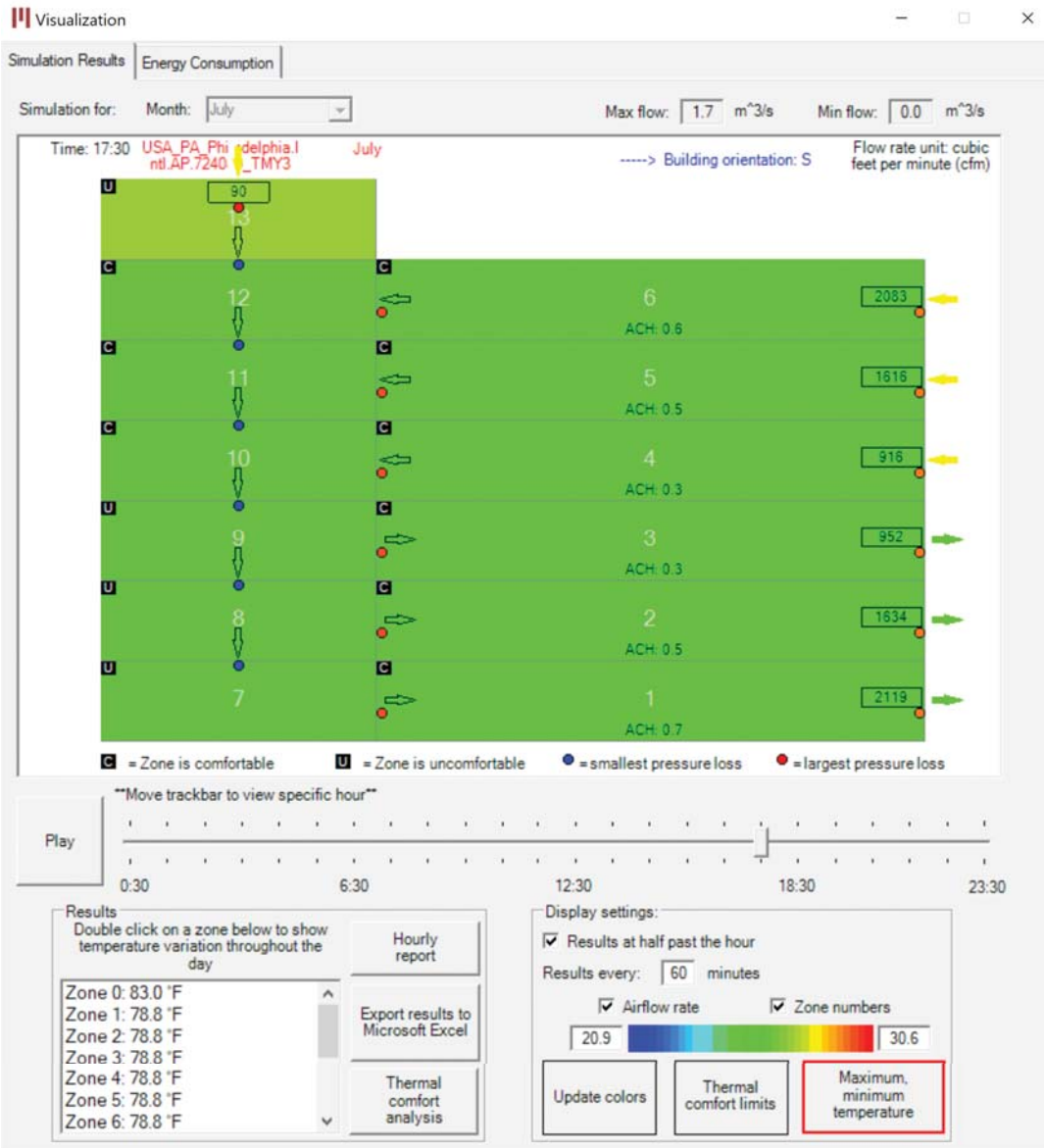
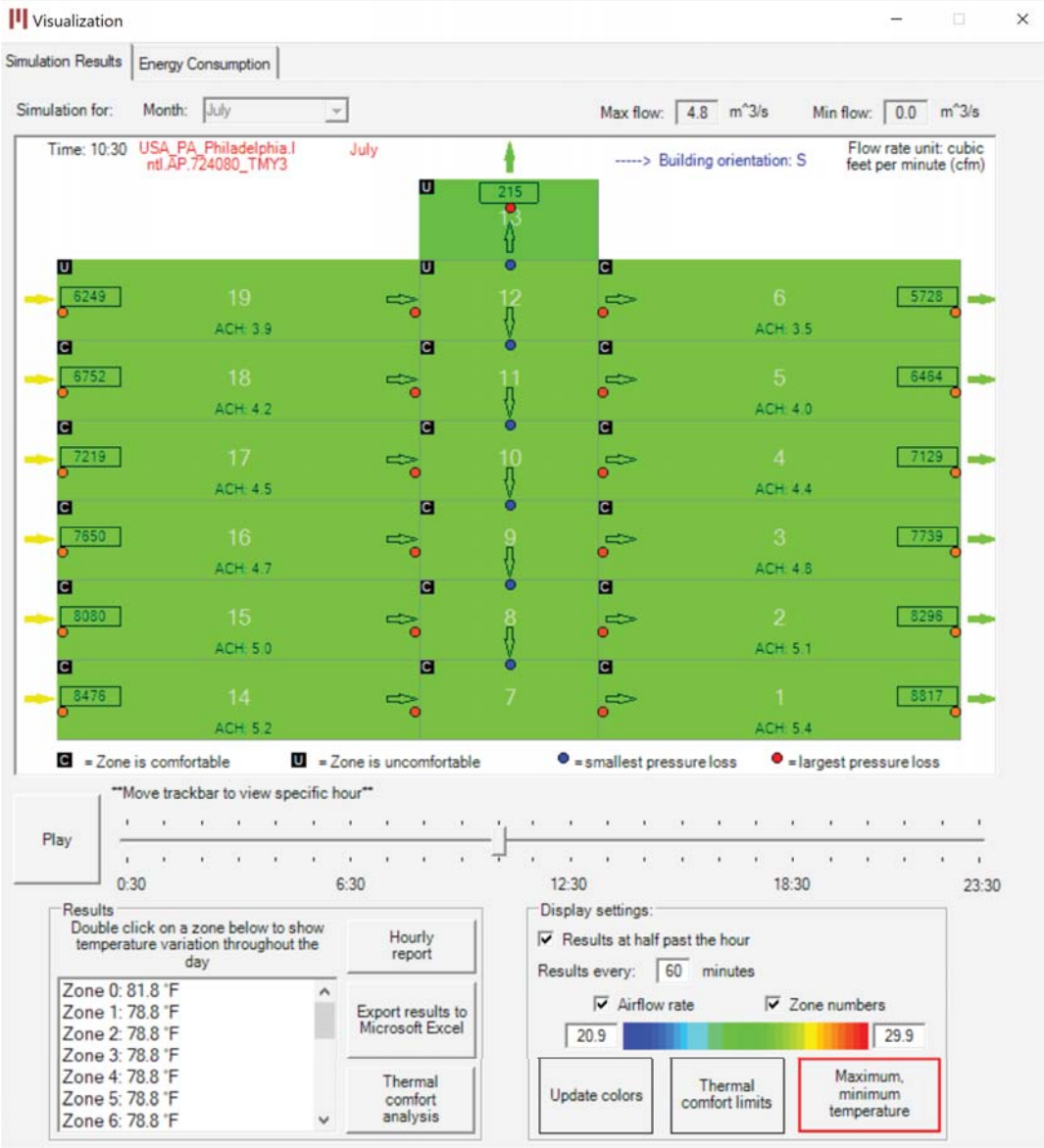
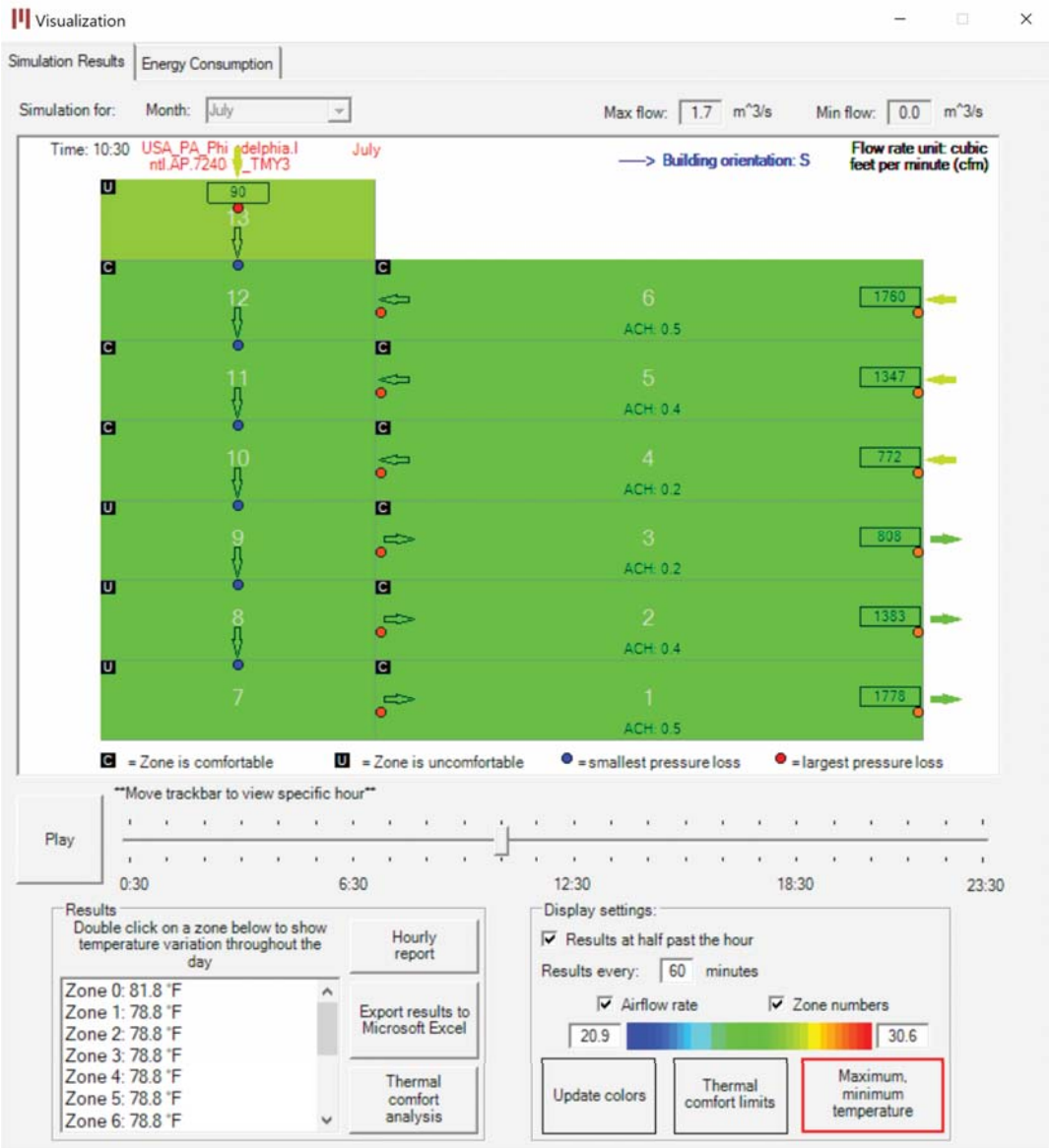
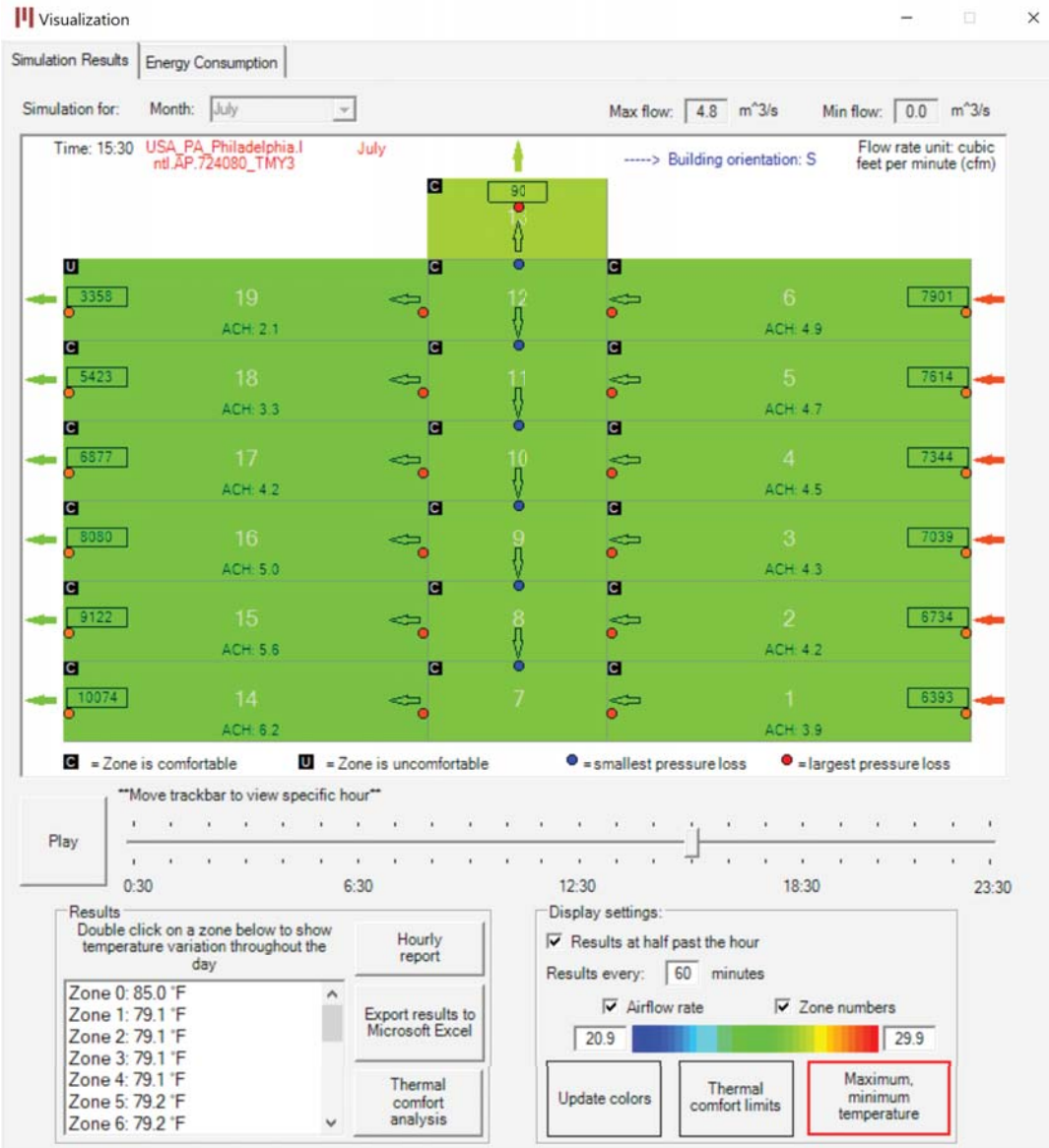
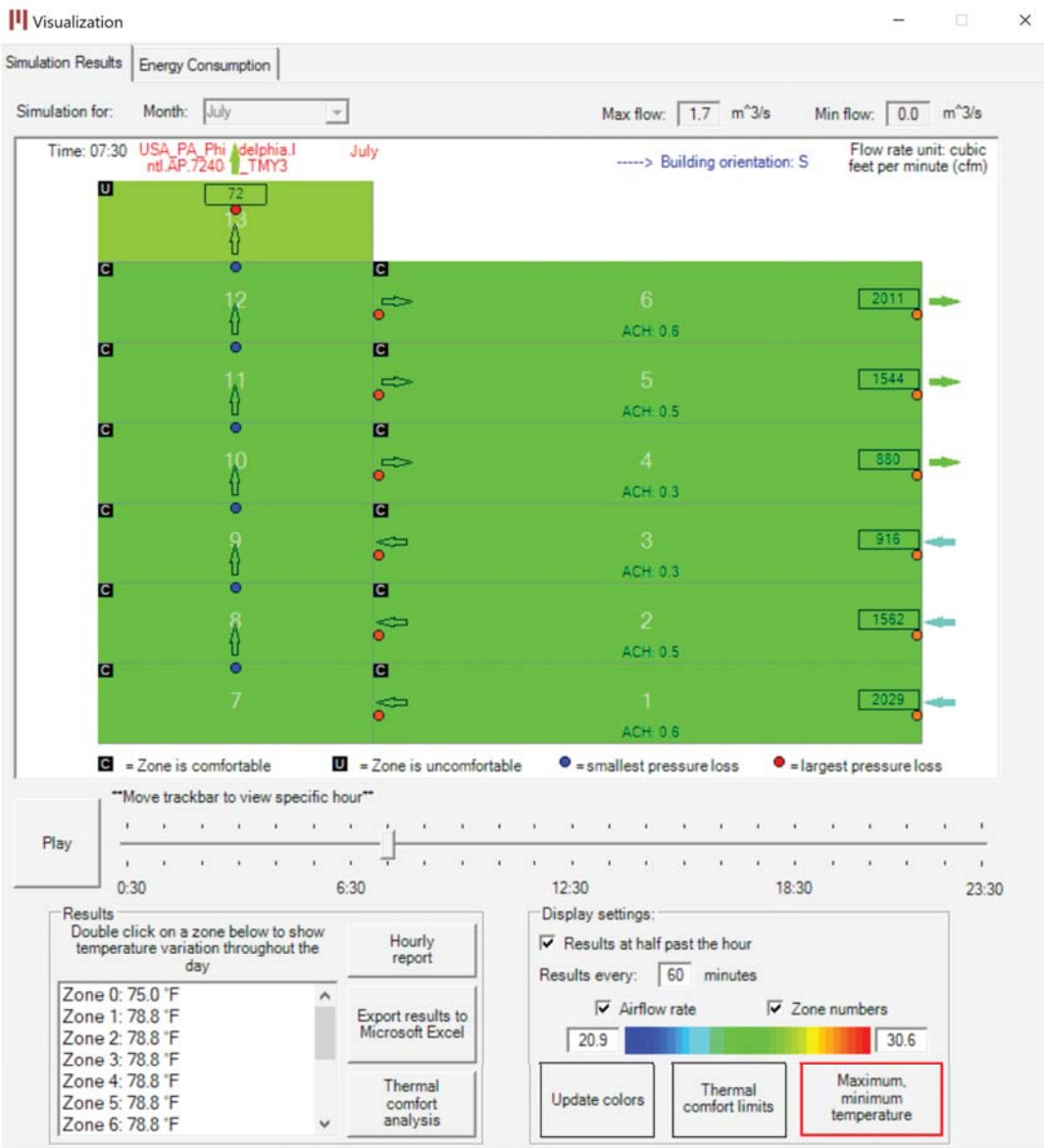
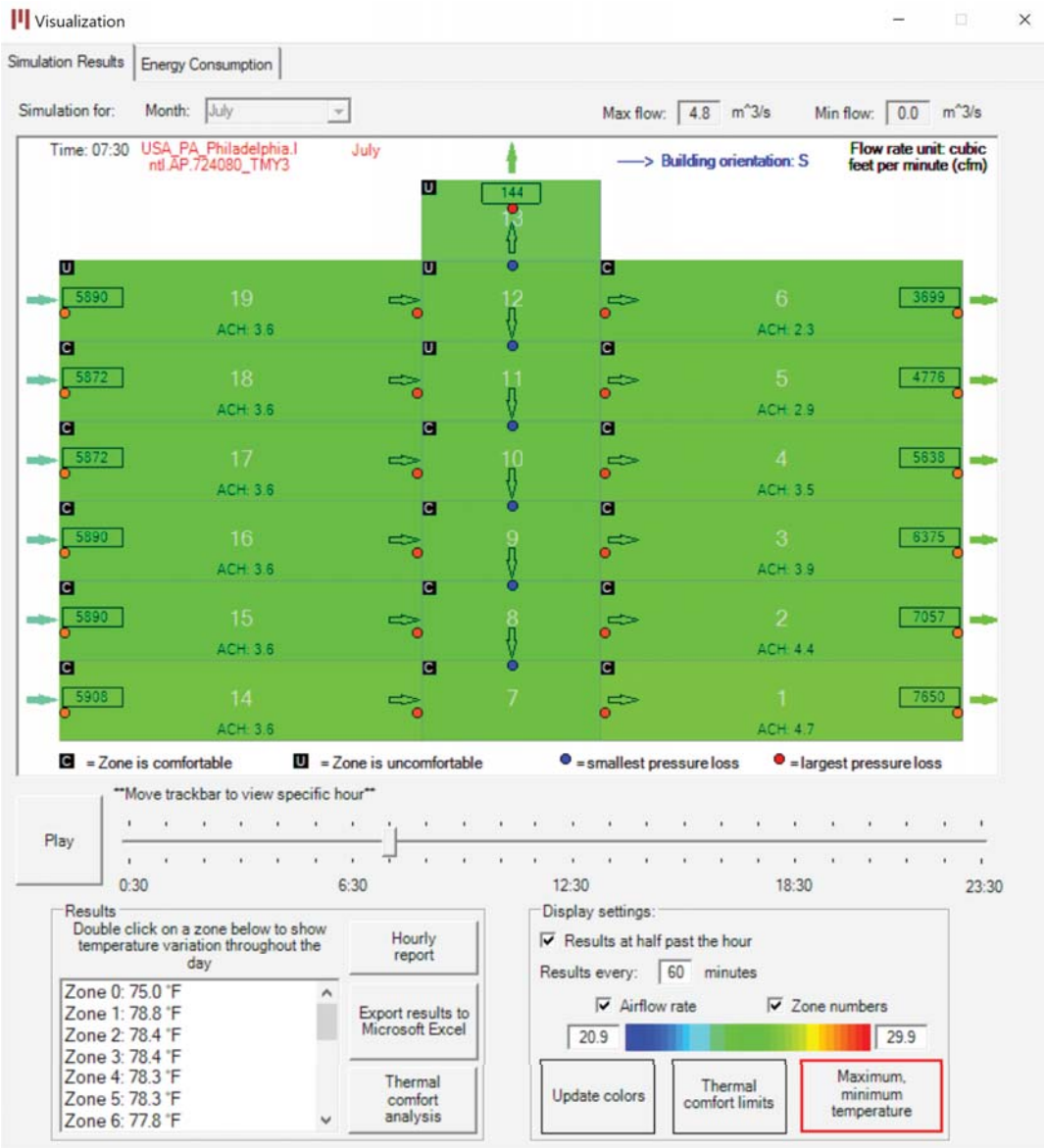


DESIGN 01 _ Central Atrium

DESIGN 02 _ Chimney



DESIGN 01 _ Central Atrium

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FileEnglishHelp

Scenario

Scenario name

Scenario summary

Simulation type: transient

Building type: central atrium

Building footprint: 20800.0 ft²

Occupied area per floor: 16900.0 ft²

Glazing-to-wall ratio per floor: 80.3 %

Opening-to-wall ratio per floor: 40.1 %

Ratio of roof opening to roof area: 0.3 %

Calculate inputs / Save scenario

Visualize results

Simulation type

Transient (24 hour)

Steady state (snapshot)

Building type

Central atrium

Internal heat loads

Heat source level: Educational 12.7 BTU/(h-ft²)

Occupancy schedule: From 9:00 hours to 24:00 hours

All zones but the atrium zones (if any) are assigned heat loads.

Off peak equipment load fraction: 0.2

Terrain properties

Terrain type: Urban, industrial or forest area

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Ratio of roof opening to roof area: 0.3 %

Calculate inputs / Save scenario

Visualize results

Weather data

Select a city: Other Browse

Select a month (first month of simulation): July

Last month of simulation (only for hourly simulation): September

Orientation of front facade

S 180 degrees

Weather Data for a Typical Day

Wind speed [m/s]

Temperature [°F]

Relative humidity [%]

Time of day, starting from midnight [hr]

Direction from which wind is coming:

N

W

E

S

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Opening-to-wall ratio per floor: 40.1 %

Ratio of roof opening to roof area: 0.3 %

Calculate inputs / Save scenario

Visualize results

Building dimensions

Number of floors: 6

Floor length: 130 ft

Floor (bay) width: 65 ft

Floor-to-floor height: 11.5 ft

Floor-to-ceiling height: 10 ft

Shaft width: 30 ft

Shaft height: 10 ft

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Opening-to-wall ratio per floor: 40.1 %

Ratio of roof opening to roof area: 0.3 %

Calculate inputs / Save scenario

Visualize results

Side windows dimensions

Single opening window

In each floor, there is only one opening per window (see schematic).

Window glazing area per floor per facade, fixed and operable (to calculate solar gains through windows): 1200 ft²

Operable window area per floor (used to calculate air flowrate): 600 ft²

Height from floor to mid-opening (h): 3 ft

Operable lower window area per floor per facade: 10.8 ft²

Height difference between upper and lower opening (Delta H in figure): 3.3 ft

Roof opening dimensions

Roof operable area for chimney 1: 10.8 ft²

Note: CoolVent does not account for solar heat gains through the roof opening(s).

Internal opening dimensions

Internal opening area per floor: 215.3 ft²

Advanced internal opening options: Advanced...

Additional opening options

More window options and opening specifications: Advanced...

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Opening-to-wall ratio per floor: 40.1 %

Ratio of roof opening to roof area: 0.3 %

Calculate inputs / Save scenario

Visualize results

Thermal mass

Include slab thermal mass

Floor / roof slab thickness: 12 in

Floor slab material: Concrete

Floor type: Exposed

Exposed area: 90 % of floor area

Ceiling type: Suspended

Night cooling

Use night cooling: Windows open at nighttime, when the air is cold enough to cool down the thermal mass. Windows close (down to 10%) during daytime to prevent hot outdoor air from entering the building. If the building has a fan, it will be used to assist night cooling.

Time controlled: close all windows at 7:00 hours, open windows at 19:00 hours

Temperature controlled: close windows in zones where temperature is lower than outdoor temperature; close windows otherwise

Window operation

Close windows when the outdoor air temperature drops below 60.8 °F

Close window and turn on heating when any internal zone temperature drops below 64.4 °F

Hybrid ventilation mode

Use hybrid mechanical-natural ventilation

Turn on fan when any internal zone temperature is above 75.2 °F or humidity ratio is above 0.012 (lb water) / (lb air). Windows will open even if using night cooling.

Close windows, turn off fan and turn on AC when any internal zone temperature is above 78.8 °F or humidity ratio is above 0.012 (lb water) / (lb air).

Allow independent window and AC control in each zone

Define fan / AC operating characteristics: Specify fan / AC

DESIGN 02 _ Chimney

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Scenario

Scenario name

Scenario summary

Simulation type: transient

Building type: chimney

Building footprint: 20800.0 ft²

Occupied area per floor: 16900.0 ft²

Glazing-to-wall ratio per floor: 80.3 %

Opening-to-wall ratio per floor: 40.1 %

Ratio of roof opening to roof area: 0.3 %

Calculate inputs / Save scenario

Visualize results

Simulation type

Transient (24 hour)

Steady state (snapshot)

Building type

Chimney

Internal heat loads

Heat source level: Educational 12.7 BTU/(h-ft²)

Occupancy schedule: From 9:00 hours to 24:00 hours

All zones but the atrium zones (if any) are assigned heat loads.

Off peak equipment load fraction: 0.2

Terrain properties

Terrain type: Urban, industrial or forest area

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Visualize results

Weather data

Select a city: Other Browse

Select a month (first month of simulation): July

Last month of simulation (only for hourly simulation): September

Orientation of front facade

S 180 degrees

Weather Data for a Typical Day

Wind speed [m/s]

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DESIGN 01 _ Central Atrium



DESIGN 02 _ Chimney

