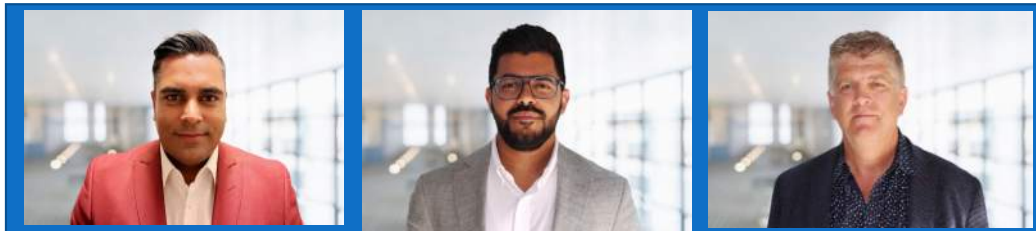


IIVACSystems

Serving the Industry for 23 Years



Vancouver Island | Lower Mainland | BC Interior | Northern Alberta | Southern Alberta



Agenda

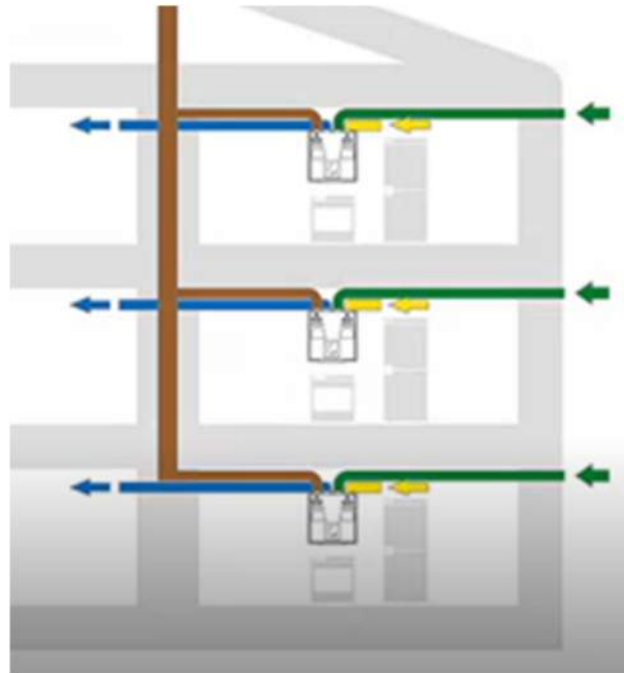
- ▶ Decentralized vs Centralized Systems
- ▶ Cost Comparison
- ▶ Individual Suite Control with a Centralized System
- ▶ Integrated Cooling Solutions
- ▶ Controllability of a Building



Feel good **inside**
Swegon 

Decentralized HRV/ERV Systems

- Typical Building – 3 – 4 Stories
- Requires close to outside wall – Bulkhead typically 36"
- Individual suite control
- ERV and HRV options
- Limited tie-in Control options
- Two-hole penetrations per suite
- Supply and intake ducts to be insulated
- Increased ductwork size to reduce static pressure for ERV
- Motorized low leakage damper via ERV and connect to DDC
- Air quality – Filtration type
- Maintenance access
- Maintenance cost – service/filter changes



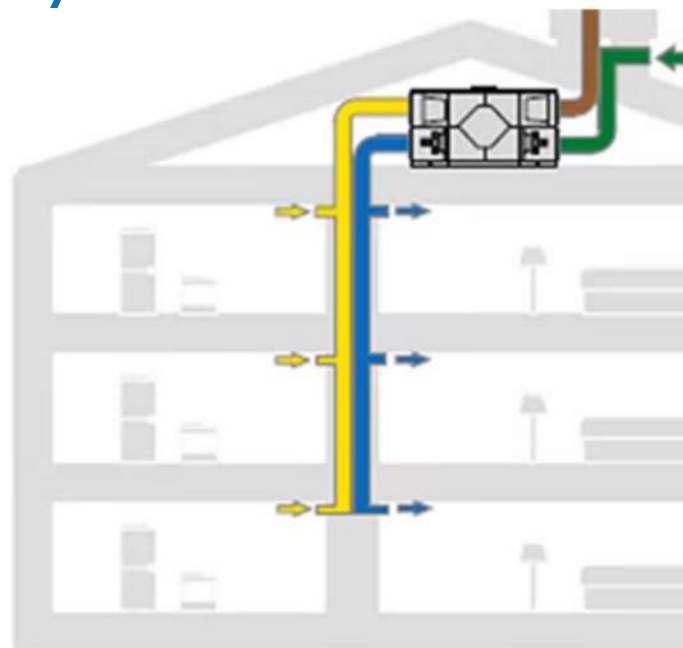
Decentralized HRV/ERV Systems



Feel good **inside**
Swegon 

Centralized HRV/ERV Systems

- Typical Building – 4 plus Stories
- ERV and HRV options
- Eliminate additional building penetrations
- Reduce DDC Controls in Building
- Remote Troubleshooting
- Balancing of Suites
- Building Pressure Control
- Air quality – Filtration type – MERV 13, Carbon, UV Lights
- Easy Maintenance access
- Common area duct runs
- Maintenance cost – service/filter changes



Decentralized HRV/ERV Systems



Feel good **inside**
Swegon 

COST – COMPARISON CHART

Equipment Savings of:
41%
Plus
Additional Installation Savings
Costing Based on 2023 Projects and based on the following:
- Based this on 100 suites
- Based on 40 tons of Cooling
- Based on 110 CFM per suite

Decentralized System
In-suite HRV Equipment Cost
Additional Equipment:
- Ductwork Cost
- VAV Fire Dampers
- Motorized Dampers
- Louvres
DDC Controls
- Thermostat/VOC Sensors
Additional Heating & Cooling:
- Split System Cooling In Suite
- Preheat - electric heater
- Defrost Control
Centralized Systems
Central HRV Equipment Cost
Additional Equipment:
- Ductwork Cost
- VAV Fire Dampers
- Motorized Dampers
- Louvres
DDC Controls
- Thermostat/VOC Sensors
- REACT Damper
Additional Heating & Cooling:
- Split System Cooling In Suite
- Preheat - electric heater
- Defrost Control

Feel good **inside**
Swegon 

Individual Suite Control with a Centralized System

- Centralized System Benefits and Drawbacks
- The REACT Damper Solution
- Smart Add-ons to REACT Damper
- Moving Forward and Design Evolution

How do we provide controllability?

By Using REACT Dampers to design for individual suite control.



- Ability to modulate airflow based on:
 - Space temperature
 - Space humidity level
 - Demand Control Ventilation (CO₂ , VOC or occupancy)
 - Passive House occupant control
 - Normal mode
 - Boost mode
 - Away mode



- Low pressure drop (0.2" w.g)
- High Turndown ratio (10:1 or higher)
- Built in communication to the central unit
- Built in airflow sensors for balancing and troubleshooting

Normal. Boost. Setback

PURPOSE

Allow occupants in multi-family residential (dormitory) buildings with central ventilation units to vary the airflow into their apartment. The controller is designed to meet the requirements of Passive House and supports humidity control and free cooling (economizer) functions for improved occupant comfort and energy savings.

SEQUENCE OF OPERATION

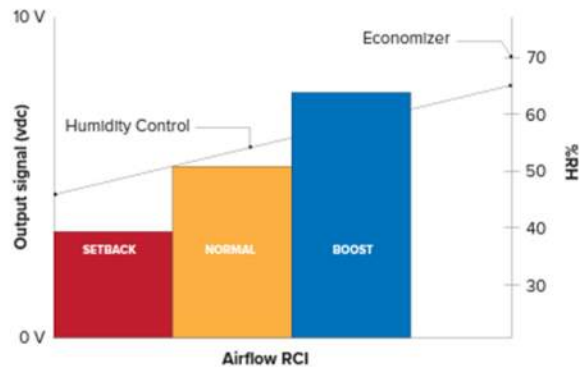
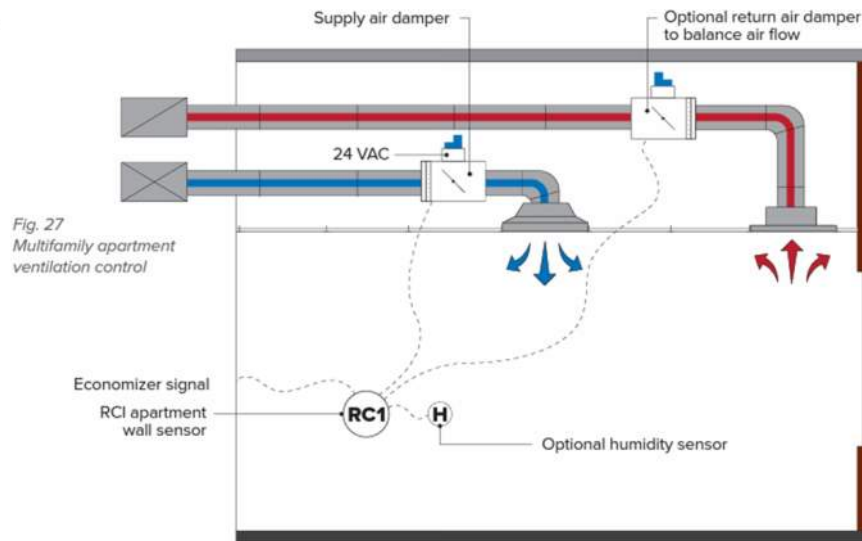


Fig. 28 Sequence of operation



Design Example #1: SPACE TEMPERATURE CONTROL

PURPOSE

Deliver occupant thermal comfort by maintaining temperature setpoint. Cooling is achieved by increasing airflow, heating can be achieved by operating separate heat source such as a duct or baseboard heater.

SEQUENCE OF OPERATION

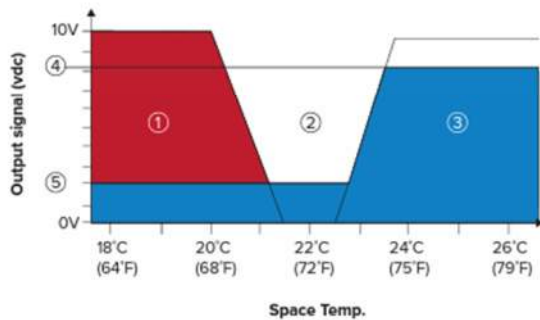


Fig. 13

1. Heating with a radiator.
2. Dead band. 3. Cooling by air.
4. Preset max. output signal, cooling by air.
5. Preset min. output signal, cooling by air.

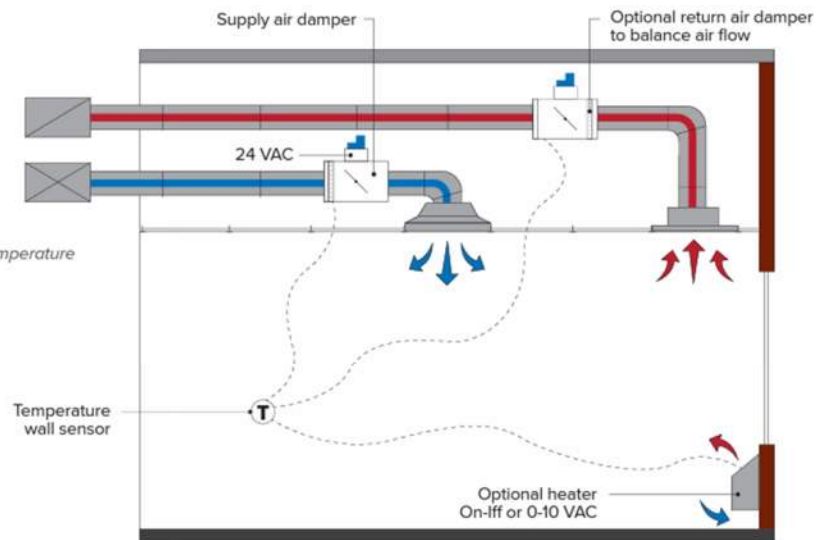


Fig. 12
Space temperature control

Centralized HRV/ERV Systems - Cooling Systems

Numbers:

86%

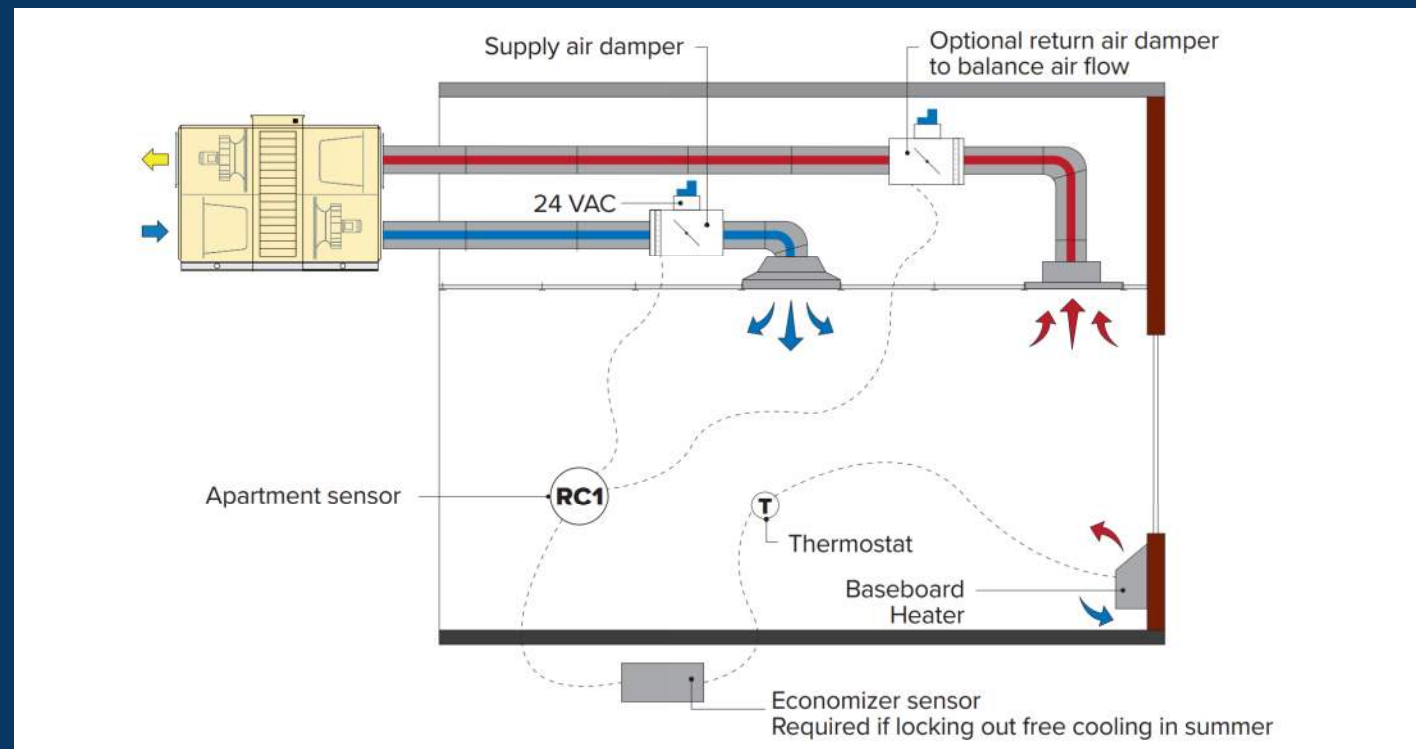
20°C

0.45 %

0.5 RPM

0.54 w/cfm

-30°C



Centralized HRV/ERV Systems - Cooling Systems

Numbers:

86%

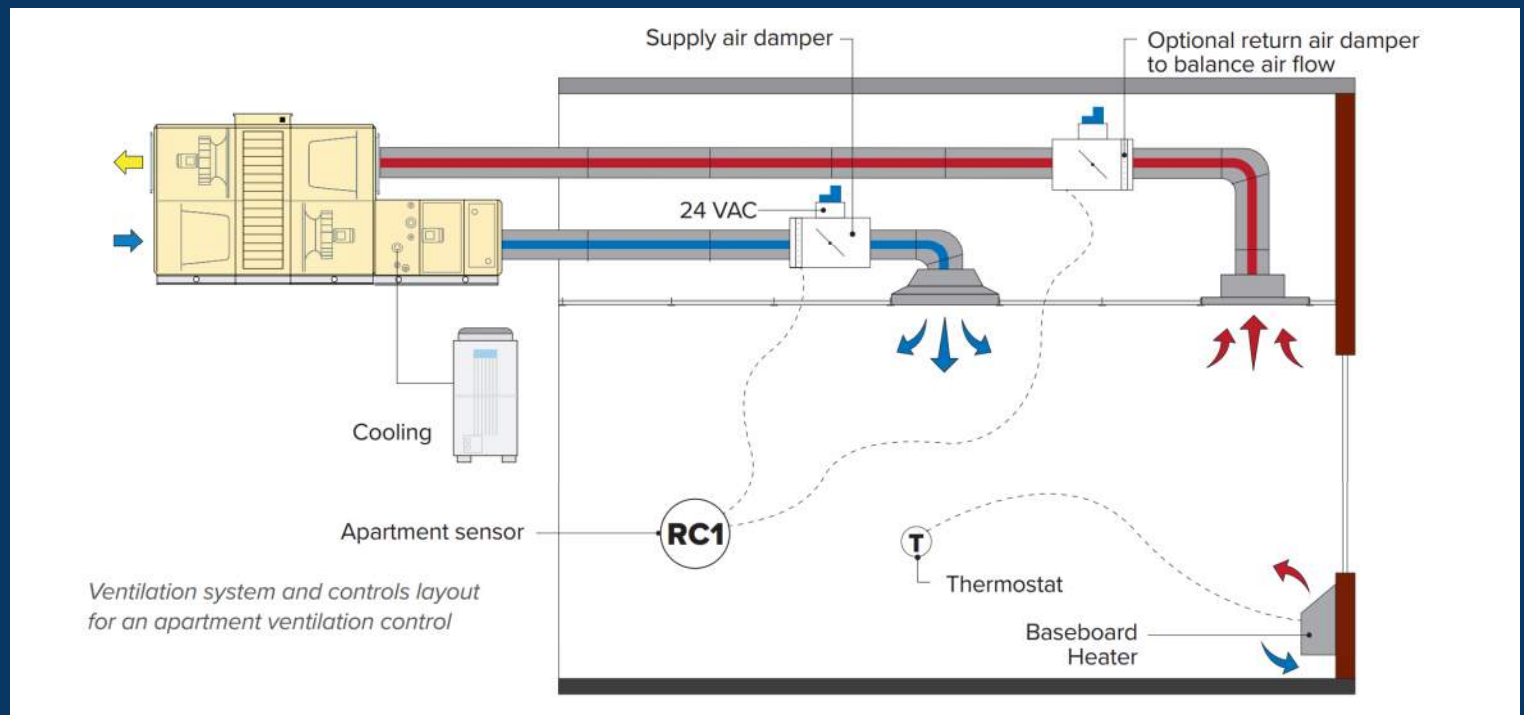
16°C

0.45 %

0.5 RPM

0.56 w/cfm

-30°C



Centralized HRV/ERV Systems - Cooling Systems

Numbers:

86%

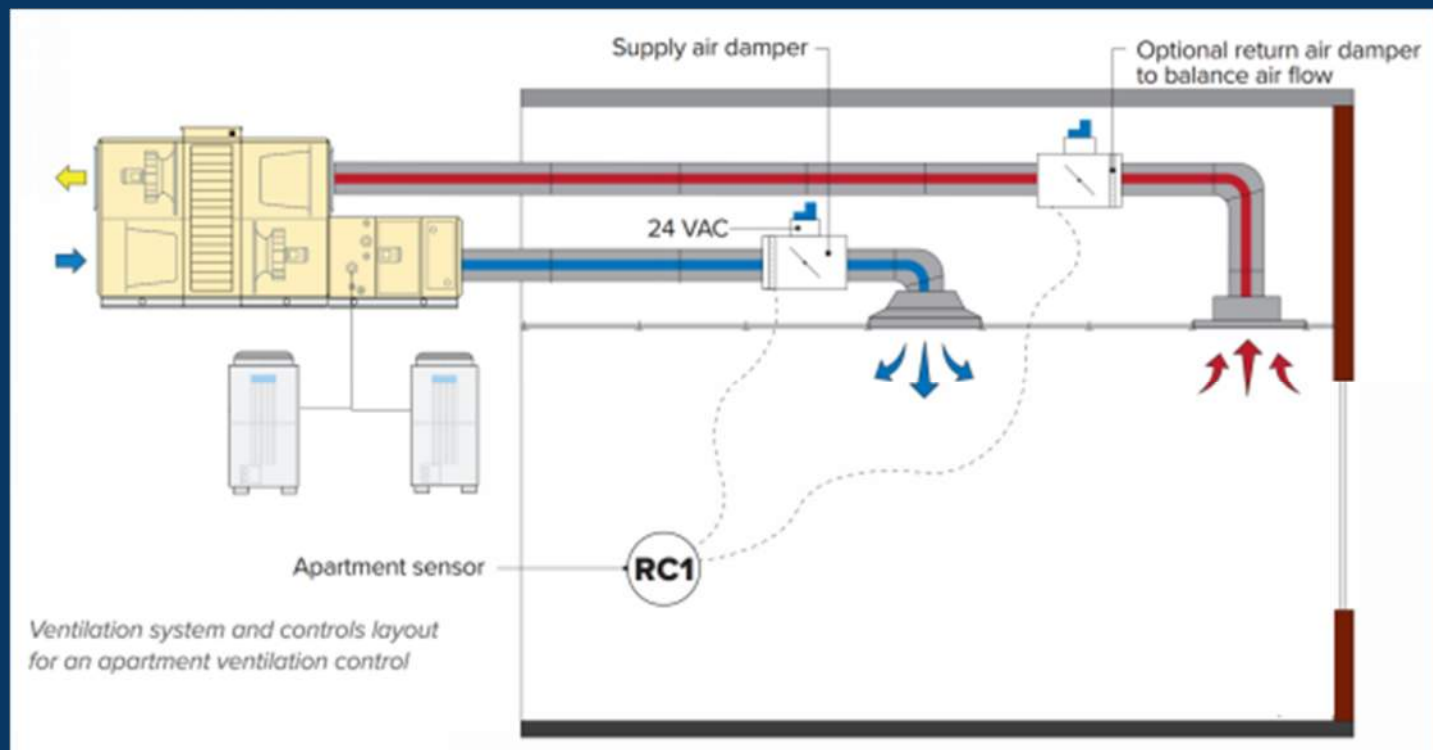
12°C

0.45 %

0.5 RPM

0.58 w/cfm

-30°C



Sten Hansen

Controllability of a Building

- 1. Swegon Declare**
- 2. CO₂/VOC Control**
- 3. Fire Damper Strategies**
- 4. BACnet or Modbus Controls**
- 5. Casa Controls & App**

Controllability of a Building Centralized

Swegon Declare

Living Building Challenge (LBC).

- When configured with the Declare Label option, GOLD RX is Living Building Challenge Compliant.
- GOLD RX is part of Swegon's Healthy Building Solution.
- Details of the GOLD Declare label are available from International Living Futures Institute ([ILLFI](http://www.illfi.org)).
- For more information about applying GOLD RX air handling units in projects to maximize energy savings, please visit:
<https://swegonnorthamerica.com/swegon-healthy-building-solution/>
- The Declare label also contributes to the materials requirements of WELL, Collaborative for High-Performance Schools (CHPS) Enterprise Green Communities (EGC)

The right equipment!

Controllability of a Building Centralized

Declare.

SM

GOLD RX Swegon North America

Final Assembly: Markham, Ontario, Canada
Life Expectancy: 25 Year(s)
End of Life Options: Recyclable (95%), Landfill (5%)

Ingredients:

Magnelis sheet (DX51D ZM 310): Steel; Zinc; Aluminum; Magnesium; **Other Metals:** Aluminum; Steel; **Galvanized sheet metal:** Iron; Zinc; **Motors:** Electronic Devices (circuit cards)¹; **Insulation:** Glass, oxide, chemicals; Electronic Devices (circuit cards)¹; **Electronics:** Electronic Devices (circuit cards)¹; **Polymeric material:** Nylon 6; EPDM; Polycarbonate; 1,3-Benzenedicarboxylic acid, polymer with 1,4-butanediol, 2,2-dimethyl-1,3-propanediol, 2-ethyl-2-(hydroxymethyl)-1,3-propanediol, hexanedioic acid and 1,1'-methylenebis[4-isocyanatocyclohexane]; Polyethylene; Polypropylene; POLYESTER; Polyether; **NA Filter:** Aluminum; Polyethylene Terephthalate; Glass, oxide, chemicals

**on for
RX**

X unit
herefore
iant when
ition.

t the final
f life options,
ed, and Living

OLD RX, visit:
ucts/air-han-

ibels, visit:
cts/gold-rx

s of GOLD RX,
eclare label
erials trans-
y Challenge,
ance Schools,
ID.

.label option

ts exemption
d, because
Directive 3, 2013

SOLUTIONS

chools

and optimization

3 Emerson Court, Unit 3 Phone: 416-291-7201 info-us@swegon.com
 Ajax, ON L1Z 0A4 Toll-Free: 1-800-555-8461 www.swegon.com
 Canada Fax: 1-888-871-2264



Controllability of a Building Centralized

CO2 Control

Swegon Gold RX can be set up to adjust CFM based on Carbon Dioxide (CO2) Levels

Or

Volatile Organic Compound (VOC) Levels.

This ensures occupants continually see the highest indoor air quality regardless of room occupancy.

VOC/CO2



Wall Mount



Humidity sensor TBLZ-4-31-6

or

Duct Mount Humidity Sensor



Controllability of a Building Centralized

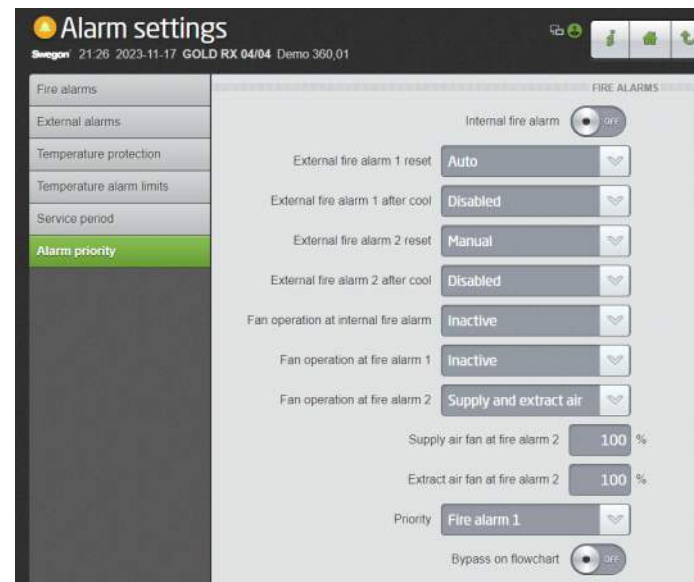
Fire Damper - strategies include

- * Individual Dampers per Floor
- * Control by Swegon Gold RX to:
 - Stop Supply Fan & Command Return Fan to run at 10-100%
 - Stop Return Fan & Command Supply Fan to run at 10-100%
 - Full Stop
 - Run Until Death

Controllability of a Building Centralized

Fire Damper - strategies continued

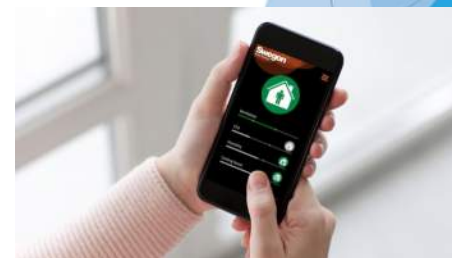
- * External Fire Alarm 1 Reset
- * Fire Alarm After Cool
- * Fan Operation at Internal Fire Alarm



Controllability of a building Decentralized

Casa Controls

Swegon Casa units are controlled via wall mounted controller or via Smart Phone App from anywhere, home or away



Controllability of a building Decentralized

Swegon Casa Controls include:

- * Home & Home+
- * Boost Mode – Adjustable
- * Away
- * Pre & Post Heating or Cooling Options
- * Relative Humidity control – Standard
- * CO2 / VOC – Optional

Electric Heating - Hydronic Heating/Cooling - VOC/CO2



Basic modes

You can switch as required to an appropriate operating mode or let the pre-programmed weekly clock switch operating mode according to the diurnal rhythm you want.



Home

Normal air flow. Sufficient amount of fresh indoor air to ensure the wellbeing of the residents and the structural building elements when there are people in the home.



Home+

Higher air flow. Can be used when more ventilation is required. The home owner can change the efficiency of the operating mode from the settings.



Boost

High air flow. Used if the ventilation requirement increases, for example, when cooking, taking a bath or drying laundry, or when an unusually large number of people are in the home.



Away

Low air flow. Reduces the energy consumption when nobody is present in the home.



Travelling

Very low air flow and lower supply air temperature. Used when nobody is present in the home.

One Integrated HVAC Solution for your Building

- GOLD RX - HRV/ERV/AHU



- CASA - ERV/HRV



- REACT VAV Boxes



- Compact Silencers



- Chilled Beams



- BLUEBOX - Air Source Heat Pumps



Swegon