Ventilation Calculation Examples

These variables were taken from an existing floorplan from the dev site that was then updated to include non-zero values for the four ventilation-related variables (the last four in this list). They may or may not be reasonable real-world values for those variables, but this is just for testing the math.

Floorplan / Calculator Variables

```
infiltration (id)                                   :: 4
winteroutdoortemp                                   :: -10
summeroutdoortemp                                   :: 95
heatingsetpoint                                     :: 70
coolingsetpoint                                     :: 75
occupants                                           :: 3
unconditionedductpercent                            :: 0
unconditionedductlocation                           ::
unconditionedductinsulation (id)                    ::
unconditionedductlossfactor                         :: 0.15
unconditionedductgainfactor                         :: 0.15
appliances (id)                                     :: 2
grainsdiff                                          :: 22
ventilationrate                                     :: 1100
sensibleventilationefficiencypercent                :: 48
latentventilationefficiencypercent                  :: 34
ventilationminutesperhour                           :: 20
```

Ventilation Loss

Calculation Description

Ventilation Rate CFM

× Temperature Difference (Heating setpoint - Winter outdoor temp)

× 1.08

× (1 - Sensible HRV/ERV Efficiency %)

× (Ventilation Minutes per Hour / 60)

Enersketch Calculation

ventilationrate

× Calculator::getWinterTemperatureDifference()

× 1.08

× (1 - (sensibleventilationefficiencypercent / 100))

× (ventilationminutesperhour / 60)

Example

```
1100 × (70 – -10) × 1.08 × (1 – (48/100)) × (20/60)

1100 × 80 × 1.08 × 0.52 × 0.333 = 16473.60
```

Ventilation Loss = **16473.60**

Sensible Ventilation Gain

Calculation Description

Ventilation Rate CFM

× Temperature Difference (Summer outdoor temp - Cooling setpoint)

× 1.08

× (1 - Sensible HRV/ERV Efficiency)

Enersketch Calculation

ventilationrate

× Calculator::getSummerTemperatureDifference()

× 1.08

× (1 - (sensibleventilationefficiencypercent / 100))

Example

```
1100 × (95 − 75) × 1.08 × (1 − (48/100))

1100 × 20 × 1.08 × 0.52 = 12355.20
```

Sensible Ventilation Gain = **12355.20**

Latent Ventilation Gain

Calculation Description

Ventilation Rate CFM

× 0.68

× Grains Diff

× (1 - Latent HRV/ERV Efficiency %)

× (Ventilation Minutes per Hour / 60)

Enersketch Calculation

ventilationrate

× 0.68

× grainsdiff

× (1 - (latentventilationefficiencypercent / 100))

× (ventilationminutesperhour / 60)

Example

```
1100 × 0.68 × 22 × (1 – (34/100)) × (20/60)

1100 × 0.68 × 22 × 0.66 × 0.333 = 3620.32
```

Latent Ventilation Gain = **3620.32**