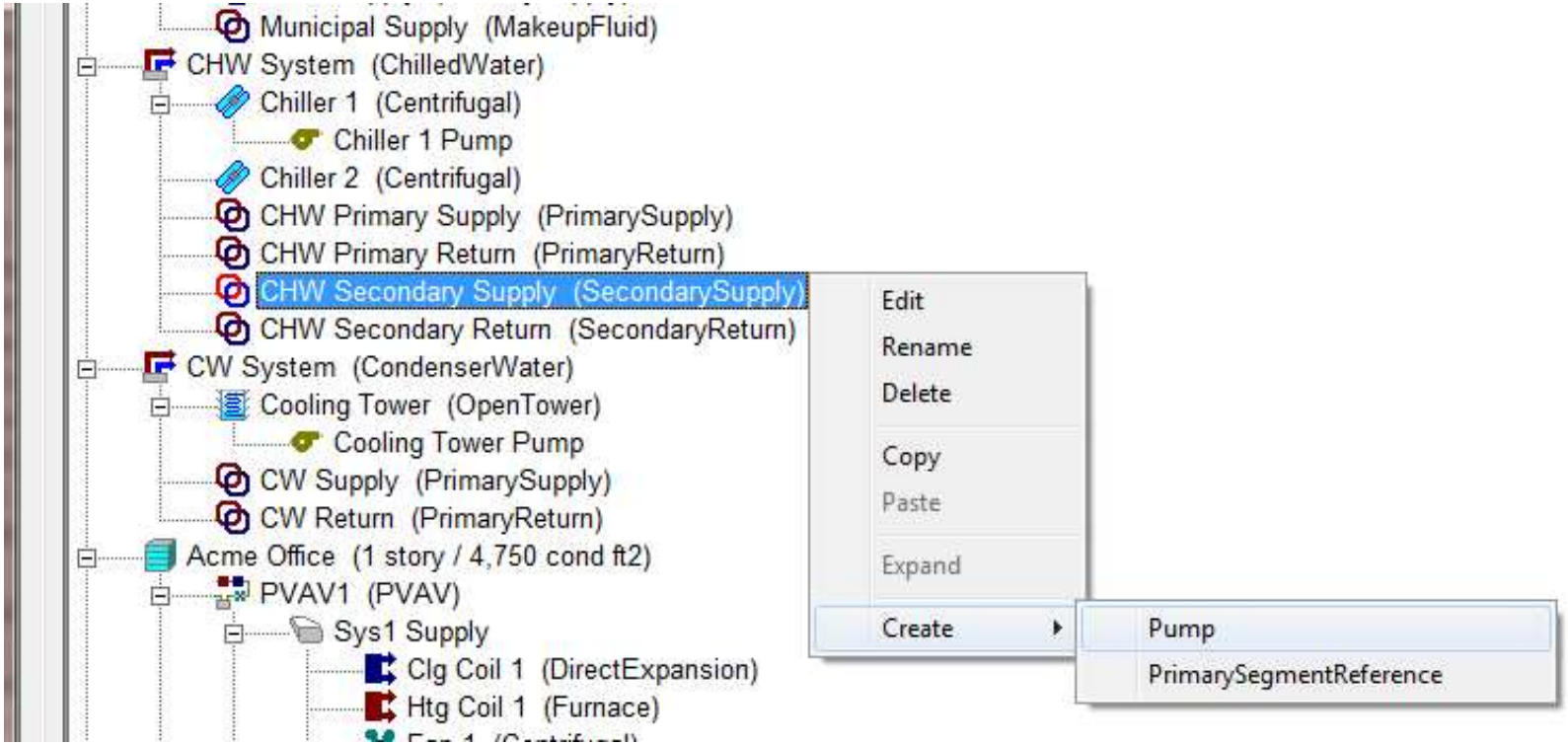
Training Module 12: Create Chiller

- **Assign Fluid Segments**
- **Typical view of the Chiller Data Screen**



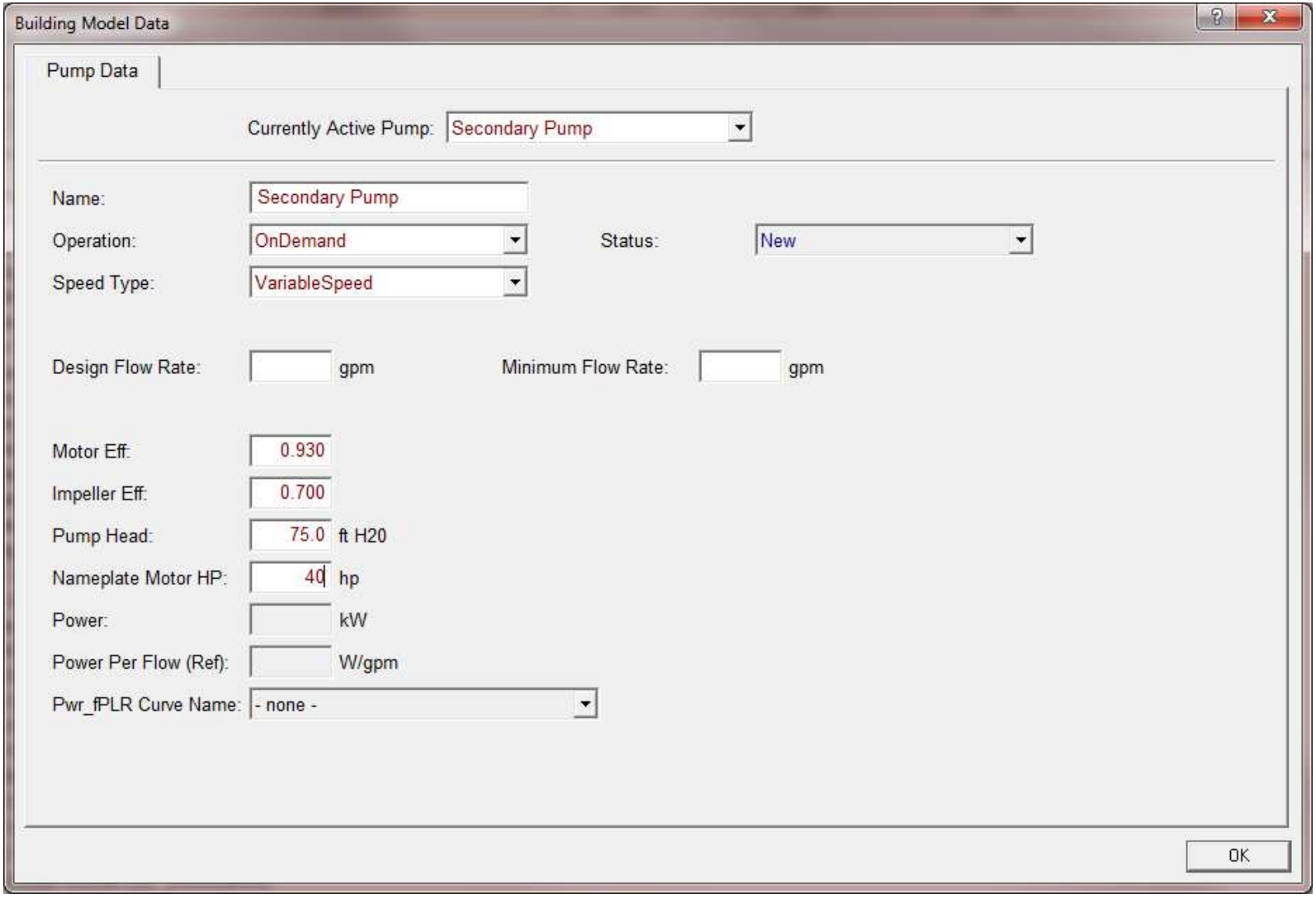
Training Module 12: Create Chiller Pumps

- **Right-click on Chiller Name (Chiller 1) then select Create > Pump**
- **A new dialog box opens – fill in the Pump Name (Chiller1 Pump) and click OK.**
- **Create a Secondary Pump for the Chilled Water System by right-clicking on CHW Secondary Supply then select Create > Pump**
- **A new dialog box opens – fill in the Pump Name (Secondary Pump) and click OK.**



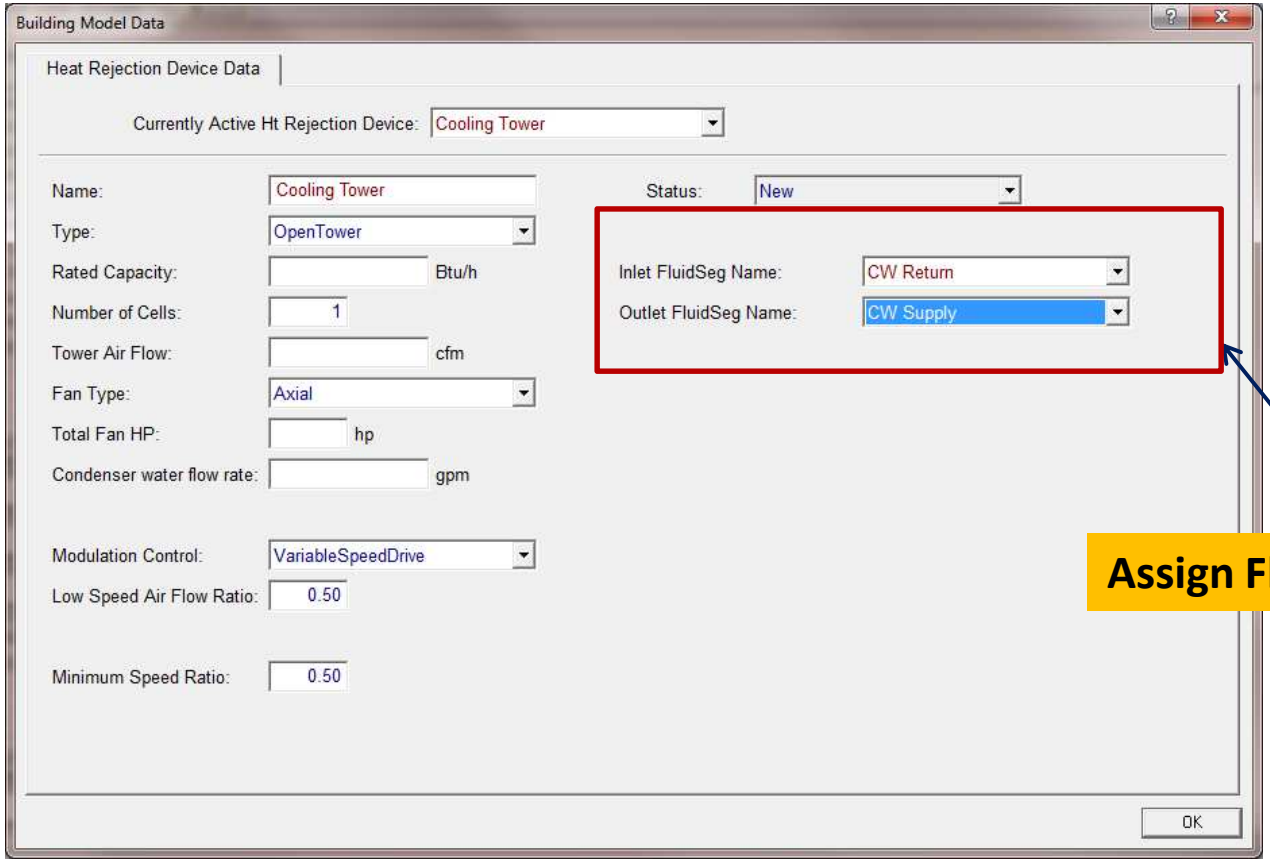
Training Module 12: Create Chiller Pumps

- **Select "Variable Speed" Speed Type for the Secondary Pump.**



Training Module 12: Create Condenser Water System

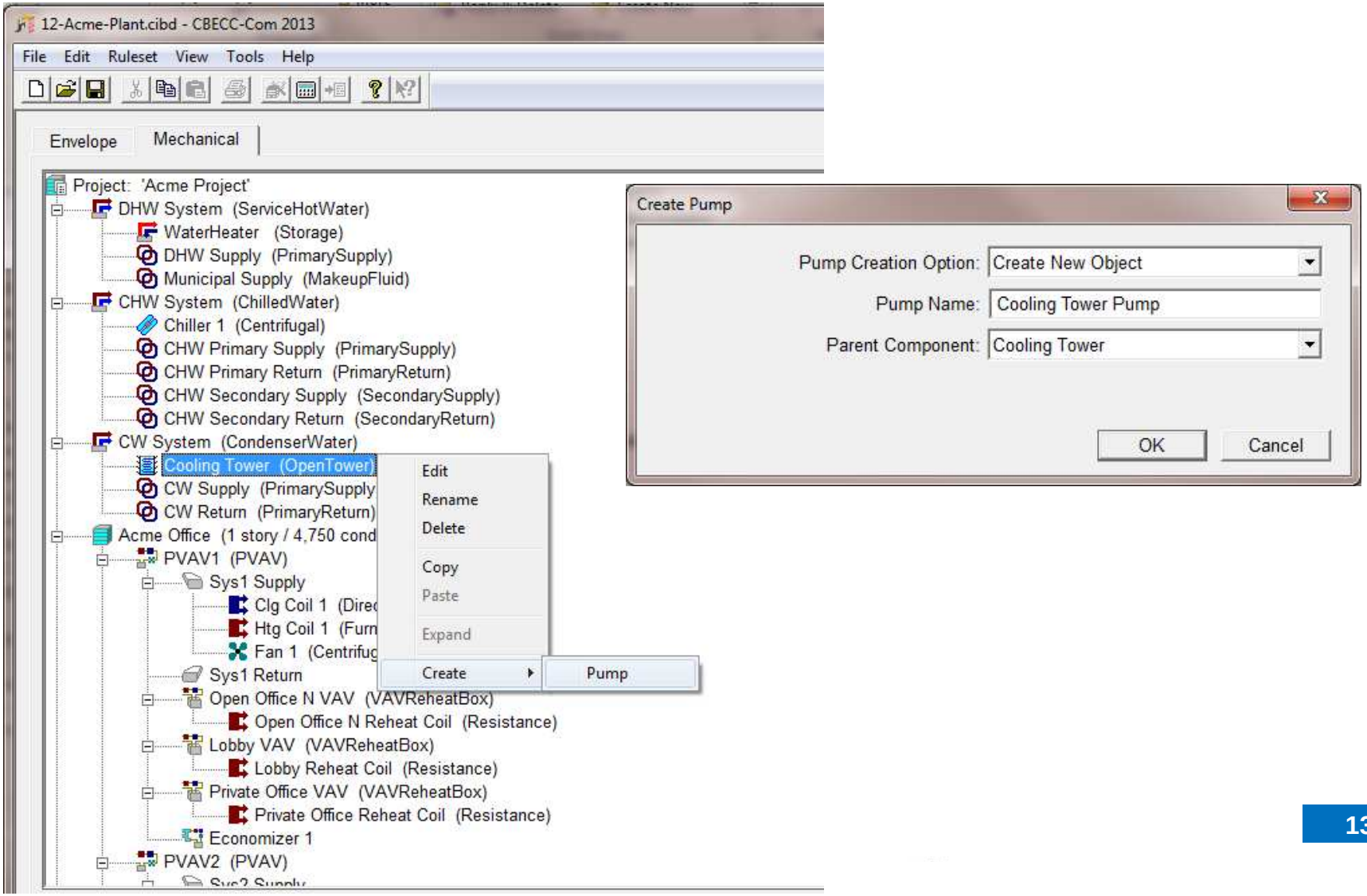
- **Create Fluid System as explained in Module 10. Name the Fluid System as CW System and select type Condenser Water.**
- **Create Fluid Segment as explained in Module 10. Name the segment as CW Supply and select type “Primary Supply”. Fluid Segment data box will appear, click ok. Repeat and create CW Return Fluid Segment of type “Primary Return”**
- **Right-click on FluidSystem Name (CW System) then select Create > HeatRejection**
- **A new dialog box opens – fill in the HeatRejection Name (Cooling Tower) and then click OK**



Assign Fluid Segments

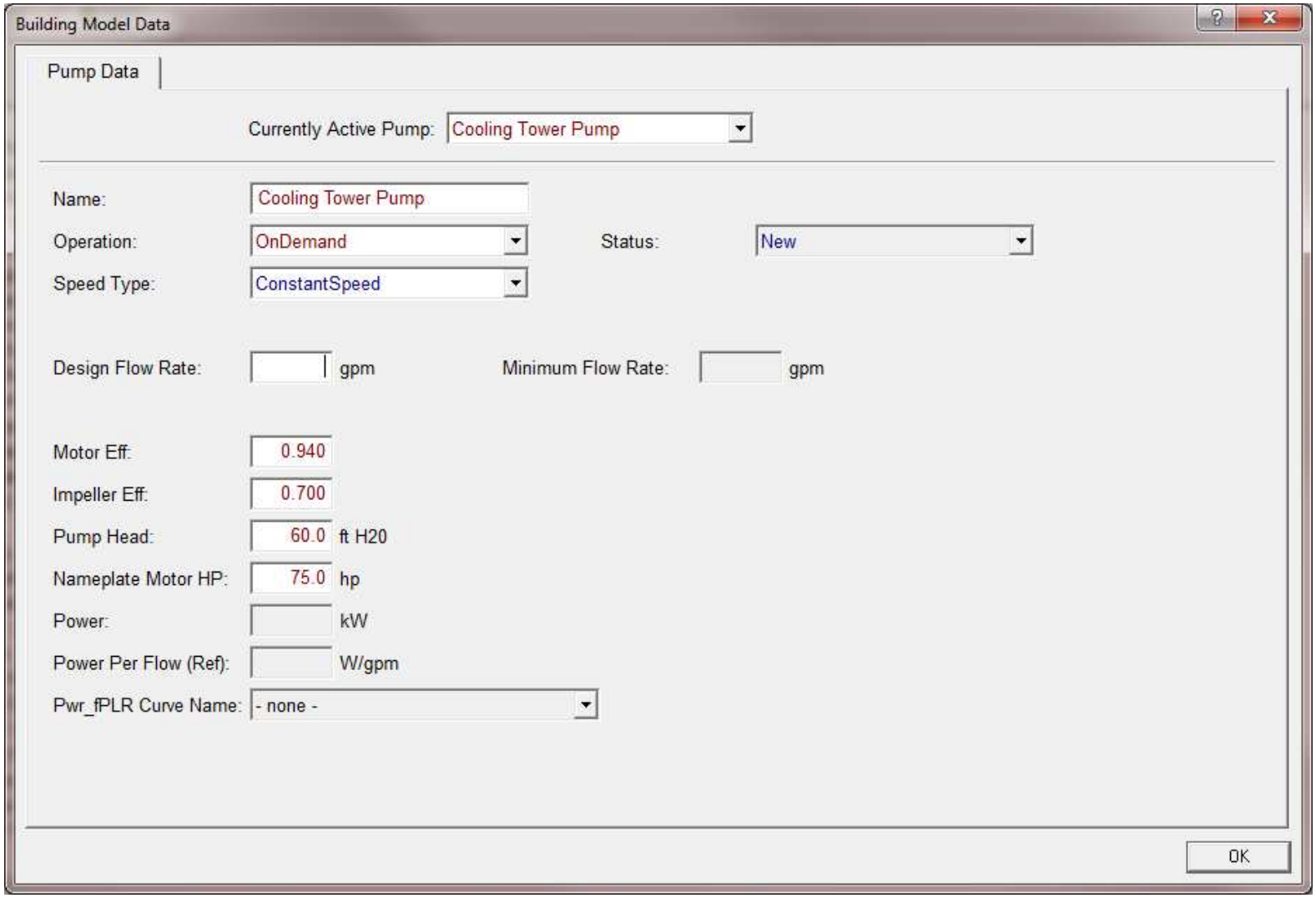
Training Module 12: Create Cooling Tower Pump

- **Right-click on HeatRejection Name (Cooling Tower) then select Create > Pump**
- **A new dialog box opens – fill in the Pump Name (Cooling Tower Pump) and then click OK**



Training Module 12: Create Cooling Tower Pump

- **Typical view of Pump Data Screen.**



Training Module 12: Mechanical Schedule

COOLING TOWER SCHEDULE

Rated Capacity (Btuh)	Tower Air Flow (cfm)	Total fan hp	Condenser Water Flow (gpm)
202,842	2,812	0.70	41

CHILLER SCHEDULE

Type	Rated Capacity (Btuh)	kW/ton	IPLV
Centrifugal	170,100	0.590	0.40

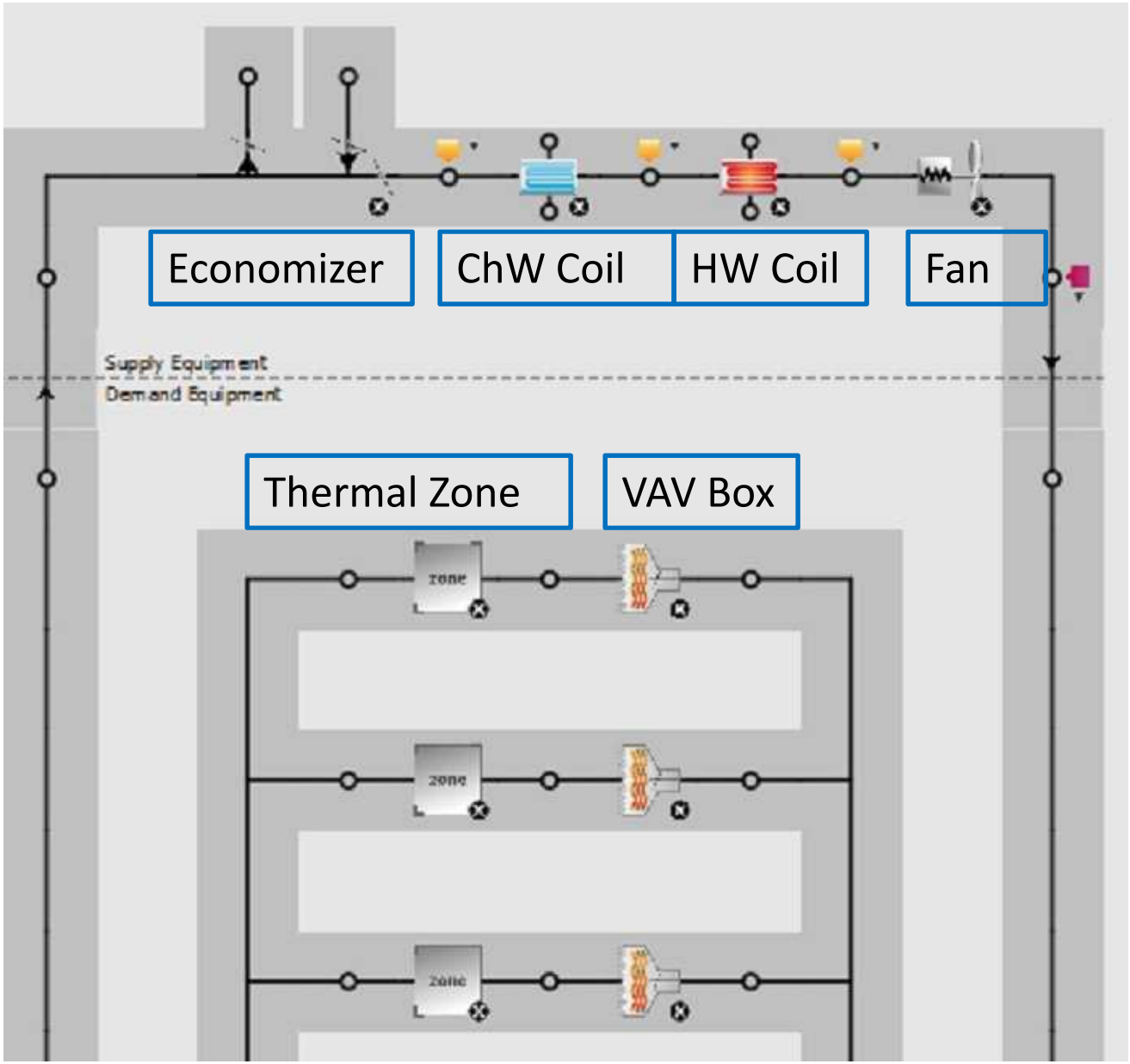
BOILER SCHEDULE

Type	Rated Capacity (Btuh)	Thermal Eff
Condensing	67,000	0.822

PUMP SCHEDULE

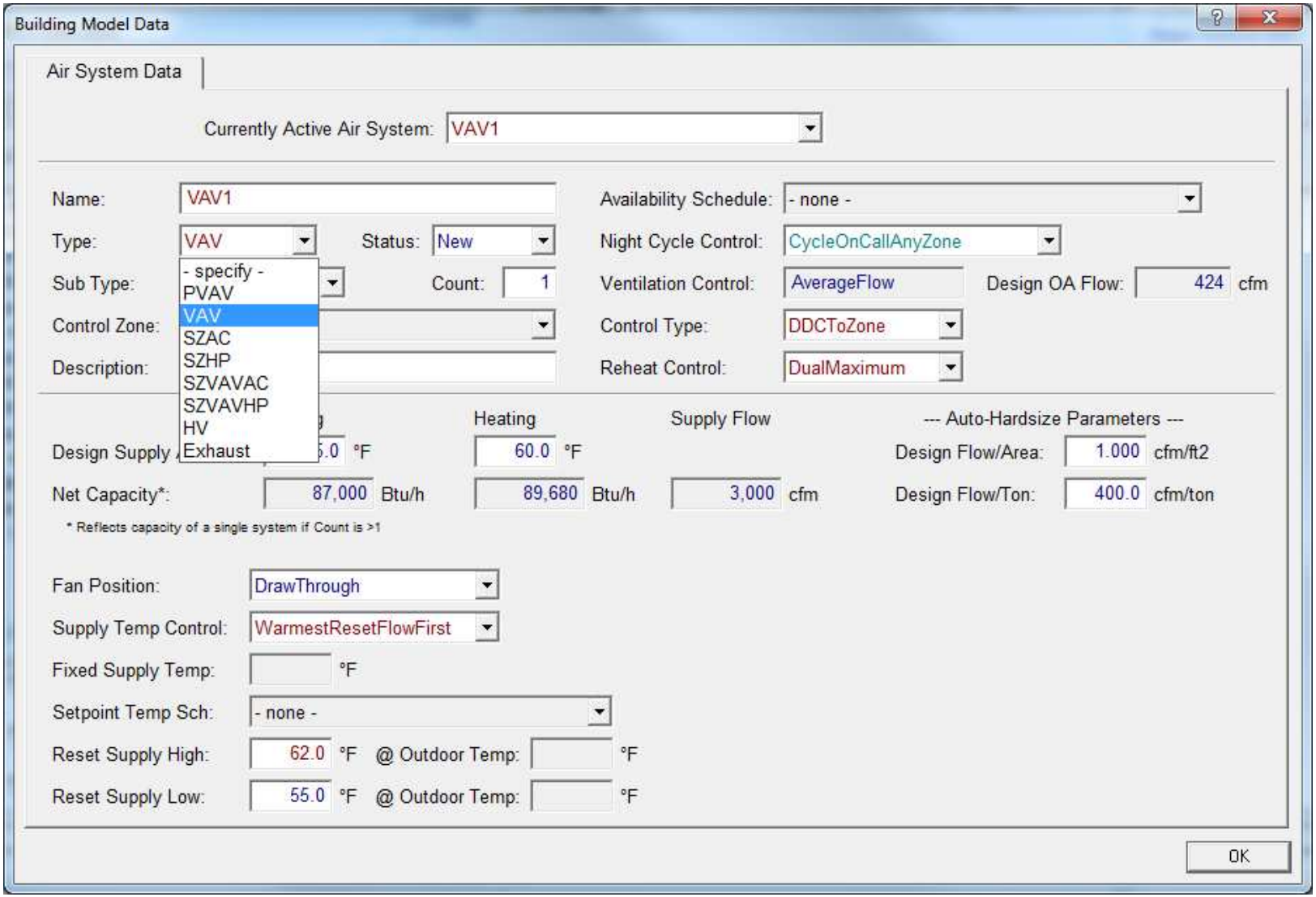
Name	Design Flow Rate (gpm)	Motor Eff	Impeller Eff	Pump Head (ft H20)	Motor HP
Chiller 1 Pump	17.0	0.855	0.70	40.4	0.3
ChW Secondary Pump	17.0, (5.1-min flow)	0.855	0.70	75	0.5
Cooling Tower Pump	41	0.855	0.7	45	0.8
Boiler Pump	3.3	0.855	0.70	60.4	0.1

Training Module 12: Create VAV System



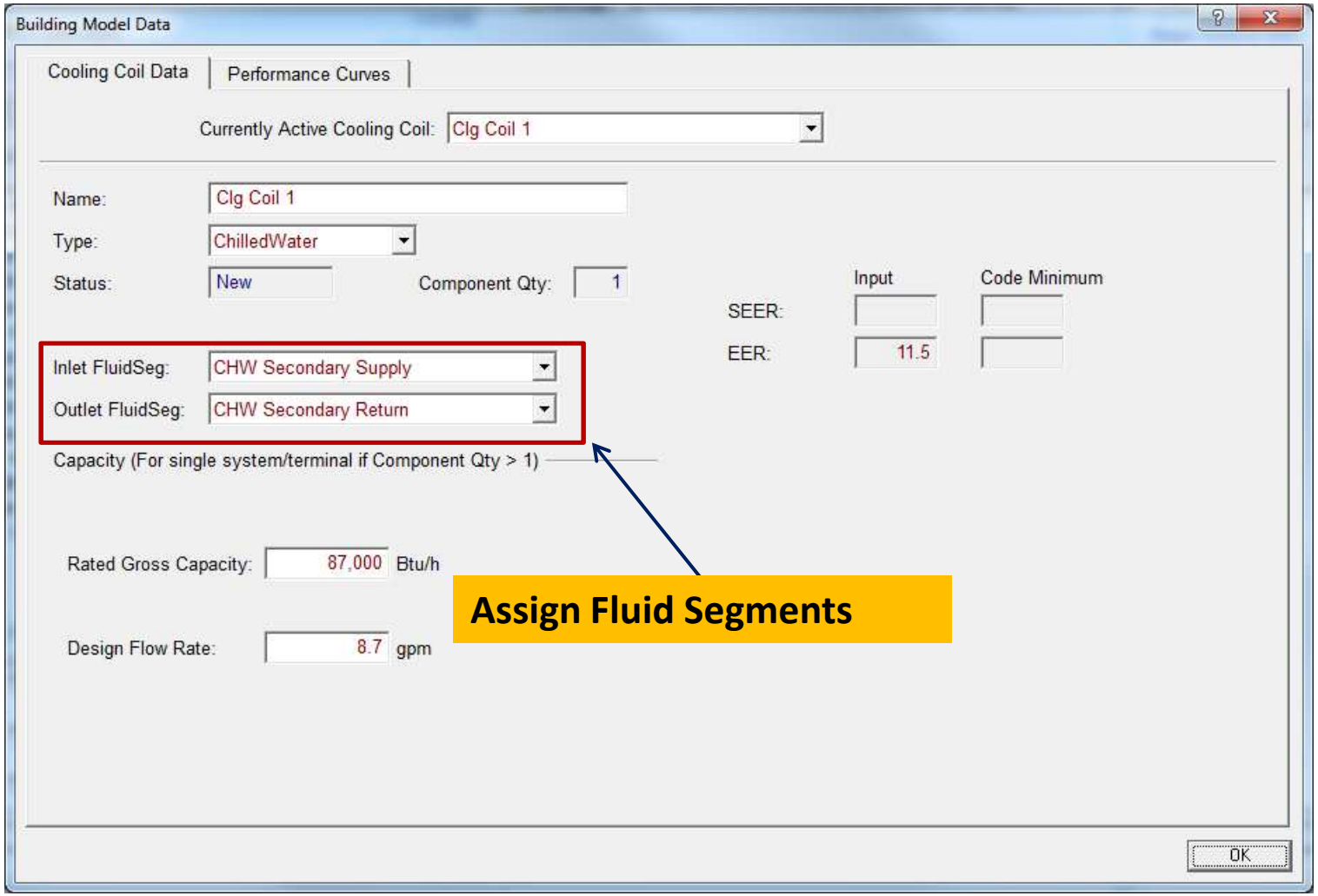
Training Module 12: Create VAV System

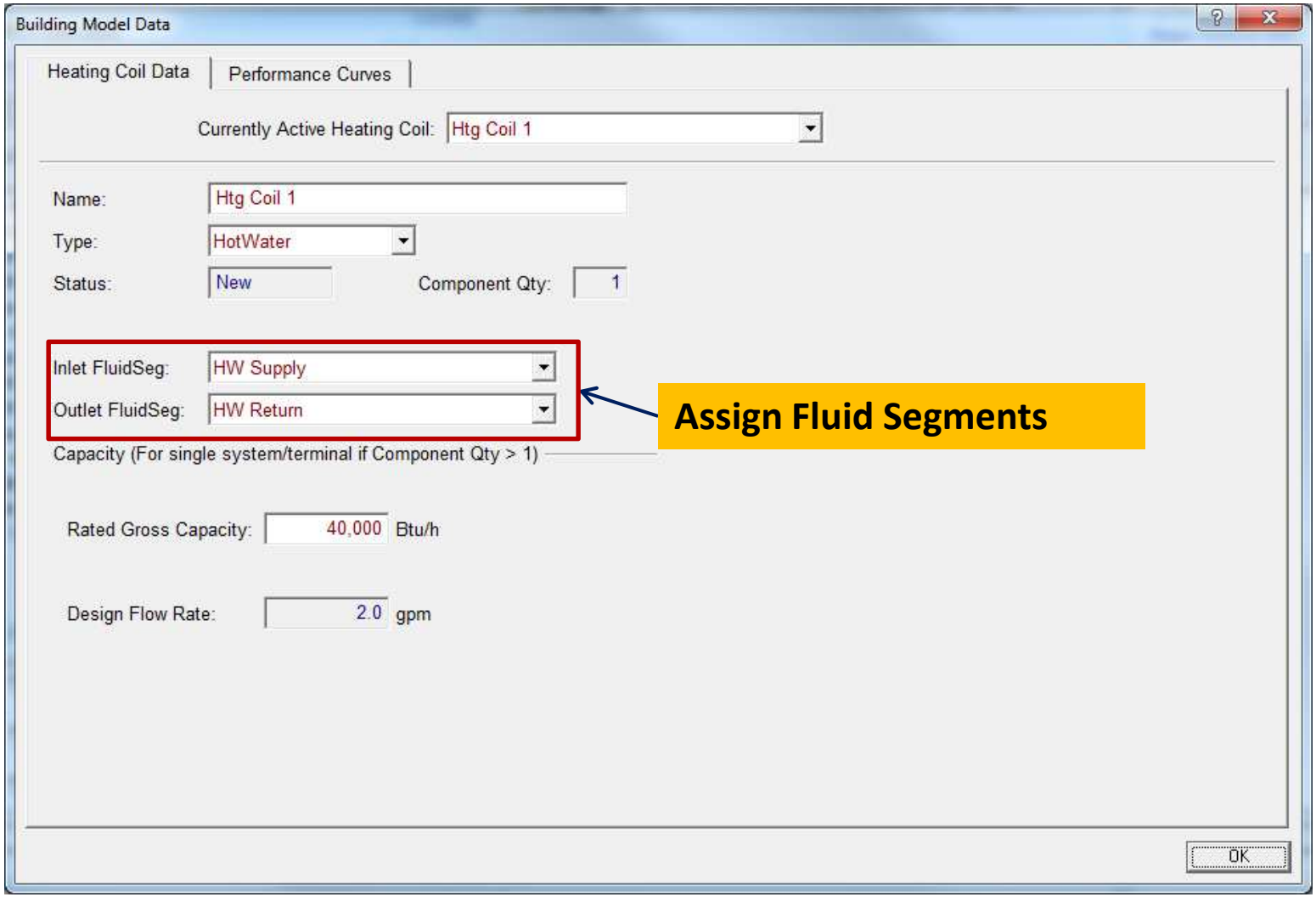
- **Create Air System – see Module 7 for details.**
- **Name as VAV 1 and select type VAV**



Training Module 12: Create VAV System

- **Create Air Segment, Cooling Coil and Heating Coil – see Module 7 for details.**
- **Select "Chilled Water" as Cooling Coil Type .**
- **Assign Fluid Segments**



Training Module 12: Create VAV System

- **Select “Hot Water” as Heating Coil Type .**
- **Assign Fluid Segments**
- **Create Fan and Economizer- See Module 7 for details.**