

HYZER | MULTILOGIC | SWEGONINSIDE

Complete Plant Intelligence for Hydronic Systems



Swegon BlueBox Control Solutions

HYZER

HYZER enables the integration of the latest generation of high-efficiency products into a single, coordinated system.

Its advanced control platform applies state-of-the-art algorithms to reduce energy consumption and proactively optimize the operating conditions of all connected units, pumps, and auxiliary devices involved in heating and cooling production. Hyzer provides turnkey solution for building owners and design engineers to deliver the right amount of water flow at the right temperature for the hydronic system.

MULTILOGIC

Multilogic manages the staging of up to 32 units through a simple LAN connection between equipment. It provides flexible control of staging and sequencing across the entire plant, ensuring coordinated operation of all units.

Multilogic can also coordinate defrost cycles across multiple circuits between units in the central plant, maintaining a high level of water temperature stability and overall system reliability.

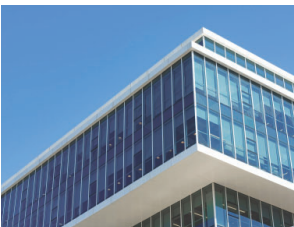
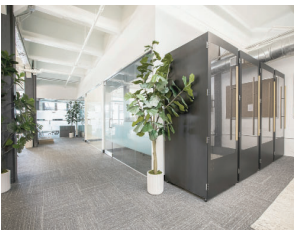
SWEGON INSIDE

Swegon INSIDE is a cloud-based digital platform for connecting and monitoring Swegon HVAC systems. It enables remote supervision, diagnostics, and performance analysis of installed equipment.

By collecting and analyzing operational data, INSIDE helps optimize system efficiency and reliability. The platform supports smarter service, predictive maintenance, and improved building performance.



Complete Plant Intelligence for Hydronic Systems





HYZER

System Optimizer for Hydronic Solutions

HYZER is Swegon's fully integrated central plant control solution for variable flow central plant heat pump systems. By combining advanced thermodynamic staging with intelligent pump management, it maximizes efficiency across the entire hydronic plant.

HYZER integrates the latest generation of high-efficiency heating and cooling equipment into one optimized, intelligent system — coordinating units, pumps, and auxiliary devices as a single, unified plant. HYZER ensures the right amount of water is delivered at the right temperature.

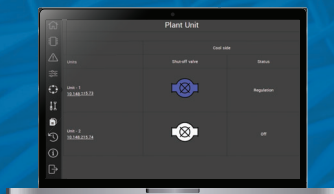
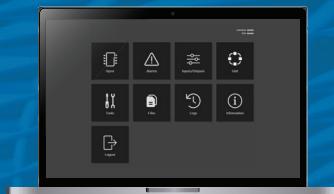
From Independent Units to an Optimized System

Energy use in HVAC central plants has a significant impact on total building consumption. Today's consultants, designers, and facility managers face increasing pressure to:

- Reduce energy consumption and operating costs
- Simplify system design and future upgrades
- Improve reliability and built-in redundancy
- Meet evolving regulations and sustainability targets

HYZER transforms standalone equipment into a dynamically optimized hydronic system — one that continuously adapts to real operating conditions to meet the building's needs.

Plant Intelligence Platform





From Equipment Control to Plant Intelligence

HYZER is not a unit controller — it is a complete central optimization platform that continuously coordinates:

Production Equipment

- Heat pumps & chillers
- 4-pipe multifunction units

Hydronic Infrastructure

- Primary variable-speed pumps
- Bypass valves in Variable Primary Flow systems for minimum flow management.
- Decouplers (bypass lines) in Variable Primary-Variable Secondary Systems & Heat Exchangers
- Primary loop temperature sensing and control to manage plant supply temperature.

Auxiliary & External Devices

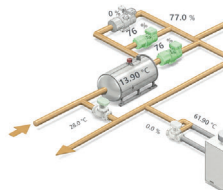
- Auxiliary boilers (supplemental or replacement)

All components operate together as one coordinated, intelligent plant — dynamically balancing thermal demand, water flow, and energy consumption.

Designed for Engineers. Delivered for Simplicity.

- Semi-custom, yet pre-engineered
- Delivered with complete Sequence of Operation documentation
- Supported by schematic libraries and design guides
- Equipped with a step-by-step start-up wizard for commissioning
- BACnet BTL certified – single connection for visibility of all devices in the central plant
- Remote monitoring ready

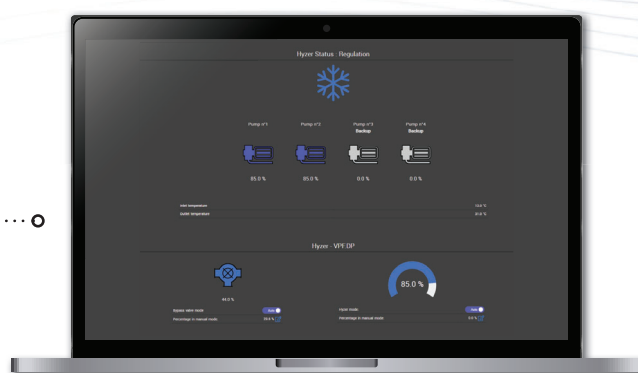
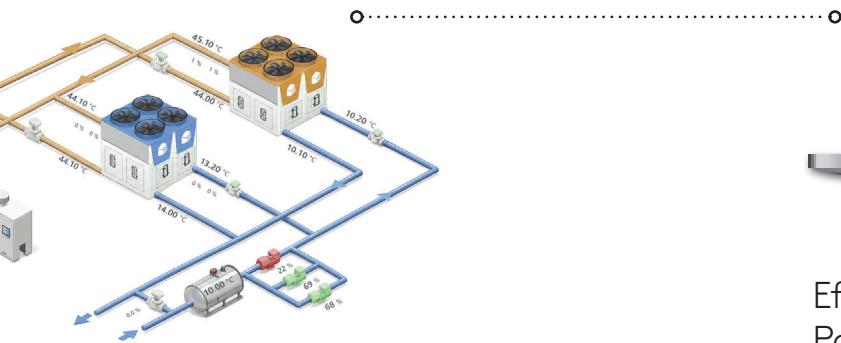
All components — control valves, flow sensors, temperature or pressure sensors, bypass valves and pump I/O — are defined upfront, simplifying design, installation, and commissioning with a “plug-and-play” architecture.



DEVICE

Compact PLC (Programmable Logic Control)

High connectivity
(compatible with
Modbus TCP/IP,
BACnet /IP and SNMP)
and provided standard with
Remote Service/Monitoring



Intelligent Control That Anticipates — Not Reacts

HYZER proactively balances flow and capacity — preventing instability before it occurs.

- Predictive pump ramping before staging new units
- Load-based compressor sequencing
- Continuous ΔT or ΔP optimization
- Real-time plant equilibrium management
- Adaptive thermodynamic staging based on operating conditions
- Ensuring minimum flow for heat pump units is always maintained, even at low load conditions.

Rather than reacting to system fluctuations, it anticipates them, maintaining stable operation while maximizing efficiency.

*System water volume reduction varies according to plant configuration and design. Contact your Swegon sales representative for a project specific water volume calculation.

Efficiency Where It Matters Most: Part Load

HYZER improves plant performance by:

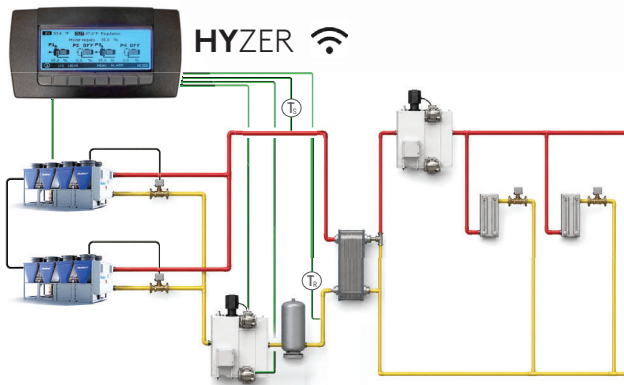
- Minimizes pump energy through intelligent variable flow control
- Reduces bypass operation and unnecessary recirculation
- Optimizes compressor performance at part load
- Coordinates defrost cycles across multiple units in the plant to reduce buffer tank size by 20–40%*

The result:

- Reduced electrical demand
- Improved seasonal performance
- Lower operating costs
- More compact and optimized plant design



Intelligent Flow. Reduced Energy. Stable Performance



VP-VS.DT Variable Primary/Variable Secondary Flow on ΔT Control

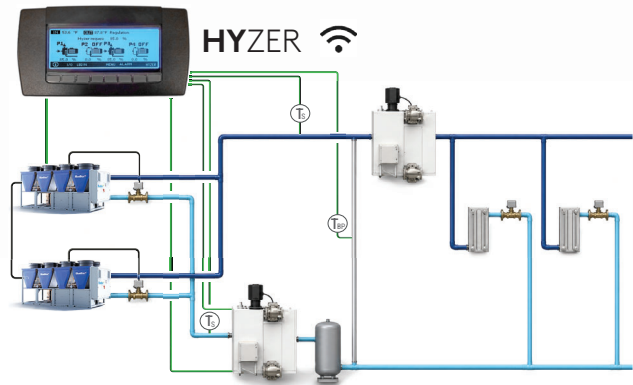
Automatic water flow regulation based on thermal load for both primary and secondary circuits.

- Can be applied to systems with Heat Exchangers used to decouple glycol from the building system, or in systems with 4-port Hydraulic separator/buffer tank
- Optimized energy consumption across the full load range
- Flexible adaptation to different plant layouts; excellent for retrofit projects and cooling-only chiller upgrades
- Stable ΔT control on the primary loop
- Header supply and return temperature sensing

The system dynamically regulates flow according to thermal demand, maintaining supply temperature while protecting minimum flow through each unit.

Best suited for:

- Hydraulically separated systems where different flow rates and temperature ranges on the primary and secondary sides of the system are required
- Cold Climate installations where it is desirable to avoid glycol circulation on the secondary side of the system
- Retrofit projects and cooling-only air-cooled chiller replacements to integrate heat pump functionality to an existing system, while leaving the building terminal units intact



VP-VS.DC Variable Primary/Variable Secondary Pumping Decoupler ΔT Control

Advanced hydraulic control for systems with primary / secondary decoupling.

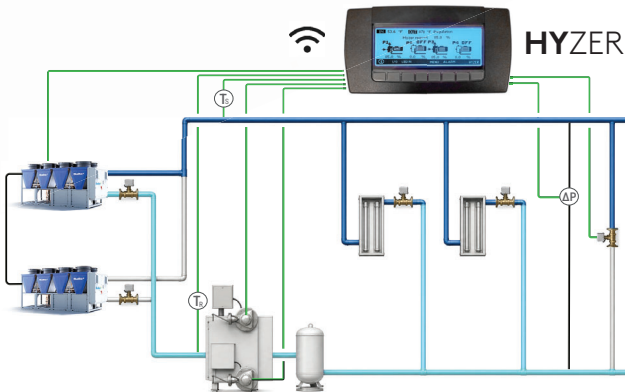
- Maintains target ΔT across the primary loop
- Continuously monitors decoupler temperature vs. supply and return temperatures for pump control
- System is controls to balance the flow on the primary and secondary sides of the system, eliminating unnecessary flow through the decoupler
- Guarantees minimum flow through each operating unit

Primary pump speed is dynamically adjusted to maintain plant equilibrium, reducing mixing losses and improving overall system stability.

Best suited for:

- Large hydronic plants adapted for heat pumps. Variable flow on the primary accommodates flow requirements in cooling and heating modes for heat pumps compared to traditional primary-secondary systems
- Can provide better system stability compared to Variable Primary Flow (VPF) systems, where operation of primary loop bypass valve can cause system instability

Designed for
optimized
hydraulic
performance
across all load
conditions.



VPF.DP

Variable Primary Flow Pumping on ΔP Control

Automatic water flow regulation based on thermal load in the primary circuit only.

- Reduced pump energy consumption
- Simplified hydraulic architecture
- Minimum flow protection via bypass valve controlled by HYZER system
- ΔP based control strategies with system inputs to monitor up to 3 pressure zones. Flexible control base on minimum value read, maximum value, or average value
- ΔT control also available
- Optimized performance at part load

Flow is continuously adjusted according to ΔP measurement in the building to match the flow with the building demand. Supply temperature from the central plant is maintained while protecting equipment to ensure flow remains above the minimum flow via bypass valve.

Best suited for:

Energy-focused plants seeking simplified piping and high part-load efficiency.

+

Both VP-VS and VPF Strategies

- Provide turnkey solutions with "Plug-and-Play" engineered central plant solution to provide the right amount of water at the right temperature
- Flexible Options for Central plant controls of Heat Pump units, Primary Pumps, Auxiliary Boilers and control valves
- Minimize pump power consumption
- Guarantees minimum flow protection of all heat pump units in the central plant
- Adapt automatically to real operating conditions as thermal demand changes
- Built-in Redundancy

Coordination of defrost in heating mode among all active circuits for enhanced water temperature stability.

MULTILOGIC

Core Functions

- Control solution without the need for additional controllers or panels, MULTILOGIC software runs on a designated Client unit and controls all units in the central plant and supports integration of up to 32 units
- Simplifies thermodynamic staging controls in applications with a circulator pump for each unit in the central plant, or with a control valve on each unit with central primary pumps (pumps controlled by BMS)
- Combine different types of units in a single plant: seamlessly integrate Chillers, Reversible Heat Pumps and 4-Pipe Multifunction units according to the plant design.
- Maintains plant supply temperature setpoint via measurement of global supply temperature
- Stages compressors and circuits based on real-time demand while balancing operating hours across compressors and circuits according to the unit staging control method.
- Coordinates defrost cycles across the central plant on all active circuits, preventing multiple circuits from defrosting at the same time
- Integrates auxiliary boiler control
- Provides redundancy and failover logic

Result:

Turnkey thermodynamic control solution, stable temperature control, optimized efficiency, and reliable multi-unit operation.

MULTILOGIC

Centralized Unit Staging & Plant Coordination

Modern hydronic plants often combine multiple heat pumps, chillers, or 4-pipe multifunction units. MULTILOGIC™ is the thermodynamic control layer within the HYZER system, providing centralized capacity management across the entire plant.

While HYZER manages hydraulic performance and variable flow, MULTILOGIC manages thermal capacity. Together, they maintain thermal equilibrium and stable plant operation. For plants with primary pump controls by BMS, MULTILOGIC is available as a standalone solution.

There are no additional controllers or panels required to take advantage of MULTILOGIC. The software is built into the controllers, and only requires a set of global temperature sensors for the main supply/return headers and ethernet connections between units to have multiple units run as a single entity.

Operating Logic

MULTILOGIC offers three selectable capacity distribution strategies:



Optimized Logic

- A hybrid strategy balancing thermodynamic efficiency and pump energy impact.
- Units operate as a combination of Balanced and Saturated modes to achieve optimal overall system efficiency.



Balanced Logic

- Units operate in parallel with equal priority.
- Maximizes part-load efficiency and improves overall plant COP.



Saturated Logic

- The units are operated sequentially, once a unit is at 100% capacity, the next unit is staged on ensuring flow is only delivered to units that require it.

Defrost Coordination

MULTILOGIC coordinates defrost cycles across the entire plant to:

- Prevent simultaneous defrost events across multiple circuits in the central plant.
- Improve water temperature stability
- Reduce required buffer tank volume (~ 20–40%)
- Redistribute thermal demand during defrost to standby units/circuits

Redundancy & Failover

MULTILOGIC enhances plant reliability through:

- Automatic redistribution of capacity upon unit failure
- Compressor and circuit fault detection
- Client (master) failover protection
- Pump and communication monitoring
- Runtime equalization across compressors
- Units available with separate power feed for controller and heat tracing, to allow for the client unit's controller to continue to operate when power is disconnected for maintenance

Swegon INSIDE

A Connected HVAC Ecosystem

- Secure connection via Ethernet or INSIDE Connect router (GSM modem – no internet connection to building system required)
- Remote monitoring of unit operation and alarms
- Real-time performance data from connected equipment
- Enables remote diagnostics and predictive maintenance

Why INSIDE?

For Service Teams

- Faster diagnostics
- Remote troubleshooting
- Reduced site visits

For Customers

- Lower service costs
- Reduced downtime
- Improved reliability

For Building Owners

- Better energy performance
- Greater operational visibility



Swegon INSIDE

Connected HVAC. Smarter Service.

INSIDE transforms Swegon units into connected, data-driven systems, enabling smarter service, optimized performance, and predictive maintenance. By linking equipment to the INSIDE Cloud, the platform provides continuous visibility of system operation, helping service teams and facility managers maintain optimal performance and reliability. All managed securely through the INSIDE platform.

The INSIDE Platform

INSIDE Portal

Central hub for managing connected buildings and equipment.

- Configure buildings and units
- Manage users and access rights
- Monitor key operating parameters
- Receive alarm notifications

INSIDE Manager

Advanced diagnostic and service platform accessible from desktops or mobile devices.

- Visualize system performance
- Access full operating data
- Analyze historical trends
- Create dashboards and reports

INSIDE Connect

Secure remote access to unit controllers.

- Read and modify operating parameters
- Check alarms and system status
- Upload software updates and download logs

BlueBox Digital Services

INSIDE enables advanced digital services designed to improve system performance, simplify maintenance and reduce operational costs.

Unit Analyzer (Performance Monitoring)

The Unit Analyzer provides intuitive dashboards to evaluate system performance and efficiency.

- Energy consumption and capacity produced
- System operating modes
- Compressor and pump runtime
- Alarm history and trends

This allows faster troubleshooting and better performance optimization.

Predictive Maintenance (Detect problems)

Using machine learning algorithms and digital twin models, INSIDE continuously monitors unit performance and detects anomalies before failures occur.

- Pressures and temperatures
- Compressor performance
- Fan and inverter speed
- Water flow and heat exchanger efficiency

Early detection enables proactive service planning and reduces unexpected downtime

Feel good **inside**

