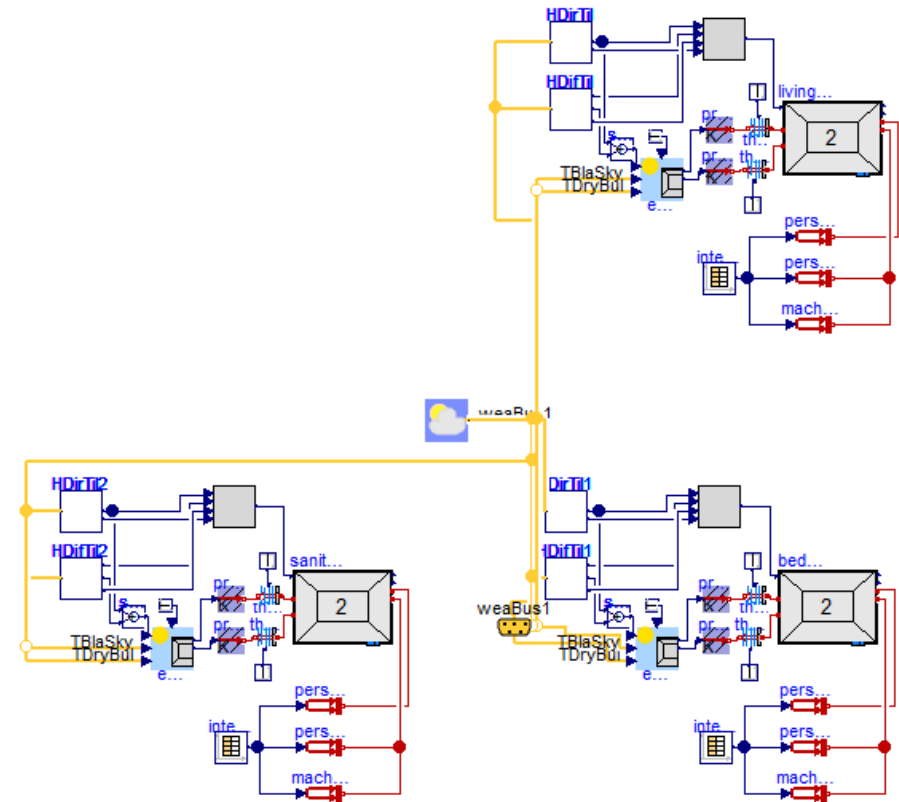


Building and HVAC

Exercises

Building and HVAC Exercise

1. Create a simple heating system of:
 1. Ideal heater/boiler
 2. Radiators
 3. Valves with PI-controllers per room
 4. Pump
 5. Ideal pipes (no heat losses)
2. Connect it to all three zones of D1_North1 building
 1. You could use D1_North1_Template
3. Change the control strategy to include night setback
4. Change the control strategy to be occupancy-dependent



Parameter settings

■ Medium:

- ≡ Simple water, e.g. Modelica.Media.Water.ConstantPropertyLiquidWater
- ≡ Pressure drops: 100 Pa

■ Radiators:

- ≡ Nominal flow temperature: 65 °C
- ≡ Nominal return temperature: 50 °C

■ Heat loads

- ≡ Living room: 92028 W
- ≡ Bed room: 70870 W
- ≡ Sanitary room: 13040 W
- ≡ Set temperatures: 20 °C

■ Volume flows:

- ≡ Living room circuit: 1.4 kg/s
- ≡ Bed room circuit: 1.12 kg/s
- ≡ Sanitary room circuit: 0.2 kg/s

■ Night setback: 15 °C, 10 PM - 6 AM, Occupancy: 15 °C if nobody in the room

<https://github.com/RWTH-EBC/TEASER>

<https://github.com/RWTH-EBC/AixLib>

Contact

E.ON Energy Research Center
Mathieustraße 10
52074 Aachen
Germany

Moritz Lauster
T +49 241 80 49772
F +49 241 80 49769
mлаuster@eonerc.rwth-aachen.de

Further Information:

<http://www.eonerc.rwth-aachen.de>