

MANDÍK Control

Maximum efficiency for your project.

Developing our own control system was the final piece of the puzzle. With it, MANDÍK becomes a truly complete manufacturer of HVAC units.

We now cover the entire chain – from the unit design software, through the development and production of the body itself, to the complete creation of the control software, including the development of our own hardware controller.

Such end-to-end development ensures maximum optimisation of every single piece of the puzzle. The result is a fully optimised product working as one coherent system. Very few companies can offer this approach today.

29.5.2026 15:03

CS

GUEST

Volba režimu: Vypnuto

Aktuální režim: Vypnuto

Manažer teploty: Vypnuto

Rekuperátor

Stav: Off

Pozice: 0 %

Integrované tepelné čerpa...

Stav: Vypnuto

Axiální ventilátor: 0 %

Výkon: 0 %

Integrované tepelné čerpa...

Stav: Vypnuto

Axiální ventilátor: 0 %

Výkon: 0 %

OUT

0 °C

0 %



SUP

0.0 °C

0.0 %

ETA

0.0 °C

0.0 %

Přívodní ventilátor

Stav: Off

Výkon: 0 %

Odvodní ventilátor

Stav: Off

Výkon: 0 %

Klapky

Směšovací klapka: Off

Pozice: 0 %

Klapka ODA: Off

Pozice: 0 %

Klapka EHA: Off

MANDÍK, a.s. | MANDÍK ControlCatalogue

Why choose MANDÍK Control

The control system is designed to eliminate the most common problems in the design, installation and servicing of air handling units. Unlike ordinary controllers, the system is not constrained by a fixed structure or the need to create custom software versions.

Key benefits in practice:

- **One unified software** for all applications – from the compact CPV, CPX and Rooftop units to any Mandík assembled unit.
- **No “custom versions”** for individual projects. Once a new function is integrated into the system, it becomes a permanent part of the standard software.
- Easy expansion without touching the architecture.
- Fast response to new customer requirements.
- Simpler servicing and fewer errors.
- **Code version control (Git)** – every software change is backed up, clearly documented and fully traceable.
- The result is a more reliable solution with lower operating and maintenance costs.

Integration with the AHUMAN design software

Direct integration of the control system with the AHUMAN design software dramatically speeds up and refines the work. In the design software the user defines the unit's complete configuration – both the mechanical layout and the required control functions.

Based on this configuration, a data output is generated that can be imported directly into the control system. This removes the manual setup that is a frequent source of errors in ordinary systems.

What the integration delivers:

- Automatic software setup in a few clicks.
- Elimination of errors caused by manual configuration.
- An exact match between the technical design and the real setup on site.

Open architecture without limits

The control system is built on a powerful PLC and our own expansion modules communicating over the Modbus RTU bus. The whole system is fully modular – individual parts (inputs, outputs, functions) can be combined and expanded freely. The system is not constrained by the fixed structure or capacity of ordinary controllers.

Every new function is implemented directly into the main software, not as a separate version. You get a platform without configuration limits and without software-version complications, able to respond flexibly to any requirement.

Control principle – the “manager” system

The control system uses a unique system of so-called managers – specialised software blocks that handle individual demands for ventilation, temperature, air quality or humidity. Each manager independently evaluates its input and generates a request. The system then combines these requests intelligently so that all conditions are met optimally without conflicts.

Advanced ventilation control

The ventilation manager intelligently controls fan output according to the current needs of the whole system. Available modes include fixed speed, constant pressure (VAV), constant flow (CAV) or external control with the option to connect to a higher-level system (including the OptimVent system).

The system can dynamically increase output above the base setting in response to rising demands on CO₂ concentration, temperature and humidity. The result is delivery of the exact air volume with a focus on energy optimisation and overall comfort.

Air-quality control (CO₂)

This manager keeps the CO₂ concentration in the space at a faultless level. It can work in two modes: either as smooth continuous output control (PID) or in a so-called hysteresis mode for intensive occasional purging.

To achieve minimum energy use, the system first adjusts the mixing ratio (increasing the share of fresh air) and only then raises the fan speed.

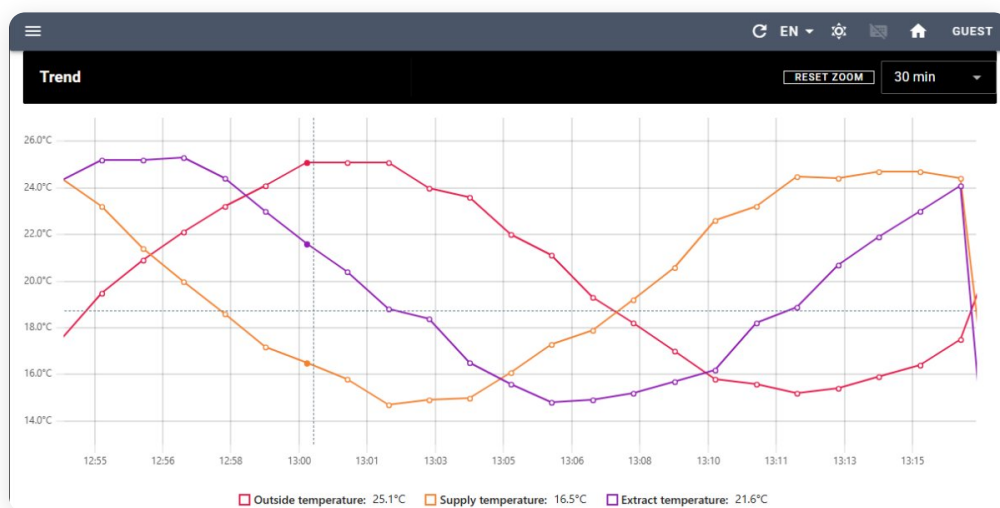
Intelligent temperature control

The temperature manager reaches the required temperature with maximum regard for energy savings. It combines two principles:

- **Qualitative control** – free-cooling first, then heat recovery, and finally the active sources (cooling/heating).
- **Quantitative control** – the fan has a min. and max. speed setpoint. If the unit cannot reach the required temperature by changing the supply-air temperature alone, it gradually increases the air volume. The control still holds the setpoint – but at the higher flow it reaches the target extract/room temperature more efficiently.

Local trends

The visualization can display trend graphs directly on site. The list of variables is generated dynamically from the unit configuration – only the sensors and sources actually present are shown. The user selects the time range (10 min to 24 h, or a custom from-to interval) and switches individual variables on/off. The graph has independent axes for temperatures, outputs, pressures, speeds, humidity and CO₂.



Local trends – overview of the measured variables directly on site (no cloud connection required)

Recirculation control

Mixing control offers a fixed ratio as well as a dynamic mode responding to CO₂ and temperature. The system preferentially raises the share of fresh air and maximises heat recovery – a major reduction in energy use.

Source control

Intelligent staging of heating/cooling steps according to need and availability. Source rotation by running hours, automatic exclusion of a faulty source and engagement of a backup.

Intelligent humidity control

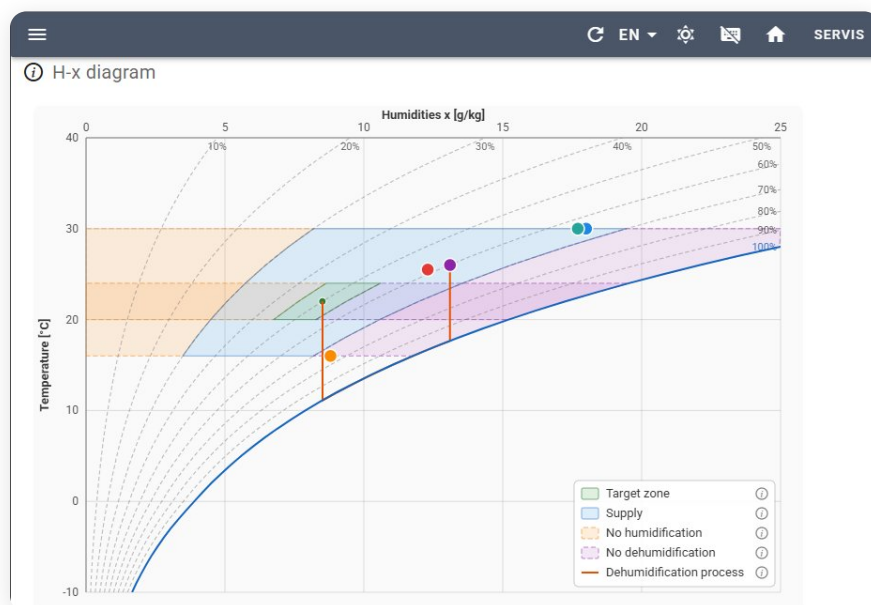
The humidity manager keeps the air humidity optimal and so complements temperature control. It works with **specific humidity (g/kg)**, which, unlike relative humidity, is independent of temperature – so the control stays accurate even when the room temperature fluctuates.

How it works:

- The user conveniently enters the setpoint and limits in **% relative humidity**, and the system converts them to specific humidity itself.
- **Dead band** – above the upper limit the unit dehumidifies, below the lower limit it humidifies, and in between it does nothing. No needless switching or oscillation.
- It uses the unit's existing components (cooler / heat pump for dehumidification, steam humidifier) and works together with the temperature manager.
- It controls air flow preferentially – energy savings before active sources are engaged.

Mollier diagram right in the visualization

The user sees with their own eyes where the air moves in the psychrometric (h-x) diagram – the target zone, the supply band, the “out of reach” areas and the dehumidification process path itself. This helps you understand what the unit is doing and why.



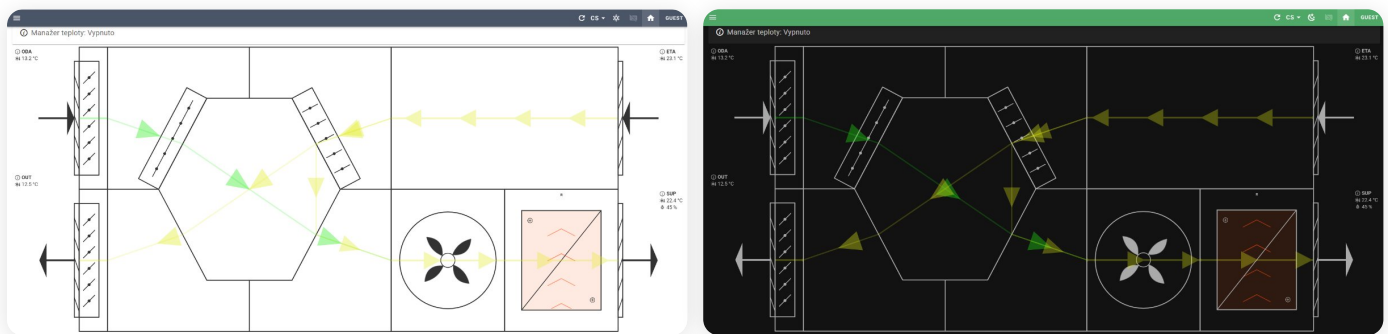
Mollier (h-x) diagram – a graphical view of the air state right in the web interface

Modern visualization and control

MANDÍK Control includes an integrated next-generation web interface, built on modern technologies with elements inspired by Google Material Design. There is no need to program complex external panels – everything runs directly in the system. The visualization is fully responsive – it adapts to a PC, tablet, phone and industrial displays. The operator gets a user experience comparable to modern apps.

An integrated manual right at hand

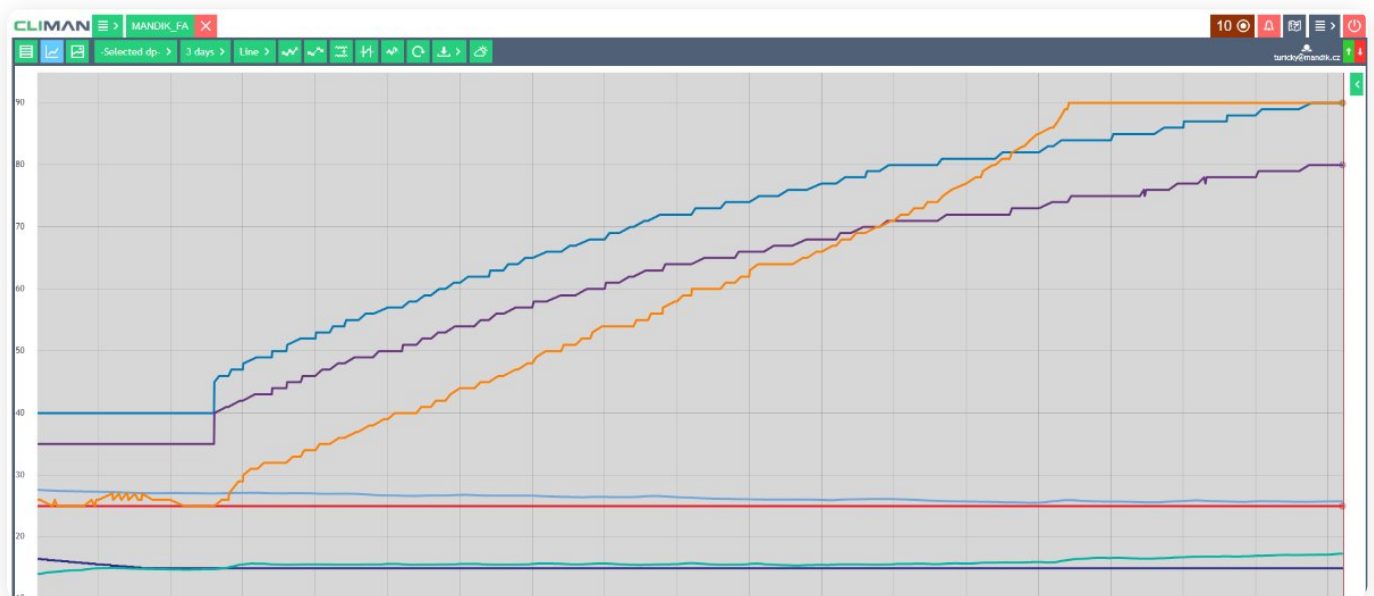
Every parameter has an info icon (i). One click shows a detailed description, limits and recommended values. No more leafing through manuals or calling support.



The entire visualization can switch between Light and Dark mode

Cloud and remote management

The platform is ready to connect to a cloud solution (climan.online) – supervision from anywhere, history retention and diagnostics. Most service situations can be handled online, including software updates. Remote access shortens response time and lowers service costs.



Cloud – remote management and diagnostics from anywhere (climan.online)

Communication & access

The control system integrates easily into the building and its technology. It communicates with supervisory building-management systems, works with room devices, and offers local and remote access to the same web interface – from the touch display, a phone or a laptop.

Connection to a supervisory system (BMS)

- **Modbus TCP** – over the Ethernet network (the controller acts as a server)
- **Modbus RTU** – over the RS-485 serial line
- **BACnet IP** – standard for building automation
- **Analog / digital signals** – for simple commands and states

Room devices

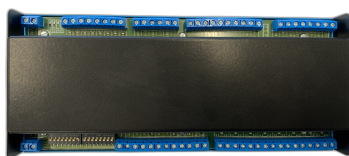
The end user can control the unit directly from the room with a **Belimo** room device (Modbus RTU communication) or an analog/digital device (**HMI/RO3**, **CP-M-B**) – without needing access to the web interface.

One web interface, from anywhere

- **10" touch display** – local control, can also create its own Wi-Fi hotspot
- **Local router** – API hotspot for connecting from a phone or laptop right on site
- **Teltonika router** – remote access and monitoring via the cloud (climan.online)

Our own CLIMAN hardware

We turned more than 10 years of experience in air-handling control into the development of our own hardware and the CLIMAN platform expansion. One expansion covers a small/medium unit – but thanks to chaining up to 30 modules on the bus, we can handle even the largest and most complex applications.



Type	Count
Digital inputs (DI)	8
Relay outputs (DO)	8
Analog inputs (AI)	12
Analog outputs (AO)	12
Power supply	24 VDC
Communication	Modbus RTU (RS-485)
Addressing	DIP switches

Diagnostics and build

Each DI and DO has a **status LED** – the technician sees the state at once without a multimeter. The **robust industrial casing** for DIN-rail mounting ensures resistance to vibration and EMC interference.

Modbus – unlimited expandability

Up to **30 modules** on a single Modbus RTU bus. At the same time we can run the control on any Modbus-compatible PLC – freedom and independence from a single supplier.

Monzun-HPB – industrial heating

We also use our own PLC in industrial heating, in the **Monzun-HPB** product, with separate firmware and its own logic.

Configuration, service and diagnostics

Thanks to the same software base for all projects, the technician's job is significantly easier. The system has robust tools for service, commissioning and operational diagnostics.

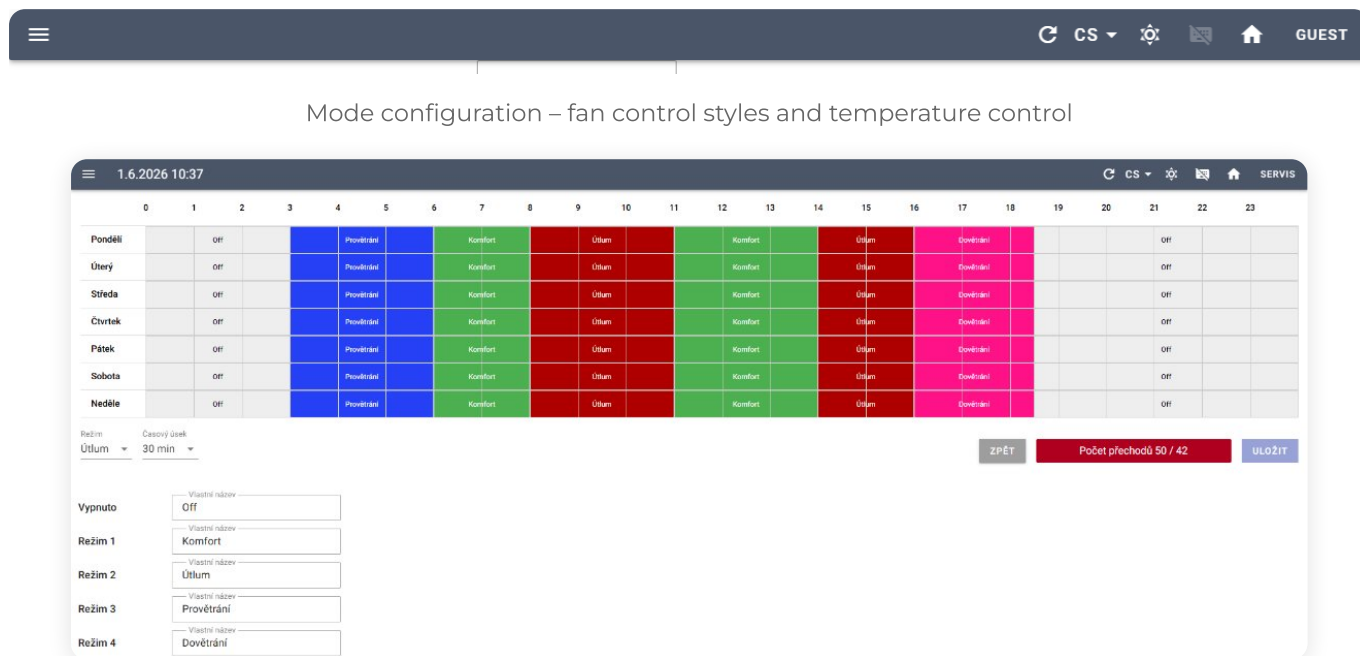
- **Diagnostics and schematics:** The system automatically generates a clear unit schematic, an air-flow visualization and shows the current operating values.
- **Service and commissioning:** Manual control of every single component, live views of all physical inputs and outputs, and a detailed alarm log with its history.
- **Energy optimisation:** Easy connection to zone control systems (e.g. OptimVent). In this mode the fans work strictly according to the real demand of the zones, markedly reducing pressure losses and saving electricity.
- **Operating modes:** Four user modes are available, which the customer can name freely (e.g. Comfort, Reduced, Night, Party). Each mode defines the complete unit state – including the fan control style (constant pressure VAV / constant flow CAV / fixed speed in % / external control) and the type of temperature control (to supply / room / extract temperature). Switching between modes is smooth, without dangerous step changes or restarts.
- **Security and rights:** Tiered access to the system. The levels available are: Guest (view only), User (routine temperature management), Service (detailed sensor and mode configuration) and Admin (full access).

Odvodní ventilátor				
	Konfigurace	Typ	Vstup	Hodnota
ⓘ Měření tlaku	✓	0-10V	AI 1_8	1.0 Pa
Přívodní filtr 1				
Měření tlaku				
Čidlo je instalováno na potrubí a měří statický tlak v potrubí vůči atmosférickému tlaku. Hodnota může být využívána k řízení výkonu ventilátoru a k udržování konstantního tlaku v systému VAV.				
CLOSE				

Info icon (ⓘ) – context help with a complete parameter description

User modes & weekly schedule

Modes are configured directly on the touchscreen. Every parameter comes with context help. The weekly schedule lets you set the whole week in seconds – coloured blocks dragged with a finger.

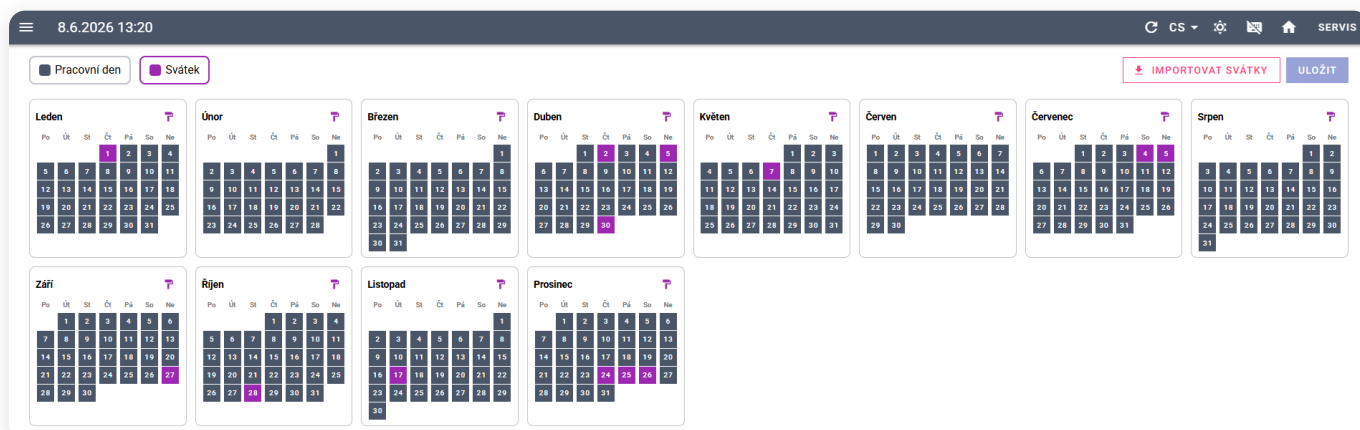


Graphical touchscreen weekly schedule – set modes by dragging a finger across the display

Holiday schedule & annual calendar

In addition to the standard weekly schedule, the controller includes a **holiday daily schedule** – a separate page for defining the time profile of a holiday day. The days to be governed by this schedule are marked in the **annual calendar**.

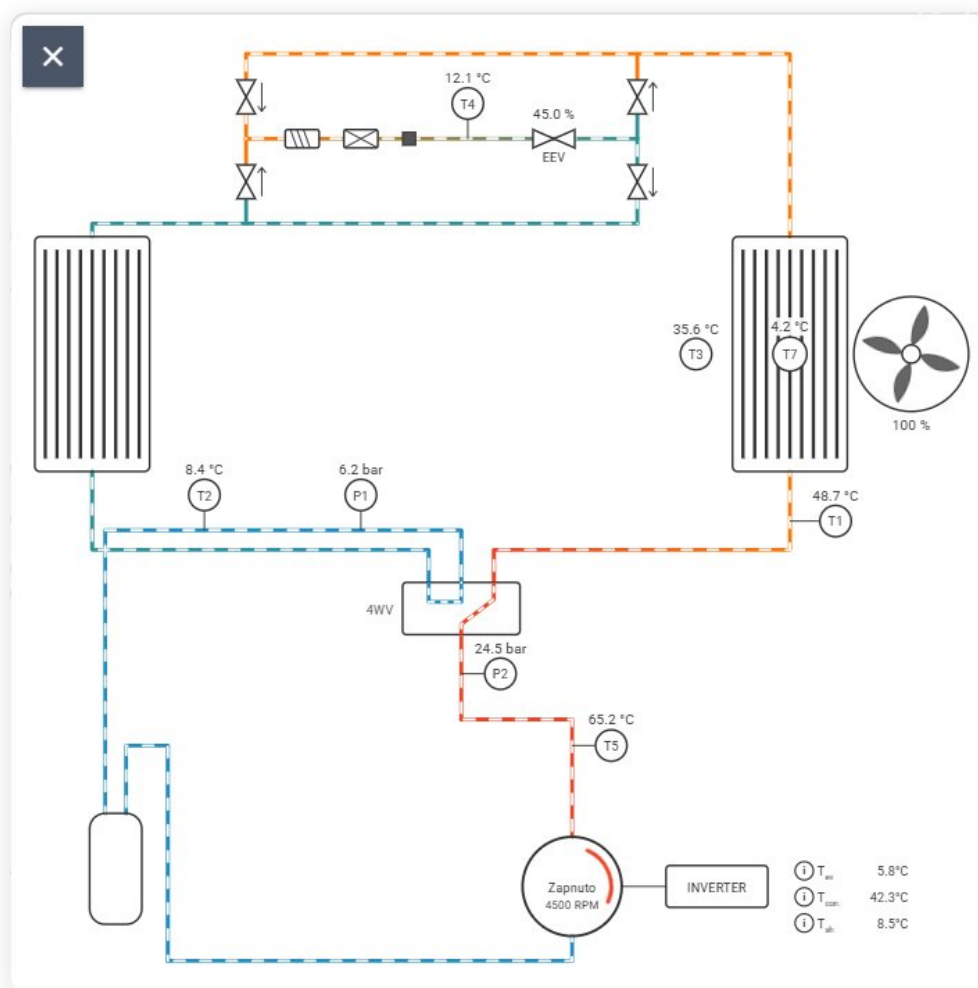
The annual calendar shows an overview of 12 months and lets you mark public holidays, planned shutdowns or special operating days. The *Import holidays* button automatically loads the public holidays for the country set in the configuration (CZ, SK, DE, AT, etc.).



Annual calendar – overview of holiday and non-standard operating days

Automatically generated schematics

From the current unit configuration the system automatically generates live technology schematics with operating values – below is an example of an integrated heat-pump circuit.



Automatically generated heat-pump circuit schematic

Summary

MANDÍK Control brings air-handling technology a 21st-century solution. By completely removing the barriers of "custom projects" and adopting the philosophy of an open, fully modular environment, it gives designers, operators and service companies incomparable control over the indoor climate of buildings.

It is control that always adapts to your project – not the other way around.