

# FLOWNEX<sup>®</sup>

SIMULATION ENVIRONMENT **HVAC**

Flownex<sup>®</sup> SE determines pressure drop [flow] and heat transfer [temperature] for the connected components of a complete system in steady state and transient, e.g. pumps or compressors, pipes, valves, tanks and heat exchangers.

## TYPICAL USES:

### ANALYSIS

- Simulation.
- Performance assessment.
- Modification assessment.
- Fault root cause assessment.

### DESIGN

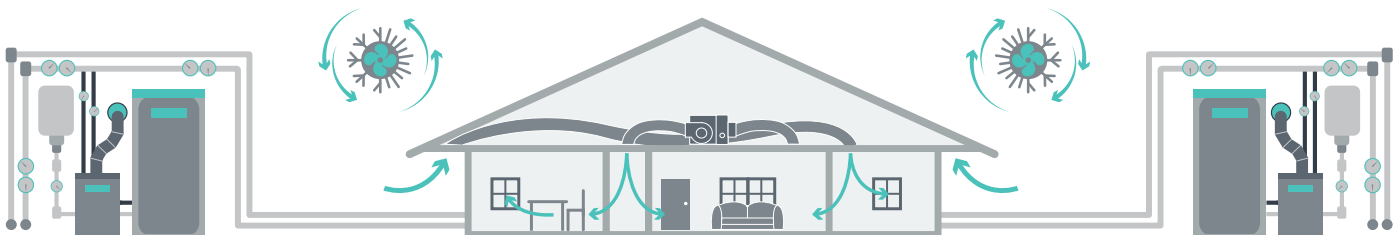
- System sizing.
- Component sizing.
- Determining operating ranges.
- Flow, temperature, pressure, power consumption, etc.
- Testing of control philosophy.

### TRAINING

- System behavior examination.
- Performing basic flow and heat transfer calculations.
- Thermohydraulic principles and properties referencing.

### BRINGING NUCLEAR QUALITY AND STANDARDS TO SYSTEM SIMULATION

Flownex<sup>®</sup> is developed in an ISO 9001:2008 quality assurance system and NQA1 supplier approved environment.



Flownex<sup>®</sup> gave an excellent overview of all interactions in the assembled system. Hence we were able to design a system that fits into a confined space and still control the temperatures and humidity within the tight ranges required by high-voltage power electronics.

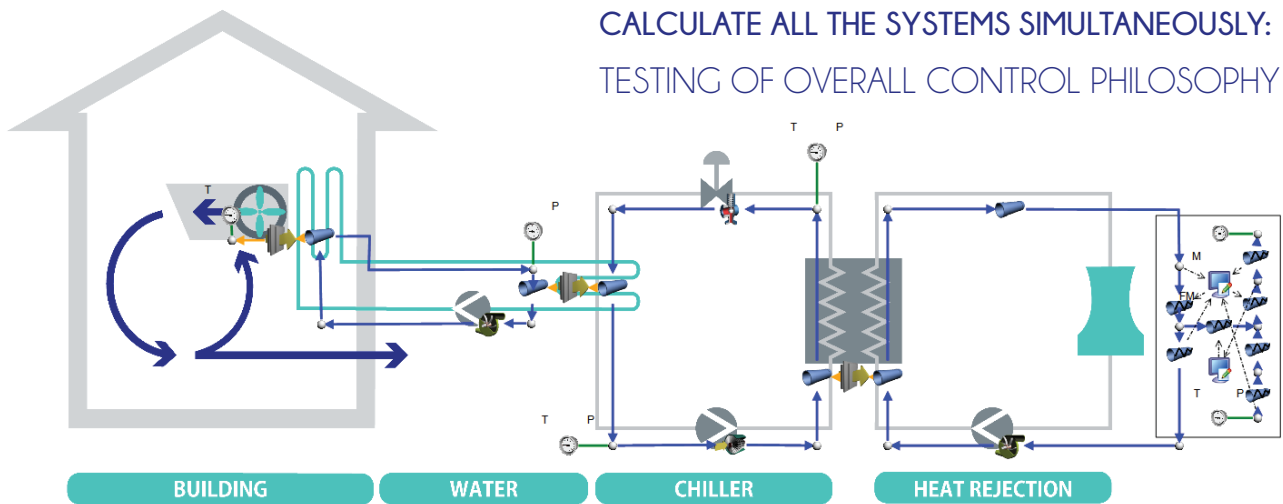
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See more at [enginsoftusa.com/flownex-CFD.html](http://enginsoftusa.com/flownex-CFD.html)

# ONE STOP TOOL FOR HVAC SYSTEM DESIGN

UNIQUE AND COMPLEX NON-STANDARD APPLICATIONS



## BUILDING INTERNAL AIR

- Heat load.
- Temperatures, humidity, pressure.
- Sizing of fans, louvres, ducts.
- Heat exchangers.
- Recirculation rates.
- Control philosophy.

## WATER SYSTEMS (HEATING/COOLING)

- Pipework velocities, pressure drops.
- Pump and valve sizing.
- Control philosophy.
- Flow balancing in branching networks.
- Calculation of NPSH and prediction of cavitation.
- Water hammer.
- Sizing of safety relief valves.

## CHILLER UNIT

- Compressor performance.
- Pressures, temperature.
- Condition dependent COP.
- Design of compound refrigeration cycles with multiple compression/expansion loops.
- Evaporator design: natural circulation or once-through.

## HEAT REJECTION SYSTEM

- Cooling tower sizing.
- Performance according to ambient wet bulb temperature.
- Evaporation rate as function of environment wet bulb temperature.
- Pump sizing and energy optimization.
- Fan sizing.

FOR HVAC, FLOWNEX EXCELS IN NON-STANDARD APPLICATIONS.

## SPECIALIZED APPLICATIONS:

- Heating: Building heating or district heating.
- Design of liquid circulation or distribution systems: pump & pipe sizing.
- Air cycle refrigeration: aircraft cabin pressurization from engine turbocompressor.
- Insulation sizing.

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