
# HYZER

System optimizer
for hydronic solutions

Swegon

# BLUETHINK

## Systems & Controls

Nowadays one of the unique technologies of Cooling/Heating equipment is the loads optimization of the units in different working conditions, maximizing the efficiency but also the integration with other plant equipment and systems.
BLUETHINK® is the latest generation of units Controls in Swegon cooling/heating units with the embedded software 100% developed by internal "Systems & Control team". The full ownership of the technologies allows fast response to market needs and development of unique advanced function for the unit management, multiple unit management, System Optimization, System integration and Supervision.

### BLUEYE

BLUEYE® is a fully configurable web based system which allows remote monitoring of different Swegon units and HVAC devices. This supervising system can be installed in already existing units or mounted directly in the factory during the unit assembly. Blueye allows to subscribe to two different contracts.

### HYZER

HYZER allows integrating the last generation of efficient products together in a system. The control implements state-of-the-art algorithms to reduce energy consumption and preventively optimize operating conditions of all units, pumps and external devices involved in the heating and cooling production.

### FLOWZER

VPS and VFPP Flowzer solutions, as optimizer of water flow rates, work on advanced levels of PID alghorithms that grant outstanding level of stability during the working, minimizing the fluctuation of inverter regulation.

### MULTILOGIC

IT works like one of the major function embedded in BLUETHINK® control, enabling the management of multiple units installation up to 32 equipments, simply connecting the units via LAN. Many function logics manage multiple units system. The system is fully embedded in the control and software is already set in the factory.

# From independent products to a smartly linked system

The energy used in the HVAC central plant has a huge impact in a building energy consumption.
All the "Actors" involved in the entire life cycle management are then in front of different challenges:

## Consultants

Achieve an **efficient system** solution
for reducing energy consumption

## Investors

**Achieve Building** rating and
good references

## Mechanical & Electrical Designers

Get a **modular design**, easy
for refurbishments and system
upgrade

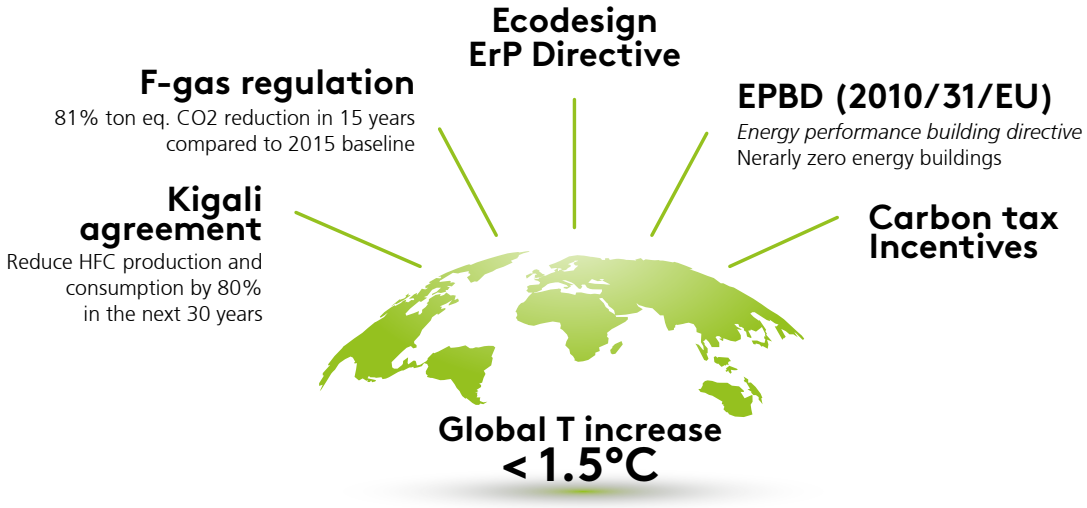
## Service & Maintenance Managers

**Reduce maintenance** & **running costs**
and manage unexpected events

# Climate change fight

The latest developments in directives and regulations (for example, ERP, F-Gas and Carbon Tax) has created new challenges in terms of efficiency and sustainability. Integration of the latest generation products in a system is the best way to fully optimise the operations of each component.

HYZER is the latest generation of BLUETHINK® controls consisting of unique and advanced functions for the intelligent management of the hydronic system.



# HYZER
## HYDRONIC OPTIMIZER

BLUETHINK® control to manage units, components and devices and build an optimized System.

- **Advanced algorithms** to maximize system total efficiency
- **Less Opex** thanks to lower energy consumption
- **Flexible management** of multi units, variable water flow and external devices (drycoolers, cooling towers, boilers,..)
- **Real time** energy consumption to obtain advanced structured data analysis
- **Modular design** to perfectly suit any project requirements in terms of application, size and complexity

**EFFICIENCY**

**COMMISSIONING**

**CONFIGURATION**

**REDUNDANCY**

**OPTIMIZATION**

**MONITORING**

# Flexible and scalable solution

HYZER control device offers different integration levels: from the management of more units in parallel to the control of auxiliary devices, such as dry coolers and/or external pumps, always ensuring the best system efficiency.

The unique and advanced technical experience in sophisticated hydronic plants brought us to design 3 specific solutions able to cover and quickly respond to the market needs:

## EMBEDDED

MULTI units
VARIABLE flow

**INTEGRATED FUNCTION**
No additional devices
Better MTBF (Mean Time Between Failures)
Less CAPEX

HYZER E EMBEDDED

## CONTROL

2-PIPE & 4-PIPE systems
VARIABLE flow (user and source side)
EXTERNAL DEVICES (drycoolers, boilers, well pumps)

**PLUG & PLAY SOLUTION**
Configured system control
Easy installation
Wide hydraulic layout range

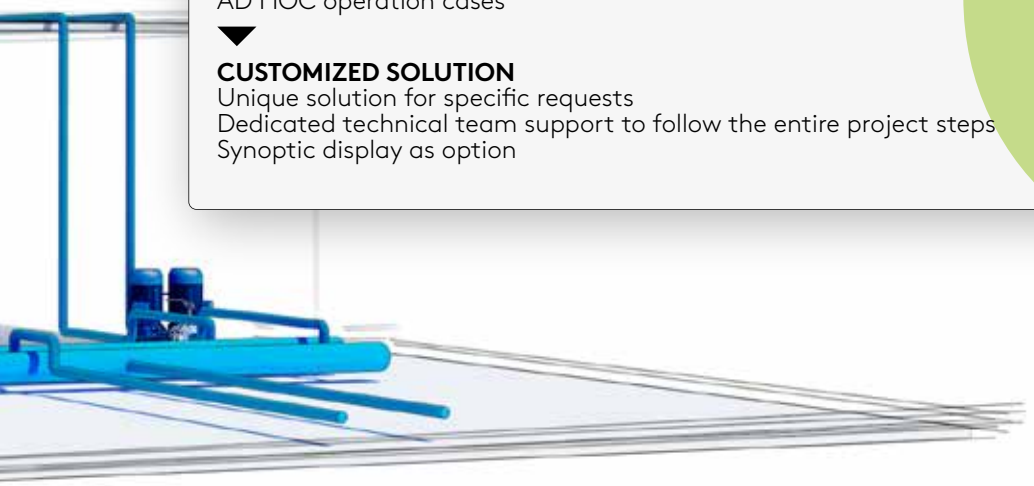
HYZER X CONTROL

## CUSTOM

MULTIPLE systems
AD HOC operation cases

**CUSTOMIZED SOLUTION**
Unique solution for specific requests
Dedicated technical team support to follow the entire project steps
Synoptic display as option

HYZER C CUSTOM



# HYZER E EMBEDDED

## Embedded function to manage multiple units system and integrated variable water flow.

This function is integrated in BLUETHINK® advanced control.

The optimized distribution logics ensure partial load operation. The variable flow management reduces pumps energy consumption increasing the overall system efficiency.

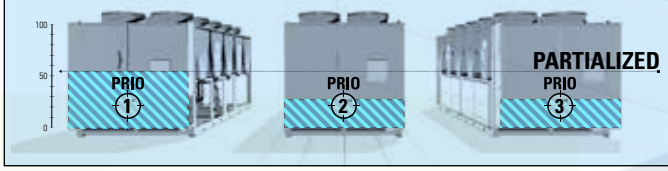
## MULTILOGIC

According to Master/Slave logic the function regulates the capacity distribution between the units activated.
Solution available for units with pump on board.

- **Integration of different units (up to 32 units)**
- **Maximum energy efficiency through Optimized power distribution**
- **Free cooling high priority**

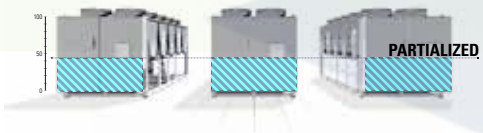
### Optimized (balanced + saturated)

The unit (usually different type and size) works as mix of Balanced and Saturated mode in order to achieve the best system efficiency.




### Balanced

Units work in parallel, with the same priority.

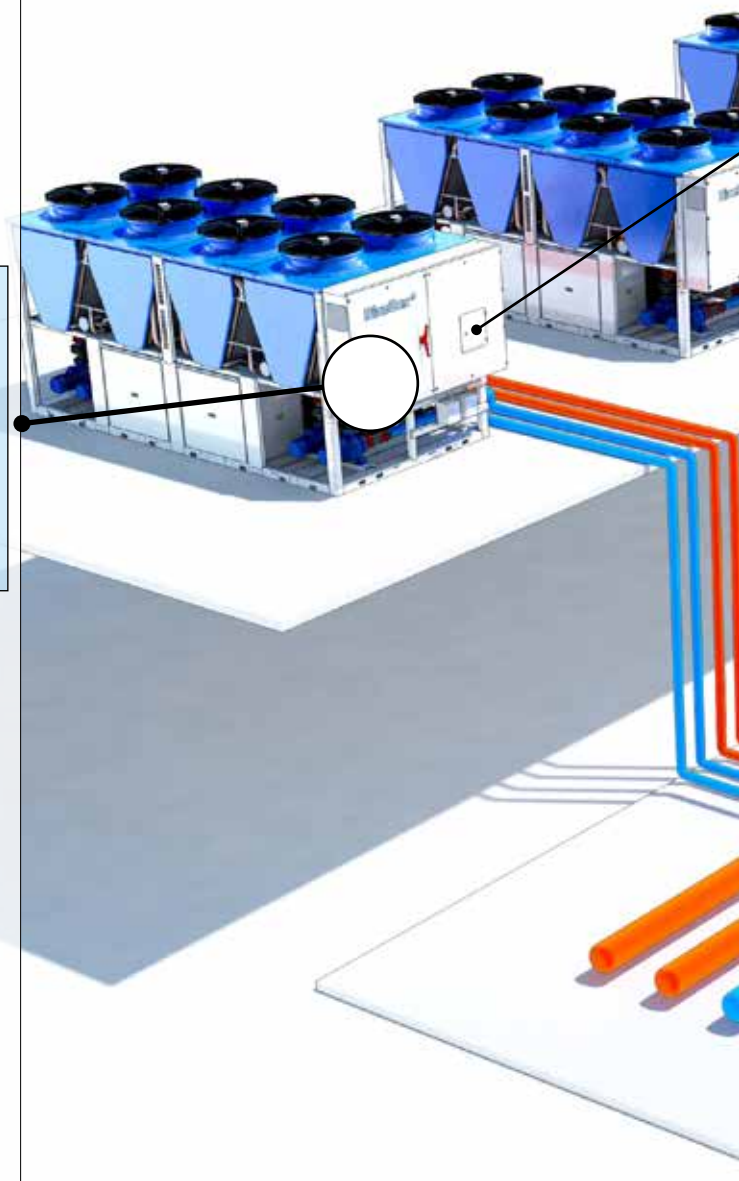



### Saturated

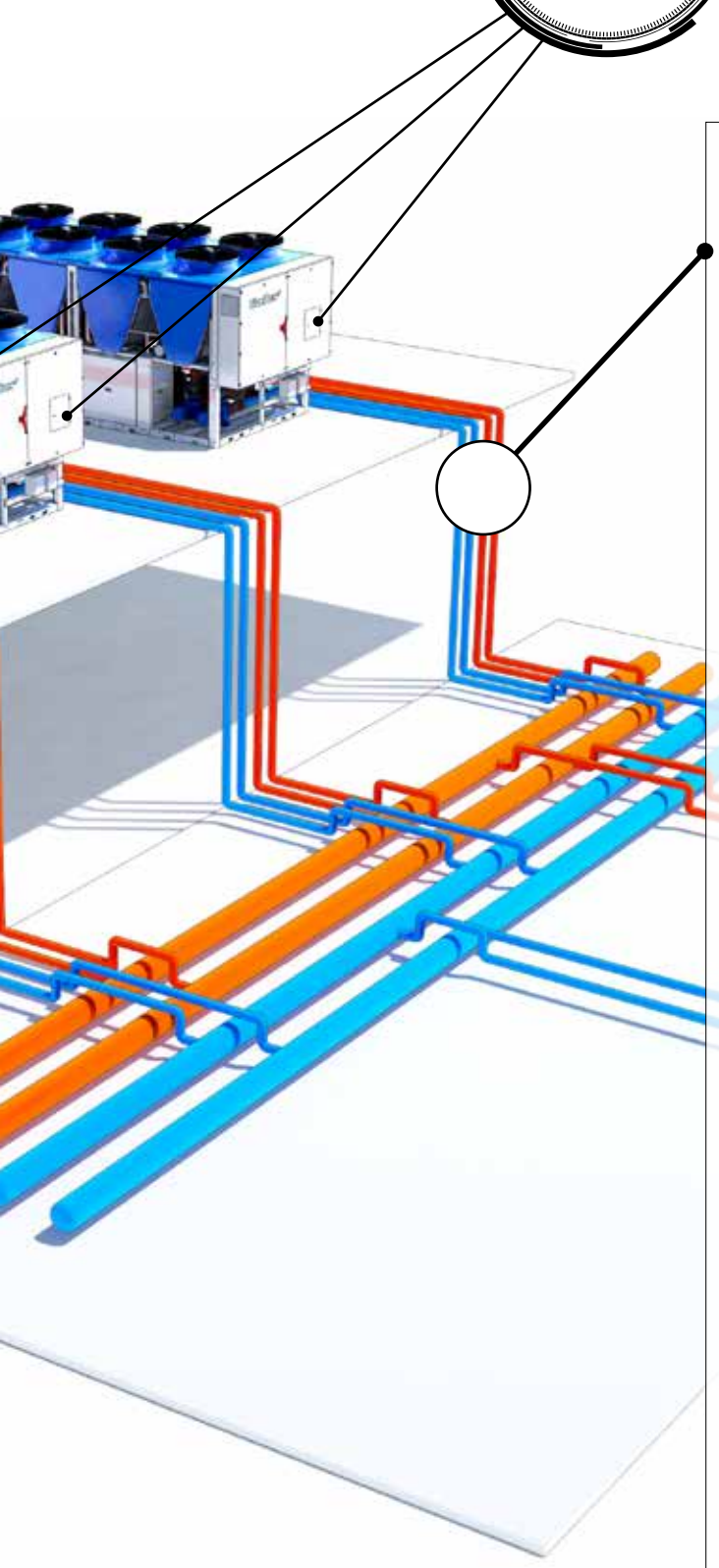
The unit with higher priority works up to 100% before starting the second unit.


### Booster/Back up

One unit is only for back up and to cover cooling demand peaks. This unit will operate seldom and can be selected as simpler unit to reduce the investment cost.


**HYZER E does not require additional external devices, the System is managed simply by connecting the units via LAN.**

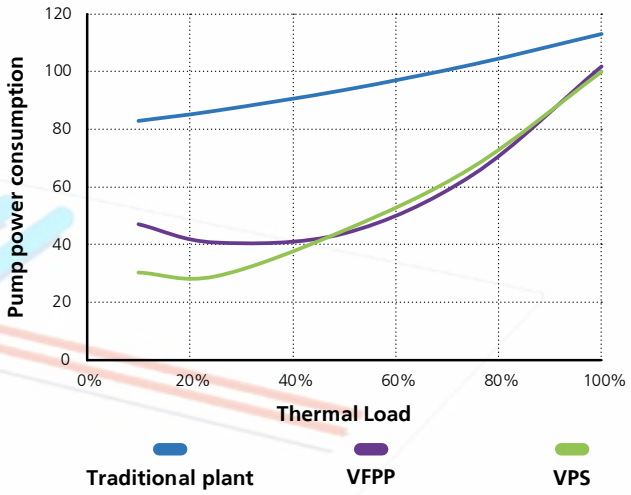


## FLOWZER

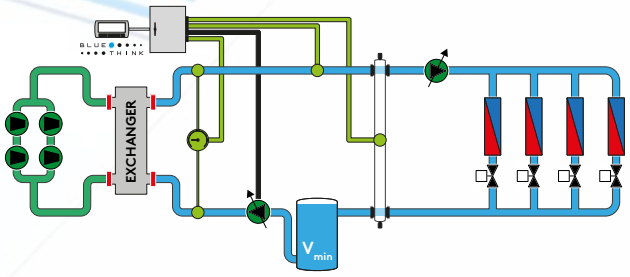
VPS: automatic water flow regulation based on thermal load for plants with primary + secondary circuits

VFPP: automatic water flow regulation based on thermal load for plants with primary circuit only.

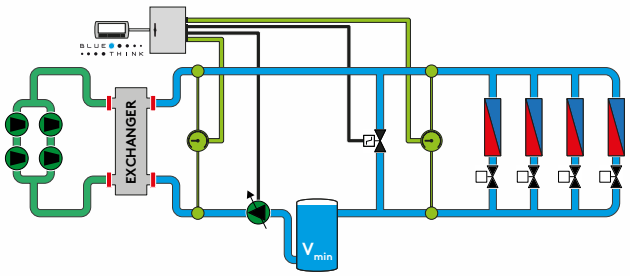
- **Operational cost saving: minimized energy consumption**
- **Best fitting solutions for different system's layout**
- **BYPASS valve supply**




**VPS** > Primary/Secondary Variable Flow




**VFPP** > Variable flow primary pumping



# HYZER X CONTROL

## The intelligent management of different system configurations

System control for the management of heating & cooling hydraulic plants. The wide range of configurations on 3 plant levels: source, production, distribution. HYZER X implements state-of-the-art algorithms that automatically manages of the entire heating / cooling production and distribution.

Including functionalities as:

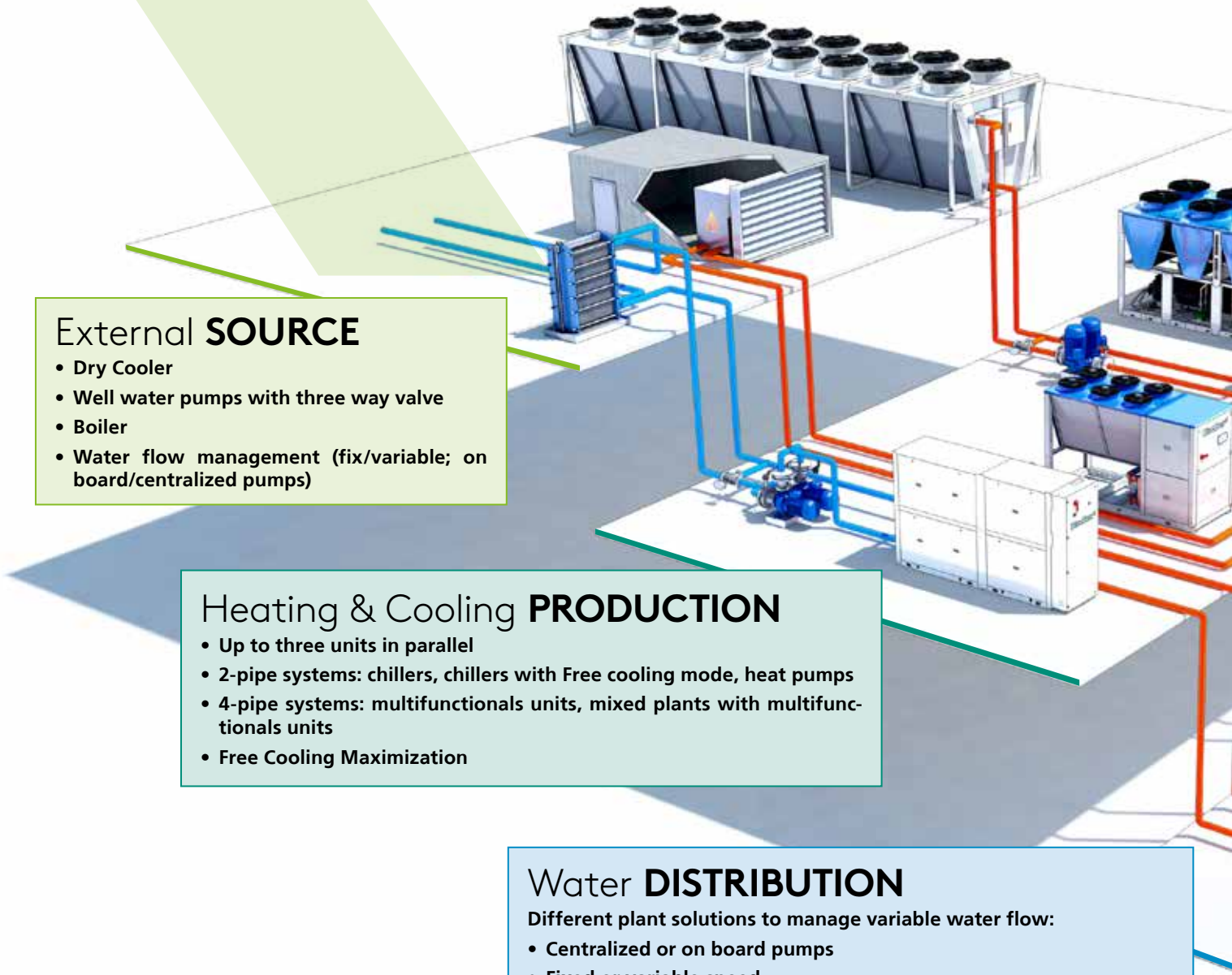
- Boiler priority
- Free Cooling priority
- Possibility to set units and pumps in Back-up

# HYZER C CUSTOM

## The Excellence Customized: the best unique system solution.

Design specifically customized when:

- A specific HYDRAULIC LAYOUT different from the traditional solutions
- Ad hoc operation cases (assigning priorities, set-points,..)
- Additional devices to include in the system management



## External **SOURCE**

- **Dry Cooler**
- **Well water pumps with three way valve**
- **Boiler**
- **Water flow management (fix/variable; on board/centralized pumps)**

## Heating & Cooling **PRODUCTION**

- **Up to three units in parallel**
- **2-pipe systems: chillers, chillers with Free cooling mode, heat pumps**
- **4-pipe systems: multifunctionals units, mixed plants with multifunctionals units**
- **Free Cooling Maximization**

## Water **DISTRIBUTION**

**Different plant solutions to manage variable water flow:**

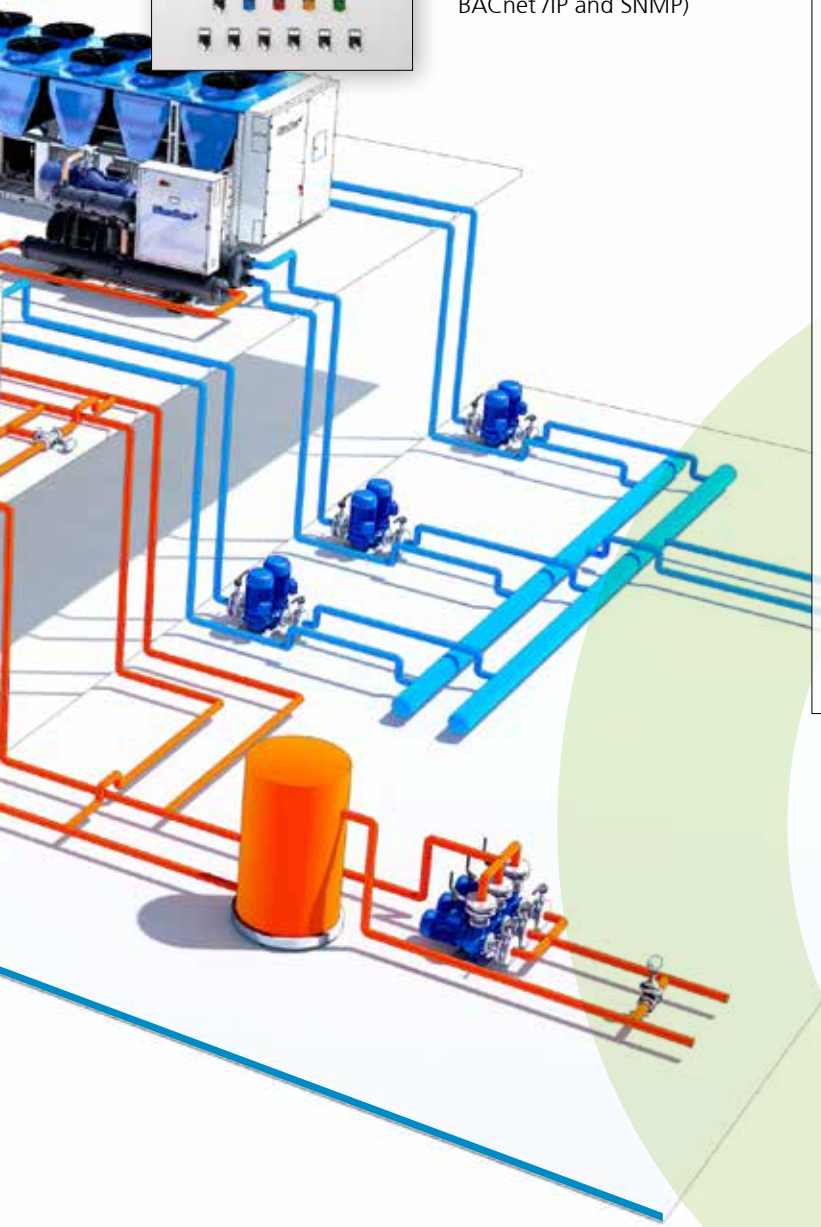
- **Centralized or on board pumps**
- **Fixed or variable speed**
- **Primary flow in a primary/secondary system (VPS)**
- **Variable flow primary pumping (VFPP)**


## DEVICE

DISPLAY Touch Screen 7”

Compact PLC (Programmable Logic Control)

- Up to 64 I / O modules
- High connectivity (compatible with Modbus TCP/IP, BACnet /IP and SNMP)



## CONFIGURATION

The device is already configured in the factory based on the layout type requested. Once installed, Hyzer will automatically read the system configuration parameters.

## OPTIMIZATION

HYZER assigns the right priorities to all components, building an efficient and reliable system:

- Boiler priority
- Free Cooling priority
- Possibility to set units and pumps in Back-up

## EFFICIENCY

Verify your saving. The system control measures:

- Real time energy consumption
- Energy delivered
- System efficiency

## REDUNDANCY

System reliability is always ensured even during maintenance operations, thanks to the manual override working mode.

## MONITORING

BLUEYE device added to HYZER allows:

- Remote monitoring
- Charting for system historical data
- Alarms notification
- Scheduling

## COMMISSIONING

By-pass valves, shut off valves and inverters supplied on demand:

- Advanced knowledge of features (response times, variation curve, valves timing,..)
- Devices completely under control
- Greater system security

# Case Study **Ca' Marcello | Venice**


## Location
Mestre, Venezia - ITALY

## Application
Nr. 4 Hotels Ca' Marcello

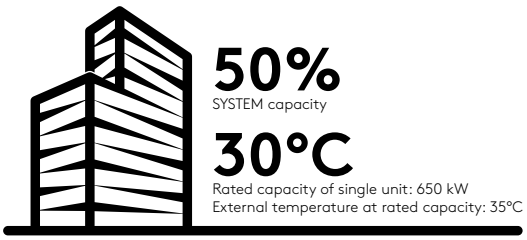
## Unit type
2 Multifunction 4 pipes units in parallel for each hotel (8 units in total).

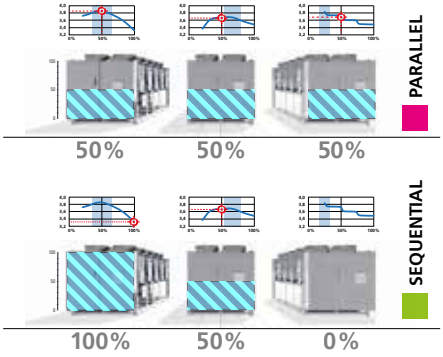
## Models
- 2 x OMICRON REV S4 HE 4T LN 42.4
- 2 x 2 x OMICRON REV S4 HE 4T LN 22.4
- 2 x OMICRON REV S4 HE 4T LN 30.4

## Customer Pain
Refurbish exhisting plant (primary/secondary with Competitors units) towards more efficient system with lower running costs. Project started with Competitors product but customer needed to reduce the investment costs because of budget restrictions

## Swegon proposal
Simplify the whole system design in order to reduce CAPEX but still achieving the highest energy saving . Supply of 4 FLOWZER VFPP systems (with dedicated control, by pass valves…) to manage 8x 4 pipes multifunction units

# Adaptive Optimization Logic

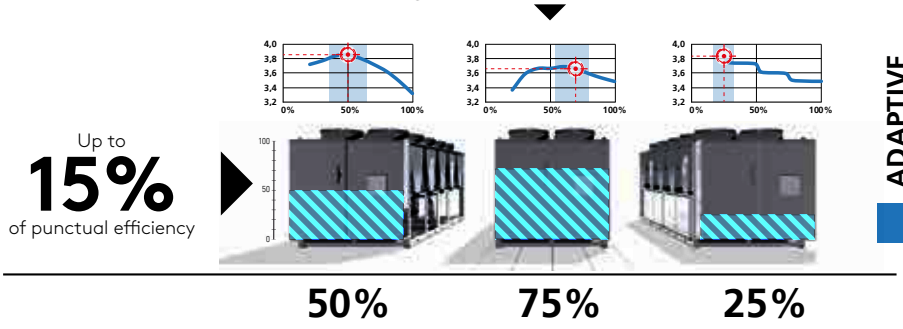


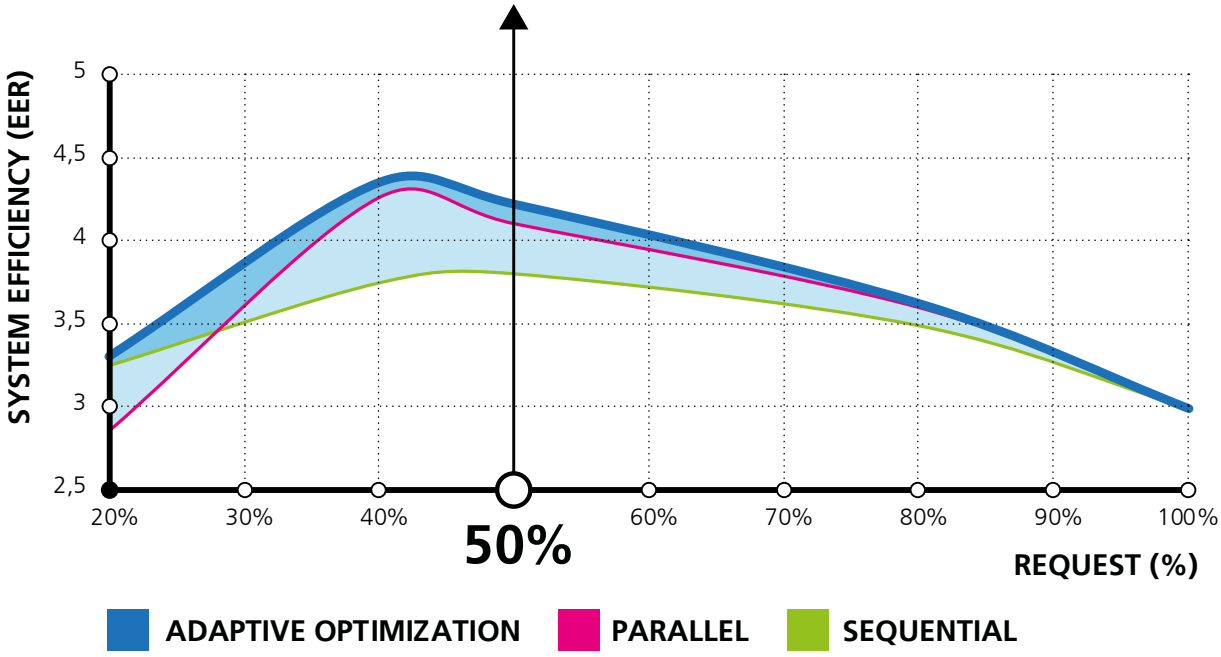

Partial loads operation and Sequential load distribution don't take into account:

- Units features
- External conditions
- Hydraulic layout

## How to get the best efficiency




Optimal adaptive algorithms define the **best activation sequence** and the most efficient working mode for any different condition and load.



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