

# Modelica Buildings Library Tutorial

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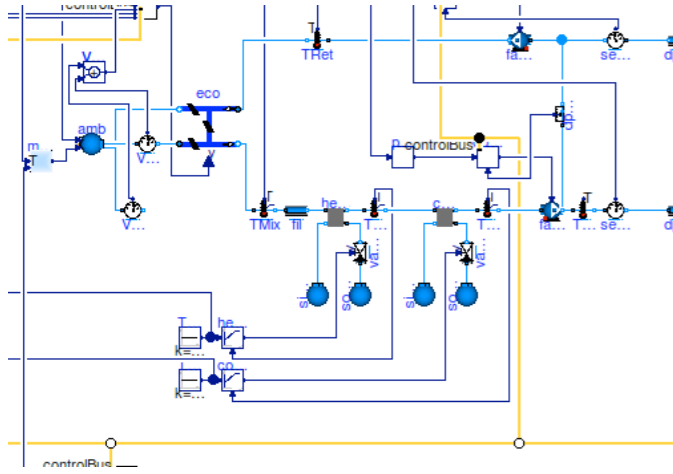
Lawrence Berkeley National Laboratory

The vision is to create a flexible computing infrastructure for

- a) the basis of the “Spawn of EnergyPlus”, and
- b) design, research, product development and operation of building and community energy systems.

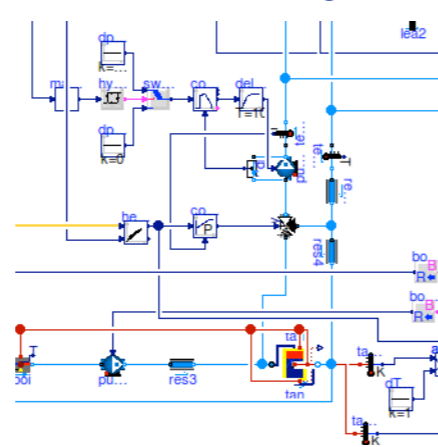
# Buildings library: 500+ validated, free, open-source models

Air-based HVAC



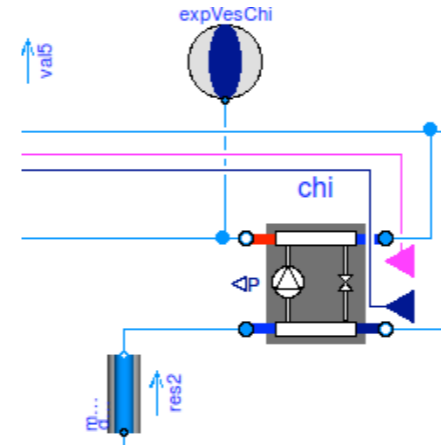
Natural ventilation,  
multizone air exchange,  
contaminant transport

Hydronic heating

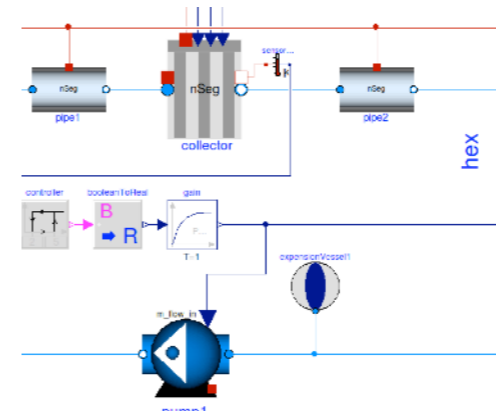


Room heat transfer,  
incl. window (TARCOG)

Chiller plants



Solar collectors



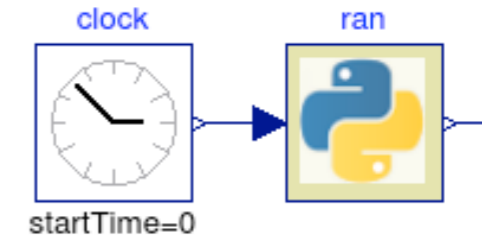
Next release

Reduced order building  
models for city-scale  
simulation.

Heating/cooling piping  
networks for districts.

Heat pump models

Embedded Python



FLEXLAB

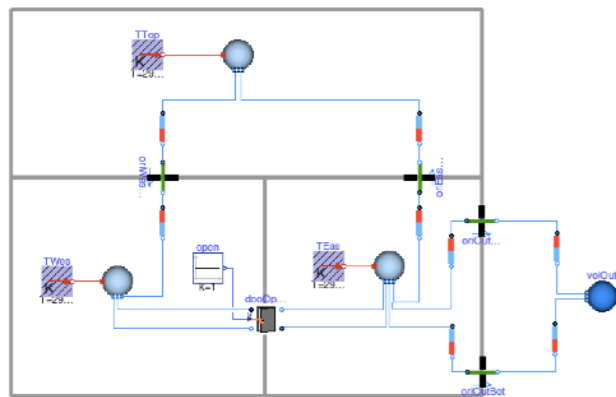


Current development:

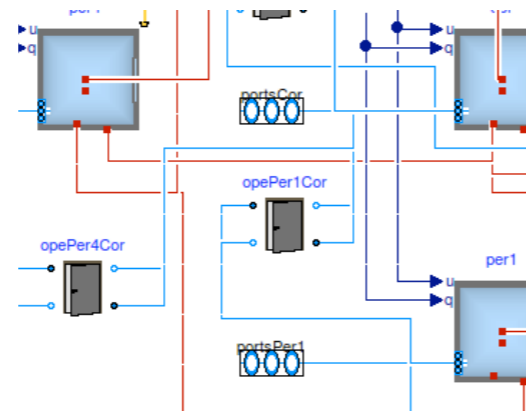
Make it the core of the Spawn  
of EnergyPlus.

Develop building control design,  
specification, deployment and  
verification tool.

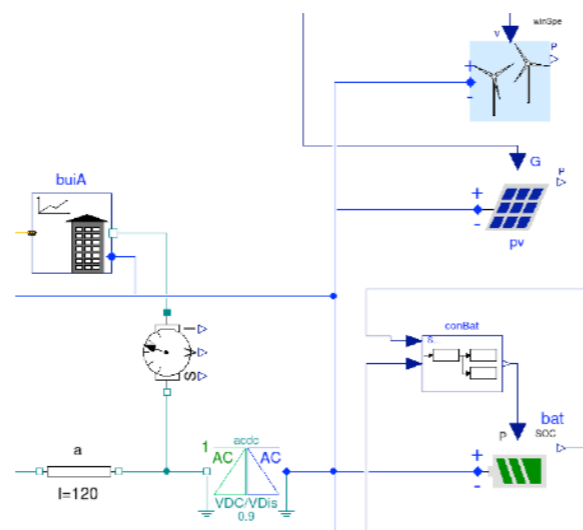
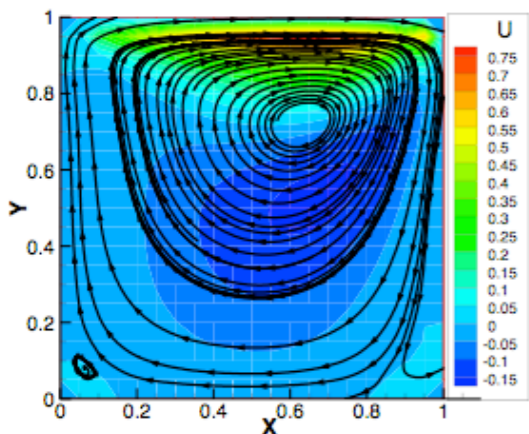
[simulationresearch.lbl.gov/modelica](http://simulationresearch.lbl.gov/modelica)



Room air flow

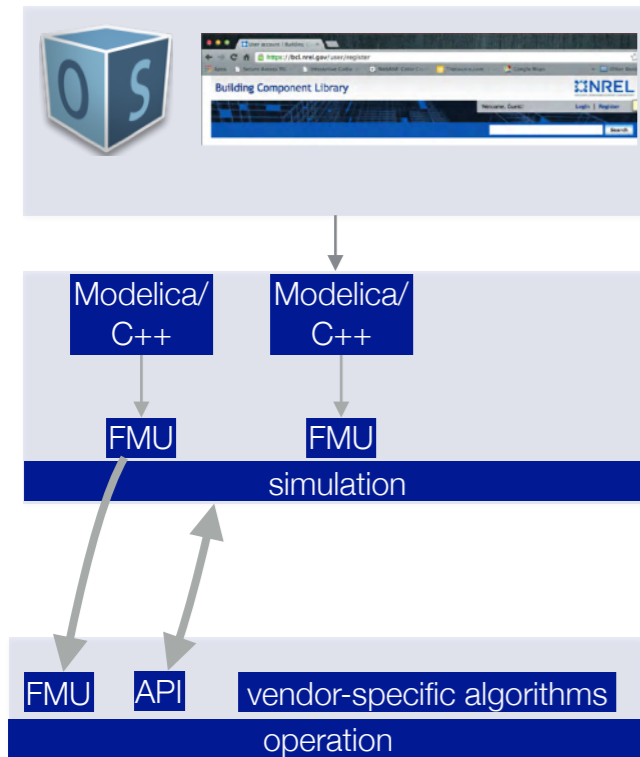


Electrical systems

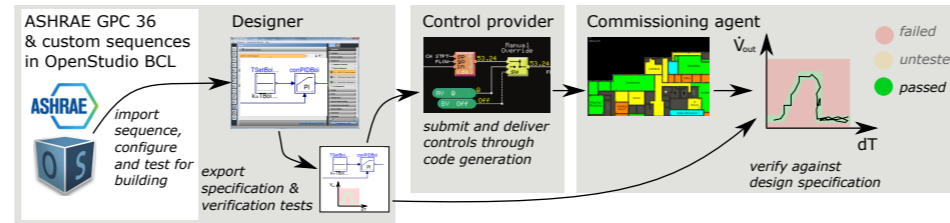


# Next

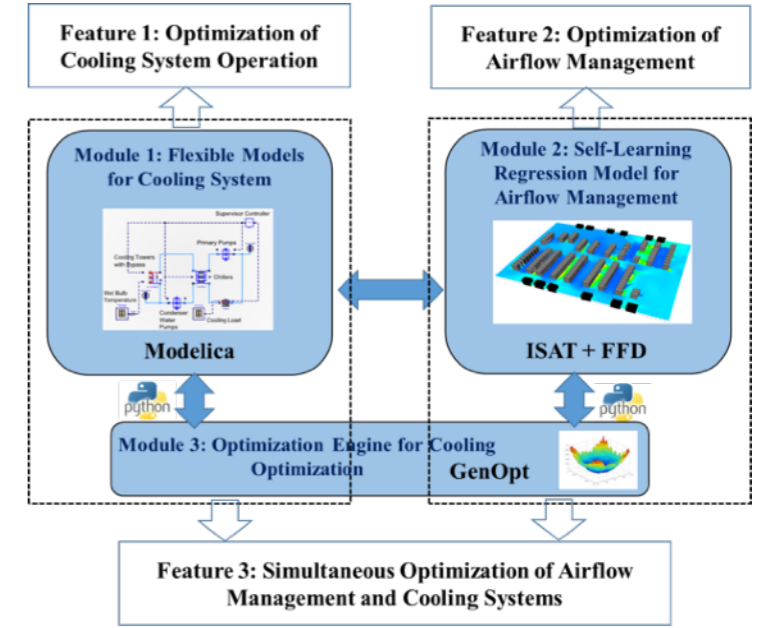
## Spawn of EnergyPlus



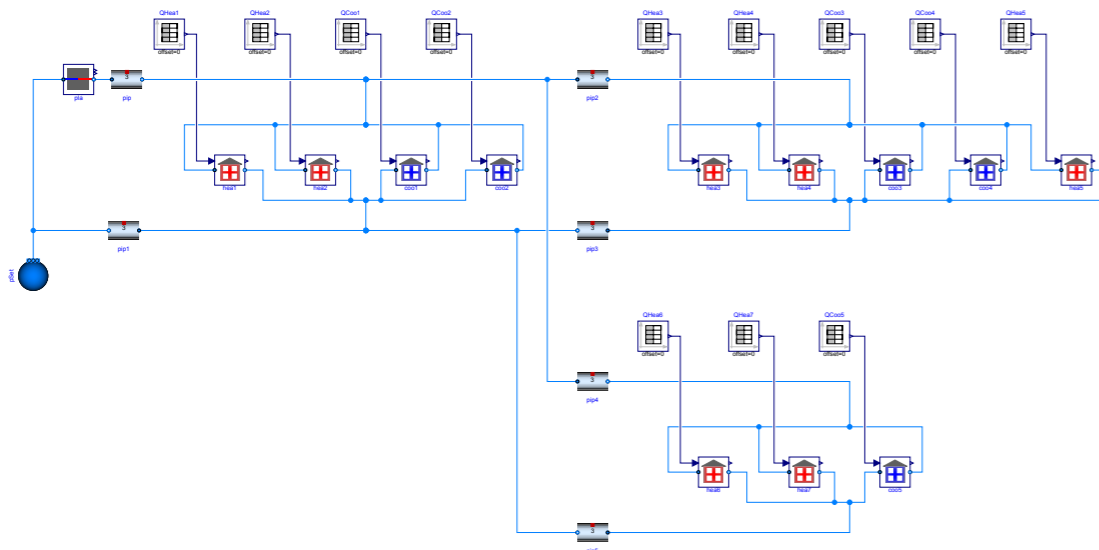
## OpenBuildingControl



## Data center design tool

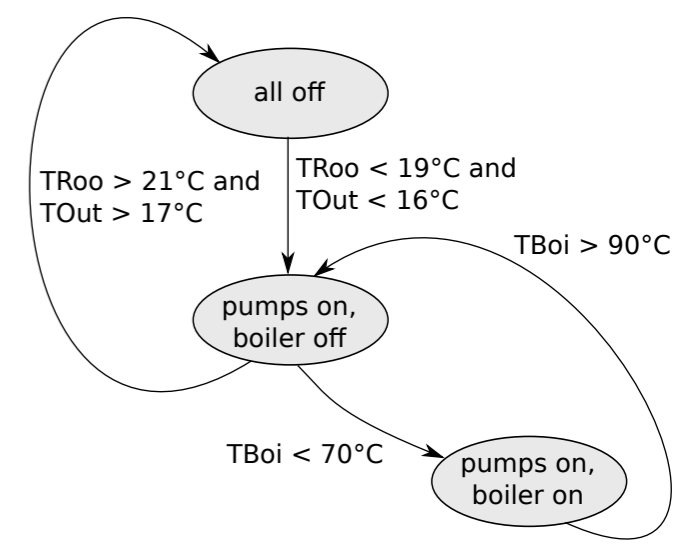
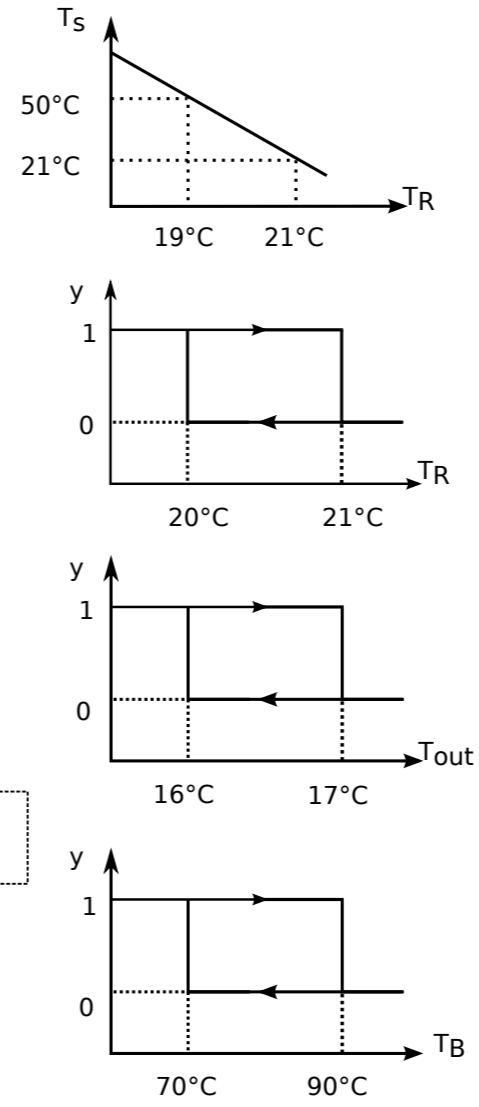
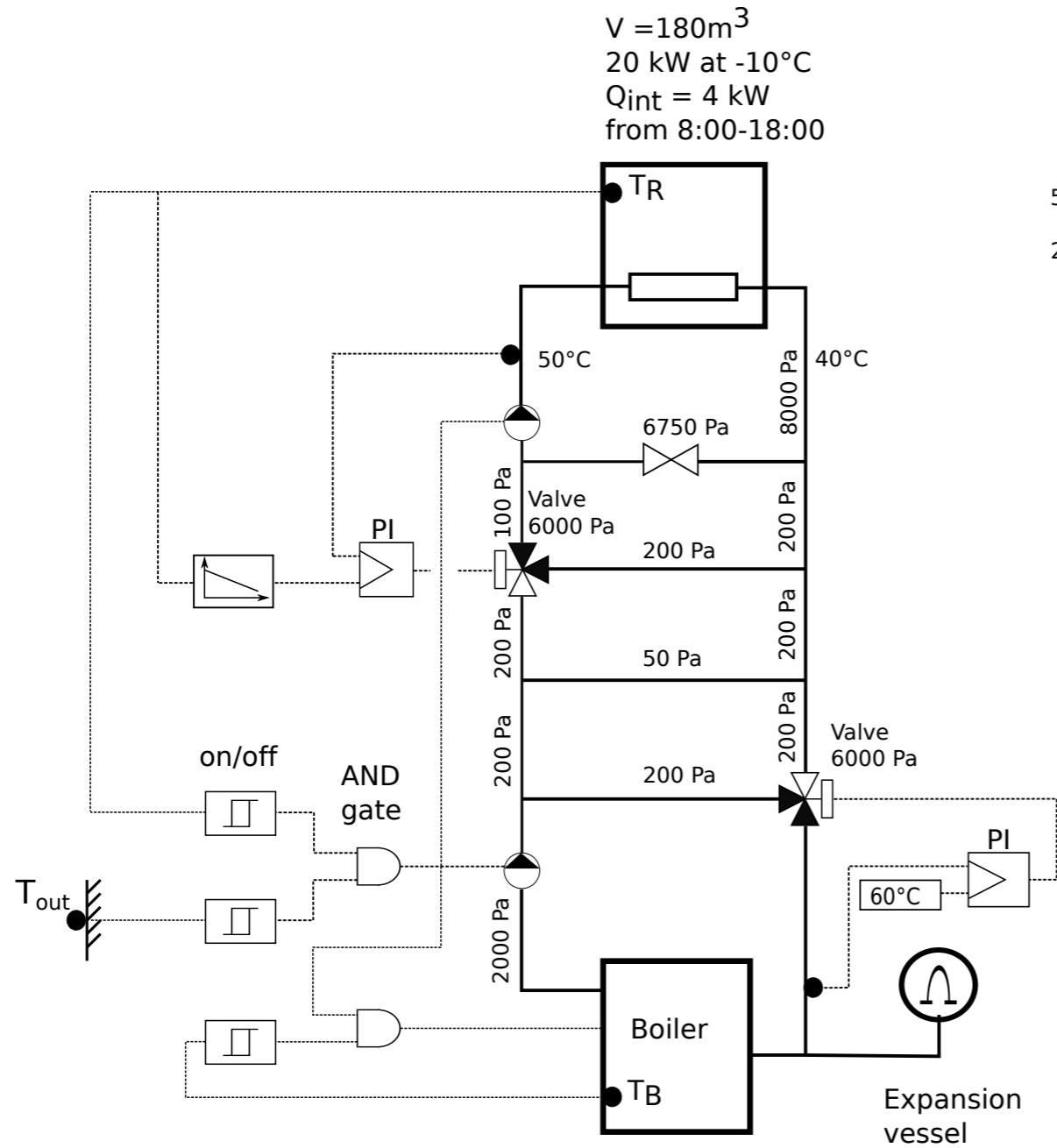


## Models for district energy systems (pipes, reduced order building model)

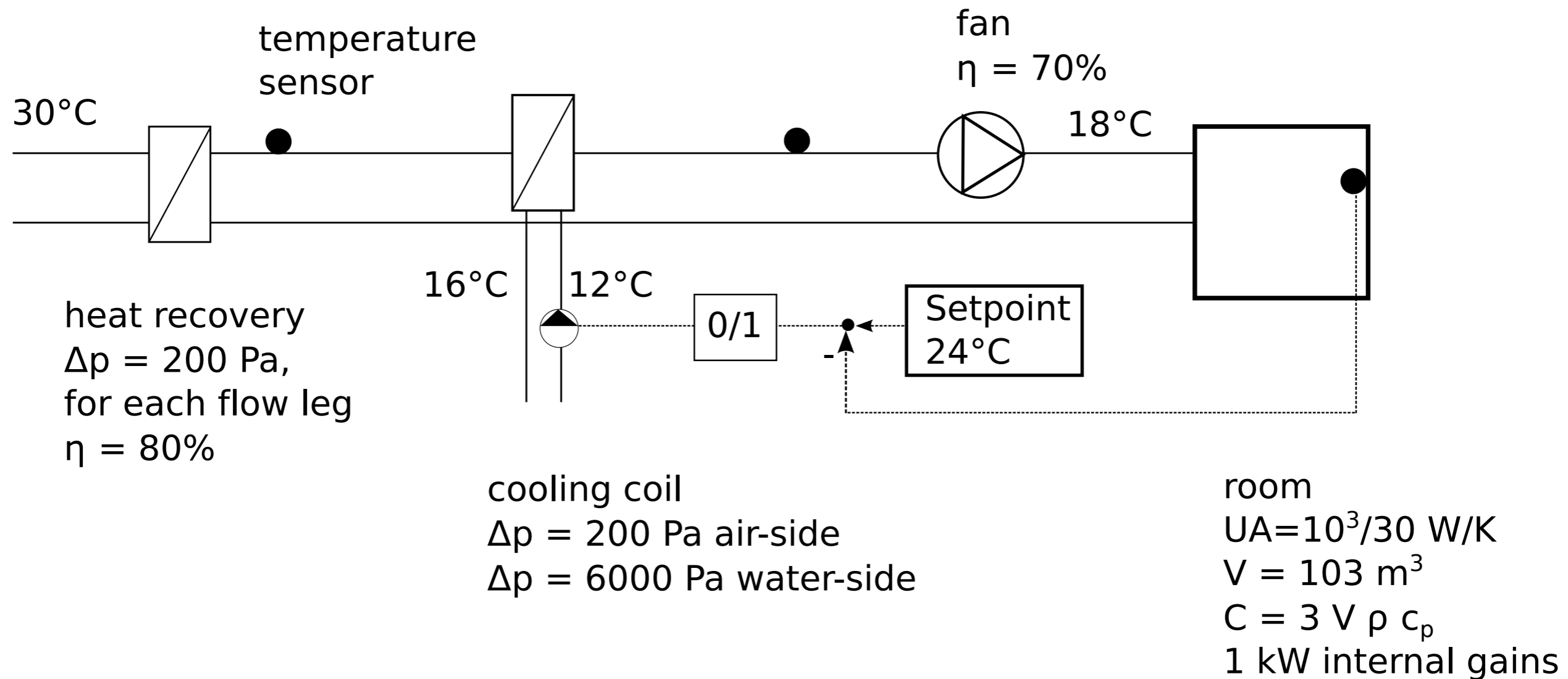


# IBPSA Project 1

# Tutorial 1: Hydronic Heating System



# Tutorial 2: Space Cooling



# Installation and access to models

<http://simulationresearch.lbl.gov/modelica/training/2017/02/06/training-openmodelica.html>