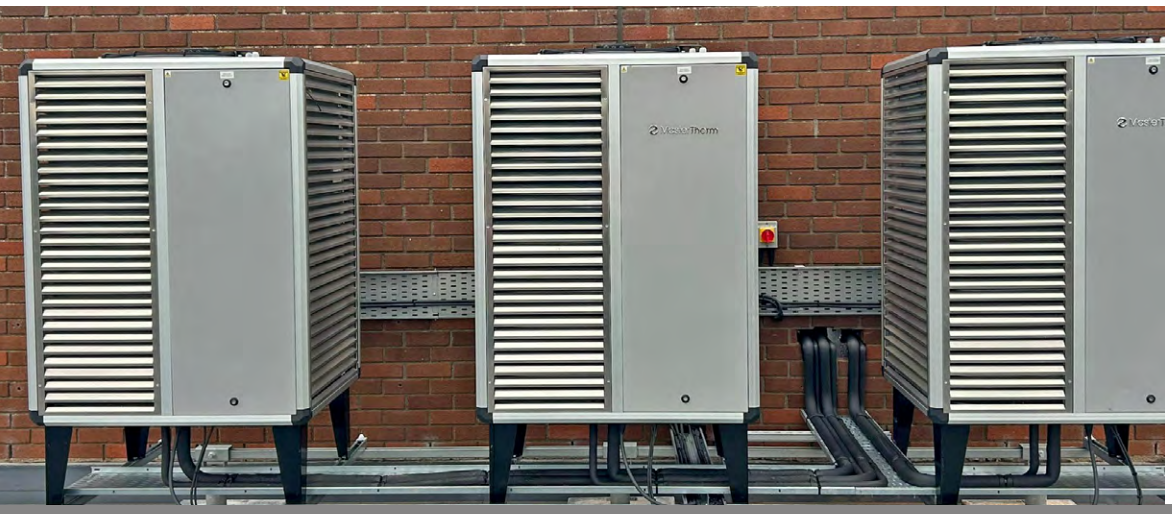
MasterTherm
HEAT PUMPS

member of Atrea group
Atrea®



REALIZED PROJECTS: RELIABLE AND ECONOMICAL HEATING & COOLING FOR BUILDINGS

Solutions for power outputs from 5 kW to Over 1000 kW

- Heating and cooling
- Air-to-water, ground-to-water, water-to-water heat pumps with R290, R410a or R407c refrigerant
- High reliability based on 20+ years of experience in industrial systems and critical infrastructure

We Are Both Manufacturer and Service Provider

- Direct technical support and service team from the manufacturer
- Immediate spare parts availability from our warehouse in Jablonec nad Jizerou
- Optional 7-year warranty on the entire heat pump system

Online Connectivity

- Remote control and management via the Internet
- 24/7 online service monitoring
- Full operational data logging with risk condition prediction
- Integrated energy management with support for photovoltaics and battery storage
- Option to connect to higher-level building management systems (BMS)

Ideal Applications

- Apartment buildings, schools, hotels, sports facilities
- Office and other public buildings
- Commercial and administrative complexes
- Industrial and production halls, warehouses
- Heat source for district heating
- Integration with heat recovery systems

Czech (EU) product

A tradition since 1994

Export into 30 countries worldwide

ISO 9001 BUREAU VERITAS Certification

Master Therm
ONLINE

Easy remote control of the heat pump is available not only for family homes, but also for apartment buildings, administrative and commercial properties, public facilities, and industrial applications.

SMART GRID READY

- Possibility of connection to higher-level control systems
- Integration with photovoltaics, spot electricity price loading, and adaptive pump control
- User interface for mobile, tablet, and desktop
- 24/7 online monitoring and remote service diagnostics
- Hotline & Technical support directly by the manufacturer

MasterTherm
HEAT PUMPS

Parknasilla Resort & Spa

Derryquin, Ireland

Installation specifications

Heat pump type: air-to-water

Models used:

- 5x BoxAir 60 IS
- 1× AquaMaster 75 ZHX high-temperature unit for domestic hot water and thermal beds
- Integrated BMS system for complete technical room control
- Bivalent heat source
- Desuperheaters for highly efficient domestic hot water heating

Requirements:

Swimming pool (20 m) heated to **29 °C**
Two outdoor hot tubs heated to **37 °C**
Domestic hot water for all showers and washbasins

Budget:

Investment cost: 765 000 EUR
Subsidies: 198 900 EUR
Net investment: 566 100 EUR
Annual energy savings: 1 300 MWh
Annual cost savings: 92 000 EUR
Return on investment: 6 years

The modernisation of the heating and domestic hot water system at Parknasilla Resort & Spa has resulted in significant energy savings. By replacing the LPG gas boilers with a Master Therm heat pump system with intelligent control, the leisure centre has become significantly more efficient and sustainable in the long term.

Instead of the original gas boilers, five Master Therm inverter split heat pumps were installed, together with one high-temperature module for hot water and wellness facilities. A BMS control system ensures maximum operational efficiency, including online monitoring. The air handling units for the pool hall and changing rooms were also optimised.

Thanks to intelligent fan control, duct sizing, and other modifications, the entire system achieves over 80% energy savings compared to the original gas operation. Life expectancy is 15–20 years.

Tiba Headquarters

Liestal, Switzerland

Installation specifications

Heat pump type: air-to-water

Models used:
- 2x BoxAir 60 IS

System output: 46 kW heating + DHW preparation (960 l) + cooling of 1000-litre tank

Control system: Superior; the heating and cooling system includes a pellet boiler and rooftop photovoltaic panels in addition to the heat pumps

The production plant of the Swiss company Tiba, with 175 years of history, is heated by Master Therm heat pumps. They are part of a system that also includes a wood pellet boiler and photovoltaic panels.

The entire system provides heating (and cooling in summer) for a 6700 m² building constructed in 2021. Heat is distributed through radiators and convector heaters. At the same time, the system handles the preparation of 960 litres of domestic hot water and the cooling of a 1000-litre cold water tank.

Learn more about the installation in the video

Municipal energy center

Ivančice, Czech Republic

Installation specifications

Heat pump type: air-to-water

Total heating capacity: 251 kW

Domestic hot water temperature: up to 75 °C

Models used:

- 8x BoxAir 60 ZHX (special high temperature heat pump)

The heating plant in Ivančice, along with its cogeneration gas unit operated by ČEZ Energo / TEDOM, also uses Master Therm AquaMaster ZHX water-to-water heat pumps to cool the process circuit.

For more information, see page 13.

Ten thousand inhabitants of the town of Ivančice benefit from ecological and economical domestic hot water heating, thanks to a cascade of heat pumps. Next to the local heating plant, a cascade of Master Therm heat pumps was commissioned in 2023. These units are part of a broader central heat supply system that also includes photovoltaic panels, a CHP unit, and both gas and electric boilers. During the winter season, gas-based technology remains the primary source. However, in summer, heat pumps take the lead—supplying domestic hot water for the entire town.

This unique system includes eight Master Therm BoxAir 60 ZHX units, specifically designed for high-temperature applications. In a cascade configuration, they deliver a total output of 251 kW at an outdoor temperature of 20 °C and an outlet water temperature of 65 °C, with a maximum achievable temperature of up to 75 °C. The system also ensures maximum operational reliability.

The Energocentrum Ivančice project, supported by ČEZ ESCO, was awarded first place in the Smart Cities 2023 competition in the category of towns with up to 10 000 inhabitants. The long-term goal is even greater integration with renewable energy sources and the digitalisation of energy management, including potential connection to electromobility.

HVM Plasma

Prague, Czech Republic

Installation specifications

Heat pump type: water-to-water

Models used:
- 12x AquaMaster 180.2Z

Total cooling capacity: 1000 kW

Control system: MasterTherm

Annual energy savings compared to the conventional technology: 940 MWh

A sophisticated cooling system for thin-film coating production based on water-to-water heat pumps has resulted in a 50% reduction in cooling and heating costs.

It enables highly efficient industrial cold production and allows process heat to be recovered for heating the entire building and for domestic hot water preparation. In addition, it provides hot cooling water for air conditioning throughout the building and laboratories.

Precisely controlled cooling with defined temperature gradients helps optimise the thin-film coating process. Unused heat is discharged via an adiabatic cooling tower with a free cooling function.

The return on investment was 4 years, and the project was awarded the title of Ecological Construction of the Year.

Learn more about the installation in the video

Randles Hotel

Killarney, Ireland

Installation specifications

Heat pump type: air-to-water

Models used:

- 5x BoxAir 60 IS for the hotel itself
- 2x BoxAir 60 IS for associated leisure centre with pool

System output: 205 kW heating + DHW preparation (6000 l)

Control system: MasterTherm

Complete reconstruction of the hotel's heating system, which was previously gas-based. A power cascade of 5 + 2 BoxAir 60 IS heat pumps was installed, with a total output of 205 kW.

All system data is continuously monitored and analysed to optimise energy consumption. Actual heating cost savings with heat pumps have reached nearly 70% compared to gas. The expected lifespan of the heat pump cascade system is at least 15–20 years.

Thanks to Master Therm heat pumps, Randles Hotel is now a leader in the hospitality sector in terms of energy savings and long-term sustainability. The installation also includes photovoltaic panels mounted on the hotel's roof.

Learn more about the installation in the video

St. Michael's Leisure Centre

Dublin, Ireland

Installation specifications

Heat pump type: air-to-water

Models used:

- 3x BoxAir 60 IS

Consumption before reconstruction (per year):

- LPG consumption: 1335 MWh

Consumption after reconstruction (per year):

- LPG consumption: 280 MWh
- Electricity consumption for CHP: 131 MWh
- Total consumption: 411 MWh

Verified annual energy savings: 918 MWh

The St. Michael's Leisure Swimming Centre needed to replace an outdated boiler room that used gas (LPG) heating. A cascade system of Master Therm air source heat pumps with intelligent control was designed. The new technology provides water heating for the pool, hot tubs, and showers, operating with low-temperature heating water for maximum efficiency. The entire system was installed without interrupting operations.

A key feature is the advanced control system, which independently adapts to the temperature requirements of individual circuits. Thanks to the cloud interface, all functions can be monitored and adjusted remotely. Temperatures, outputs, and consumption are continuously tracked, and the system alerts users to any deviations.

The project was verified by an independent energy audit and supported by a SEAI grant. The savings in operating costs and CO_2 emissions confirm that a well-designed system with smart control is a sustainable solution for energy-intensive public buildings.

Laureate Academy High School

Hemel Hempstead, England

Installation specifications

Heat pump type: ground-to-water

Models used:
- 7x AquaMaster 45 IP

Total heating capacity: 245 kW

As part of a UK Department for Education (DfE) project to modernise school buildings, Hex Energy, in partnership with Thermal Earth, Master Therm's UK distributor, installed **a unique outdoor machine room for heat pumps using R290 (propane) refrigerant.** The pump container is located outside the school building, automatically ensuring maximum safety for the installation. A machine room inside the building would otherwise require a refrigerant venting system in case of a refrigerant leak.

The plant contains seven Master Therm AquaMaster 45 Inverter P heat pumps with a total output of 245 kW (B0W35), using environmentally friendly R290 (propane) refrigerant with an extremely low global warming potential (GWP = 3). This is the first installation of its kind in the UK and represents a significant step towards a sustainable solution, confirming Hex Energy and Thermal Earth's leadership in low-carbon technology.

WITH NATURAL REFRIGERANT R290

Primary school

Maynooth, Ireland

Installation specifications

Heat pump type: air-to-water

Models used:

- 3x BoxAir 90 IP
- 1x BoxAir 45 IP

Total heating capacity: 175 kW

WITH NATURAL REFRIGERANT R290

Presentation Girls School in Maynooth has joined Ireland's Pathfinder programme, which introduces renewable heating methods into school buildings.

Master Therm Ireland contributed to the programme with technical proposals and documentation for feasibility studies commissioned by the Irish Department of Education. With over 25 years of experience, Master Therm systems are designed to operate efficiently in a variety of climatic conditions. Instead of oversizing the system to cover occasional temperature extremes, smart control software is used to manage heat pumps and auxiliary power sources effectively. This approach is ideal for the variable daily temperatures typical in Ireland.

Heat pumps serve as the primary heat source, while gas boilers are used as backup, significantly reducing fossil fuel consumption.

The installed system features new eco-friendly heat pumps with R290 refrigerant cartridges. Three units are BoxAir 90 Inverter P for space heating, and one unit is a BoxAir 45 Inverter P for domestic hot water. This combination ensures reliable operation and serves as a model for other schools and commercial buildings.

Nuclear Physics Institute of the CAS

Husinec – Řež, Czech Republic

Cooling and heat recovery of the particle accelerator.

The system provides cooling for the particle accelerator and recovers waste heat for building heating and domestic hot water preparation. It includes a free cooling option and precision air conditioning for radiochemical laboratories.

Installation specifications

Total cooling capacity: 690 kW

Total heating capacity: 860 kW

IT4Innovations National Supercomputing Center

Ostrava, Czech Republic

Supercomputer cooling and heat recovery

Cooling of active elements of the largest domestic supercomputer, with heat recovery from the cooling system used for heating the office building and for year-round domestic hot water preparation.

Installation specifications

Total cooling capacity: 360 kW

Total heating capacity: 450 kW

Annual energy savings compared to conventional solution: 2200 GJ

Return on investment: 4 years

The Candy Plus Sweet factory

Rohatec, Czech Republic

Cooling and heat recovery of food production technology.

A multinational company producing confectionery in four-shift continuous operation. Cooling of production lines, other production technologies, and air conditioning of production areas. Humidity control. Waste heat recovery used for building heating and domestic hot water preparation.

Installation specifications

Total cooling capacity: 600 kW

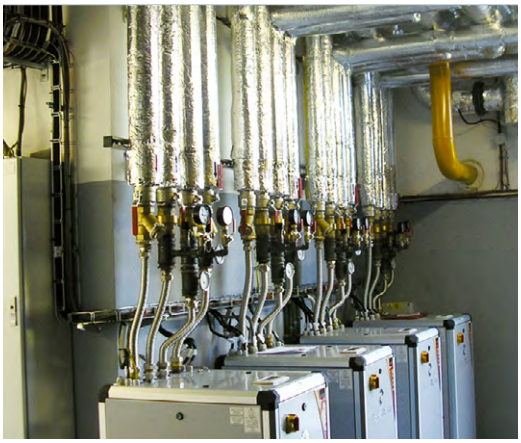
Annual cold production: 2900 MWh

Waste heat recovery: 1100 MWh

Return on investment: 5 years

ČEZ Energo

More than 20 installations across the Czech Republic



Cooling of cogeneration units and waste heat recovery.

Combined heat and power generation, including cooling of the technological circuit of cogeneration gas units. Recovered heat is recycled and transferred to the main heating circuit, increasing the overall efficiency of the CHP units.

Installation specifications

Total cooling capacity: 308 kW

Power input: 56 kW

Waste heat gain per year: 1100 MWh

Return on investment: 5 years

Galvamet

Vsetín, Czech Republic

Cooling of furnace equipment and heating of the building using recuperated heat.

The company specialises in heat treatment of metals. The cooling units extract heat from the central cooling system of the hardening furnaces. This recovered heat is then used for heating the building and for domestic hot water preparation.

Installation specifications

Total cooling capacity: 87 kW

Total heating capacity: 106 kW

Annual heat savings on heating: 180 MWh

Return on investment: 5 years

Bodycote

Liberec, Czech Republic

Heat recovery system from the cooling circuit of vacuum quenching furnaces.

The heat from the cooling circuit of the vacuum quenching furnaces is used for the hot air heating system of the production halls, the heating circuit of the administrative part of the building, and for year-round domestic hot water preparation. The original heat source was direct electric heating. COP W25/W50 = 5.2.

Installation specifications

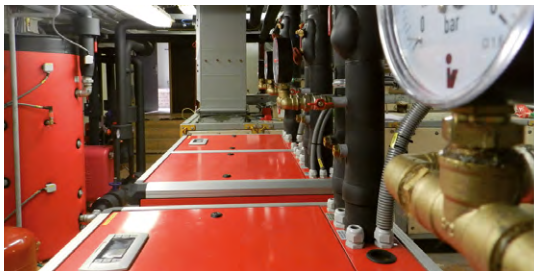
Total cooling capacity: 177 kW

Total heating capacity: 219 kW

Return on investment: 3 years

Na Homolce Hospital

Prague, Czech Republic



Cooling of diagnostic and operational technologies.

Cooling of magnetic resonance, Leksell Gamma Knife, and Magnetecs operating technology. The key requirements for the cooling system are high operational reliability, long service life, and low operating and maintenance costs.

Installation specifications

Total cooling capacity: 125 kW

Annual energy savings compared to the conventional solution: 30 MWh

RNLI Waterloo Bridge

London, England

The RNLI rescue station uses a MasterTherm AQ 45I heat pump for heating or cooling (depending on climatic conditions) and domestic hot water. Thanks to a titanium heat exchanger, the system can draw slightly saline water from the Thames. The pump is housed in a stainless steel casing with copper fittings. The system automatically switches between summer and winter modes, ensuring optimal operation throughout the year.

Installation specifications

Heat pump type: water-to-water

Model used: 1x AquaMaster 45 I

WE IMPLEMENT THE MOST ADVANCED COOLING AND HEAT RECOVERY SYSTEMS

Features:

- Precisely controlled cold production
- Progressive compact aggregate technology
- Extremely high cooling efficiency
- Smooth power control
- Minimal refrigerant volume
- High operational reliability
- Low service costs
- Remote monitoring of operation

A solution for your needs:

- High-efficiency cooling technology
- Waste heat recovery
- Significant cost savings
- Cooling, heating, domestic hot water heating, process heating

Uses:

- Manufacturing and processing technologies, mechanical engineering, metal processing
- Energy, heat and power generation, cogeneration
- Paper, chemical and biochemical production, plastics industry
- Electroplating and metal finishing
- Food production and processing
- Agriculture
- Brewing, winemaking, beverage production
- Data centres, server rooms
- Hotels, shopping centres

MasterTherm HEAT PUMPS

member of Atrea group

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