GOLD Multilogic

Control multiple GOLD units in a common duct system

Swegon

General

The GOLD Multilogic function is ideal for large ventilation systems where several GOLD air handling units are connected to the same duct system.

In many buildings, it is easier to install several small units than one large unit.

By splitting the airflow between a number of units, the designer has a greater flexibility in the use of space.

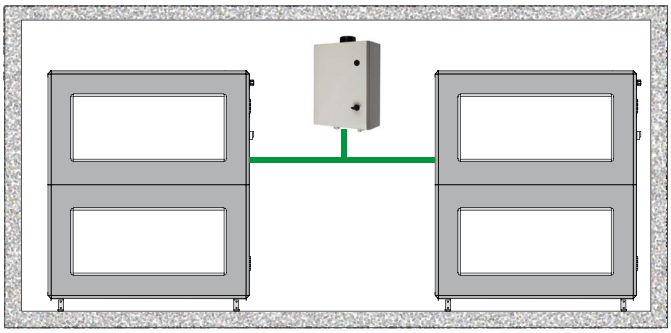
In addition, small units are usually easier to install.

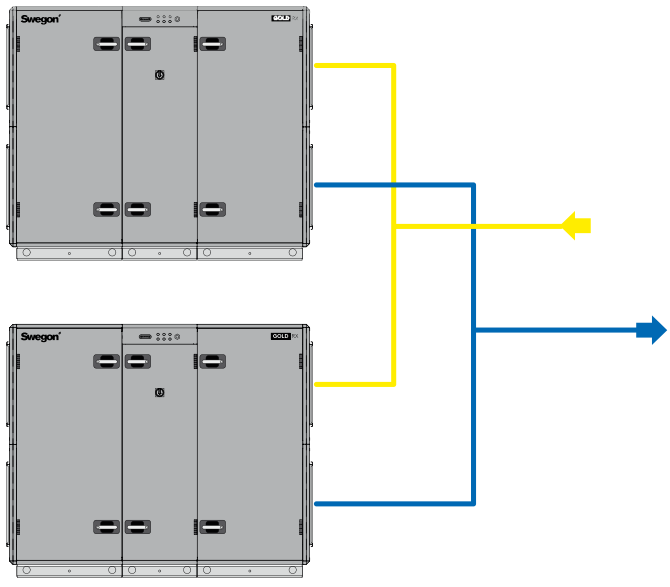
GOLD Multilogic allows those units to be operated as a group in the most energy efficient way possible by minimising the fan pressure rise at all times.

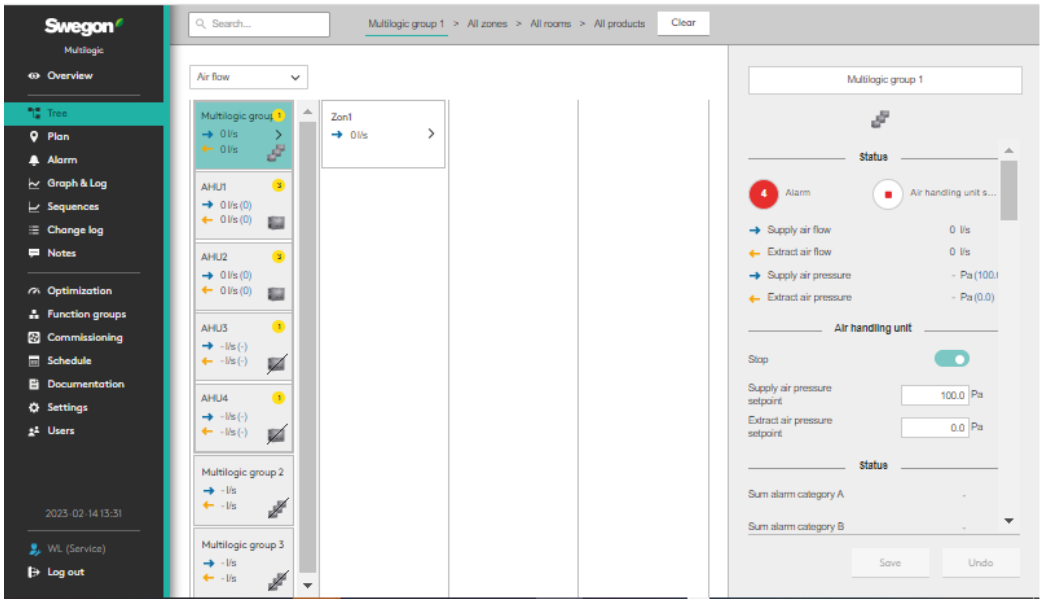
GOLD Multilogic controls multiple units as if they were one unit and provides a single user friendly interface.

In the interface, the user can see a system overview, aggregated operating data as well as group alarms. It also provides an easy to use log graph function. The individual operating data is also seen for each unit.

GOLD Multilogic has been designed to provide the perfect multi-unit control for demand controlled (DCV) systems but it will also work with constant flow systems.







User Interface

The user interface is intuitive, flexible and informative.

"Tree" view showing aggregated data for the Multilogic group as well as individual data for each GOLD unit.

Plan – Gives an overview drawing or diagram of the system

Alarm – Multilogic specific alarms and GOLD unit alarms

Graph & Log – Log files with selected data from the GOLD units for analysis. The log files are used to provide graphical information in the Multilogic interface.

Sequences – Not used for Multilogic

Change log – Shows what has been changed, by whom and when.

Notes – A note pad to make notes etc. Notes are arranged by user, product or date

Optimization – Here the pressure optimisation function can be activated.

Function Groups – Not specifically used for Multilogic

Commissioning – tools for commissioning

Schedule – A powerful calendar function
The summer night cooling function can be activated in the schedule

Documentation – Relevant documents can be uploaded/created to provide a complete document library for the system

Settings – a comprehensive range of system settings

Users – a list of registered system users.

Minimum airflow

GOLD Multilogic controls the units in sequence at low airflows so the minimum airflow for the group is lower than that of a single large unit.

As soon as it is possible to start another unit and run them at minimum flow, GOLD Multilogic initiates the start of the next unit. This means that the velocity in the units is kept as low as possible so that the pressure is as low as possible. This ensures the lowest possible energy consumption.

GOLD Multilogic installation

GOLD Multilogic is provided either as a stand-alone system or integrated in the WISE management system SuperWISE. In either case, the interface has the same layout and functionality.

The SuperWISE or stand-alone GOLD Multilogic control cabinet houses the controller, an optional Swegon INSIDE Connect, transformer, switch and I/O connection points.

The SuperWISE controller can manage 12 Multilogic groups and each Multilogic group can include up to four GOLD units in the same ventilation system.

The GOLD Multilogic user interface has tools to aid commissioning and adjustment.

Wise-design is a easy-to-use software tool that creates a configuration file to set up the GOLD Multilogic.

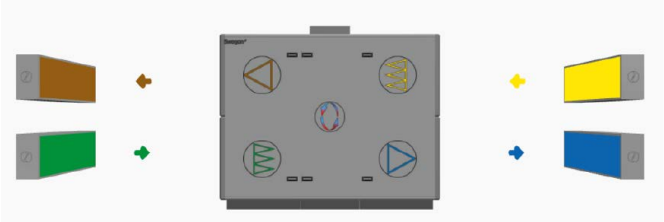
Unit configuration

GOLD Multilogic is designed to work with GOLD RX, GOLD CX and GOLD RXHC with IQLogic software version 2.40 or higher (GOLD version E/F only). All units within a group must be of the same type.

Because the units are serving the same ventilation system, they must have the same configuration. This means the units must have the same heating, cooling and ventilation functions and they must have the same control settings.

It is important that the units are fitted with dampers on the extract and supply to prevent backflow – particularly when servicing the unit with doors open.

In the current version of GOLD Multilogic the GOLD units must be of the same size.



Pressure control

In pressure controlled DVC systems the GOLD Multilogic becomes the pressure controller. GOLD Multilogic then controls the GOLD units by flow control.

Pressure sensors are installed in the common duct at the same place for each of the units. The pressure sensors are connected to the units.

GOLD Multilogic reads the actual pressure from the GOLD units and sets the flow to meet the required set point pressure.

Where GOLD Multilogic is used within a WISE system the pressure optimisation function is also available for use.

This means that the pressure setpoint for the GOLD Multilogic is reset so that the dampers with the greatest demand are driven to the nearly open position so that the lowest possible system pressure is generated at all times. This saves additional energy.

Air flow regulation

GOLD multilogic can be controlled via air flow regulation. The air flow setpoint is divided between the connected GOLD air handling units, where the lowest possible is regulated to one unit.

GOLD is always controlled via air flow regulation, regardless if Multilogic is set to pressure regulation or air flow regulation.

Fan control

As described above, GOLD Multilogic provides the functionality for pressure control and adjusts the air flow to achieve the desired pressure.

The control of supply air and extract air can be selected as one of three modes:

- Control of the supply air with the extract air as a slave
- Control of the extract air with the supply air as a slave

Individual control of supply air and extract air.

Redundancy

GOLD Multilogic can provide either partial redundancy or full redundancy.

Partial redundancy means that all of the units are needed to achieve the maximum design airflow but in off-peak periods it is possible to switch off and isolate one of the units in order to do servicing. The other unit(s) should then provide enough flow to satisfy the demand.

Full redundancy means that the units together can provide much more than the maximum design flow rate so that one or more units can be switched to standby mode all of the time. In this mode, GOLD Multilogic can be set to share the operating duty evenly or prioritise certain units.

Temperature control

Supply air

In the case of supply air regulation, the required setpoint is set in the interface and the two air handling units share reaching the required setpoint.

Extract air/room

It is possible to connect up to 4 room sensors to each air handling unit, where max/min/average can be selected for each unit. After this, Multilogic can be set to use max/min/average from the connected air handling units.

The extract air temperature can also be obtained from BMS or the WISE system.

GOLD IQlogic Control functionality

Most of the IQlogic control functionality is available for use together with GOLD Multilogic. The main thing to remember is that all units in a Multilogic group must be configured in the same way.

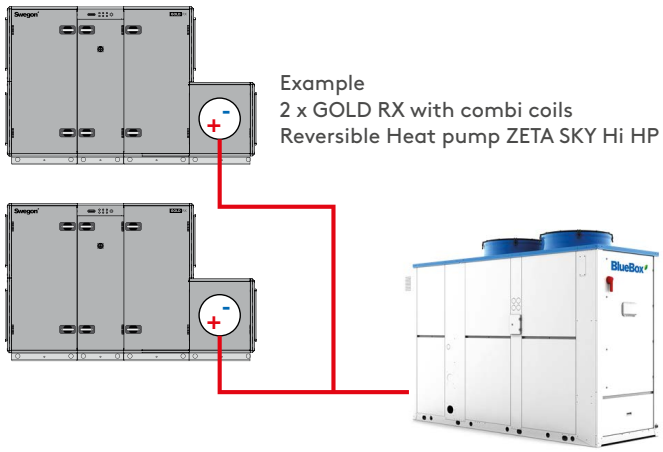
The functions below are of particular interest.

SMART Link+

The SMART Link+ function is a communication link between GOLD units and Swegon´s hydronic chillers and heatpumps in order to optimise the production of heating and cooling energy.

The SMART Link+ function is capable of working with multiple GOLD units and multiple chillers or heat-pumps.

Further information about SMART Link+ is available.



Example
2 x GOLD RX with combi coils
Reversible Heat pump ZETA SKY Hi HP

Summer night cooling

The summer night cooling function uses the lower outdoor temperature at night to cool the shell of the building.

This reduces the cooling requirement in the building during the day and reduces the cooling system's operating costs,

If no cooling system is installed, a cooling effect is still obtained.

AQC, Air Quality Control for units with rotary heat exchanger

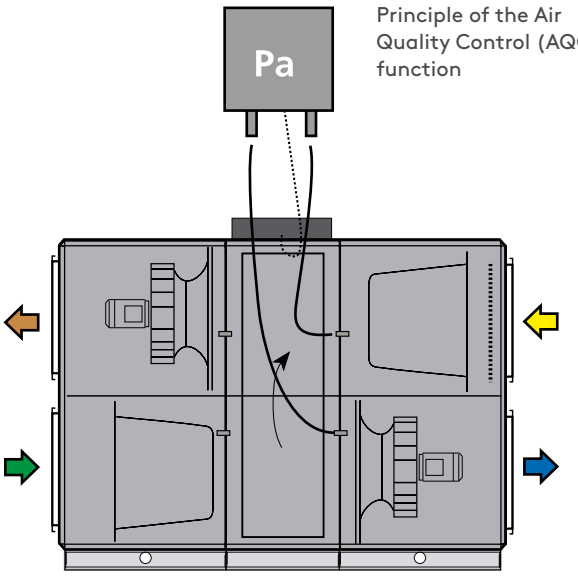
The Air Quality Control (AQC) function is used to guarantee that the heat exchanger's direction of air leakage and the purging sector work correctly.

Negative pressure in the extract air section must not be greater than in the supply air section. This ensures that extract air will not be transferred to the supply air.

In systems where variable flows and pressure variations occur, the function cannot be guaranteed with the ordinary supplied commissioning plates.

A pre-adjustment is made using the ordinary commissioning plates and a damper with a modulating damper actuator mounted in the extract air. A separate pressure sensor measures the pressure difference across the heat exchanger and controls the extract air damper so that the right pressure balance is obtained across the heat exchanger.

Since GOLD Multilogic requires dampers in the supply and extract air to prevent backflow, AQC can be applied without significant additional cost.



Principle of the Air Quality Control (AQC) function

IQlogic functions that are not compatible with GOLD Multilogic

The main GOLD IQlogic functions that GOLD Multilogic does not yet support are COOL DX and MIRUVENT.

The following GOLD IQlogic functions are not compatible because they change the setpoint for the airflow and that is what the GOLD Multilogic is designed to do so using them together is likely to cause conflicts.

- Set point displacement
- Outdoor air compensation
- Booster diffusers
- Down regulation (airflow/pressure)

The Time and schedule function in SuperWISE should be used instead of that in the GOLD IQLogic.

Fire mode

An external fire alarm should be connected to all units. In the event of a fire alarm all units will switch to the pre-set fire mode.

In the event of an internal fire alarm from one of the units, GOLD Multilogic allows that unit to go to the pre-set mode for internal fire and stops all of the other units.

Feel good **inside**

Swegon