CHAMELEON

Flexible thermal unit with sophisticated control options

www.tcmach.cz
You can’t see it. But you can feel it’s present. In each single room of your home. Yesterday impossible, today a reality. The CHAMELEON. Be demanding. Comfortable heating and cooling for your home, pool, sauna, garage and conservatory. Can one CHAMELEON do all of this? Of course. It keeps an eye on the climate in the whole house. It keeps an eye on your energy consumption. It even keeps an eye on itself. Everything’s harmonised. Nothing happens for nothing. Like a perfect living organism. Let CHAMELEON step inside your home.
You won’t see it. But you’ll feel its presence.
A chameleon typically adapts to the surroundings. And exactly this quality is also applicable to the CHAMELEON the new TC MACH thermal unit.

You can’t see it. But you can feel its presence. Comfortable warmth in each single room of your home.

You’ll be amazed in fourfold by this incredible system.
Compact look. State-of-the-art design. Perfect technology hidden in a sophisticated stainless steel jacket. You can trust your first impression. Under the casing, there is a MACH VHM heat pump with proprietary defrosting system equipped with electronic cooler injection. A copper buffer tank features a system of exchangers for service water preheating and for a solar system, as well as for a standby electric boiler. All the necessary controls and information can be found on the built-in LCD panel.

And just another detail - the CHAMELEON is so silent, that it will be hard to find it by ear.
The control unit monitors, diagnoses and archives all the operational conditions of the system. Nothing is happening for nothing. CHAMELEON controls heating, water heating, sauna heating, pool heating as well as filtration, effortlessly. It controls the relations between individual circuits and can heat as well as condition. By means of probes with feedback feature, it easily identifies a malfunction or the probability of it to arise. CHAMELEON is economic and knows what's going on and where. It can co-ordinate different processes. Gone is the era of several independent control units. Now, the left hand knows what the right hand is doing.

CHAMELEON.

When you discover what it is capable of.
Heating, conditioning, sauna, pool... There are many things you need for your lifestyle. Everything must operate flawlessly. And economically. And that’s what CHAMELEON can do. Everything operates as it’s supposed to. Just enjoy your life. No more worries. It heats, cools, monitors, controls. You can trust it.
When you discover how much energy CHAMELEON can save. You may shake your head if it’s even possible.

CHAMELEON is a saver, from the start till the finish, starting with the installation and ending with the operation. Right at the start, you will save on the installation of a general switchboard to control other technologies, because CHAMELEON has one integrated. CHAMELEON saves time and money and its space requirements are quite small.

And again, the best at the end. CHAMELEON makes cost savings when installing the system as well as when assistance is needed. By means of Ethernet or GSM, CHAMELEON is linked to our dispatcher’s room, where we monitor its function and change the setting fast and precisely, if needed. Our dispatcher suggests a fast and affordable way of any potential repair services.
CHAMELEON controls the operation of evaporators so they use the after-heat in the cooling circuit effectively. It improves the efficiency of the entire system and ensures it operates economically throughout the year.

Many companies have tried not to waste precious heating time during the evaporator defrosting cycle. And many tried to utilise the after-heat in the cooling circuit - the heat that could not make it to be delivered to the heating water. CHAMELEON succeeded. We have put the advantages of all the known heat pumps, such as constant operation, stable heat output as well as safe primary source, together in our MACH VHM. With low-speed fans and large-surface overpressure evaporators, low outdoor noise level was achieved.
CHAMELEON is new in our product range. It is unbeatable. It supplies comfortable warmth into the whole house. From the kitchen through to sauna to garage and pool. Everything is controlled from a single place. Smartly devised, precisely realised, technologically at the top.

CHAMELEON represents quality. A custom-made product. A perfect design and made of durable materials. At first sight, it is obvious that someone took the time to make it perfect.

We offer what you’re looking for: comfort into your lifestyle.
The control unit includes controlling and monitoring of the cooling circuit, solar system, heating system, service water heating, pool heating, electronic cooler injection control and an option to control other equipment (sauna, checking of circuit breakers actuation, the most effective control of auxiliary supply, air-conditioning, driveway heating, regulation, mutual blocking of appliances optimising the size of a house circuit breaker, venetian blind, etc.). The service water heating is handled in a highly effective way in up to three levels. Thanks to one control unit, all the possible measured parameters can be set and monitored remotely using a computer or a cell phone.
service water

sauna control

**CHAMELEON:**
- link to computer and visualisation software
- cooling circuit diagnostics
- circuit breaker actuation checking

cooling and heating using fan coils

filtration control, pool water heating
solar system control

floor heating regulation

electronic cooler injection control in evaporator, scanning the outside temperature

radiator heating
Capabilities of CHAMELEON

The unit features control and monitoring of:
- cooling circuit
- solar system
- heating system
- service water heating
- pool heating (pool technology)
- electronic cooler injection control
- optional control of other devices:
  - sauna
  - check of circuit breakers failure
  - the most effective control of auxiliary supply
  - air-conditioning
  - driveway heating
  - IRC regulation
  - mutual blocking of appliances optimising the size of a house circuit breaker
  - venetian blind

The complete system can be linked to the TC MACH, s.r.o. dispatcher’s room.
This solution provides complete peace of mind that,
in the unlikely case of a malfunction,
the system has identified and diagnosed
the issue and alerted a technician.
This means that the issue can be solved
without a service technician
having to visit the site.
CHAMELEON features

- MACH VHM heat pump
- Electronic control of heat pump refrigerant
- Well-arranged terminal (LCD including controls)
- Control system for the whole technology
- Power circuit
- 100% operation during defrosting
- Copper buffer tank
- Copper exchanger for preheat of hot water
- Copper exchanger for use in solar systems
- Copper electric boiler with up to 24kW power

- Additional electrical heater for high hot water demands and back-up
- Outlets to connect pool exchanger
- Outlets to connect floor heating system
- Outlets to connect radiator heating system
- Outlets to connect air-conditioning exchanger
- Water reservoir thermal insulation
- Sound protection insulation
- Stainless steel casing
- Built-in weather compensation

CHAMELEON monitors and displays

- Failure of circulation pump
- Blockage of plate exchanger
- Level of cooler in the cooling circuit
- Dual tariff electrics meter
- Compressor cooling temperature
- Heating water temperature to and from the heat pump
- Circuit cooling pressure

- Water heating pressure
- Water pressure in solar system
- Outside temperature
- Temperature in a room (floor)
- Reading of circuit breaker actuation feedback (current and historical)
- Archiving of operational conditions

CHAMELEON optimises

- Water temperature in heat pump exchanger
- Temperature in external DHW cylinder
- Control cooling compressor cycle

- Standby supply operation (e.g. electric boiler)
- Operation of connected peripherals

CHAMELEON control capabilities

- Effective operation of heat pump when connected to total system
- Output control of main hot water supply temperature
- Control of branches from main hot water supply which require different temperature
- Effective after-cooling of solar system, consequently utilising the surplus-heat
- Sequential control of radiator system circulation pumps
- Electronic control of heat pump refrigerant
- Electric service water reheating
- Service water circulation

- Solar system control
- Solar system heating to heat pump reservoir
- Solar system heating to two reservoirs, including switching between them
- Pool water filtration timing
- Pool hall heating
- Pool water heating
- Sauna control
- Auxiliary supply control (gas consumption, etc.)
- Heating system circulation pumps
- Vary the power output from auxiliary gas boiler
- Regulation of temperature in individual rooms

CHAMELEON communication

- Visual LCD display
- Ethernet

- GSM
- Modem (RS 232)

CHAMELEON savings

CHAMELEON can make additional savings on:

- Installation of general switchboard to control other technologies (solar system, service water reheating, object heating, pool heating, bivalent after-heating, air-conditioning, etc.)
- Space requirements

- Time and cost of operation
- Setting-up and remote malfunction clearing
- Problem solving due to fast and cost-effective remote access to dispatch room of TC MACH
**Nature-friendly**

TC MACH heat pumps produce only pure heat and are made entirely of recyclable materials, such as copper and stainless steel. The pumps use freon-free refrigerant, thus not affecting the ozone layer. The environmental consideration is not just an empty promise for us, it is reality.

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**TC MACH – masterpieces of precision engineering**

The TC MACH products have grown in favour of demanding customers for whom only the best is standard. State-of-the-art design, advanced technologies and precise implementation of each detail have taken TC MACH company to the top of quality.

TC MACH relies on its own research, development and production to serve you with custom-built masterpieces of precision engineering.