



VENTILATION OF (LARGE) KITCHENS – Utilisation of residual heat after heat recovery

Alupera®



MasterTherm
TEPELNÁ ČERPADLA

The ventilation system for (large) kitchens is now complete!

System basics:

Compact ventilation unit with heat recovery DUPLEX Basic, in combination with ATREA ventilation, air conditioning and lighting ceiling, or with ATREA cooker hoods. Mechanical filtration using lamella or cyclone separators is always installed in hoods and ventilation ceilings. LED lighting with optimal luminosity is also a basic feature.

Optional parts of the system:

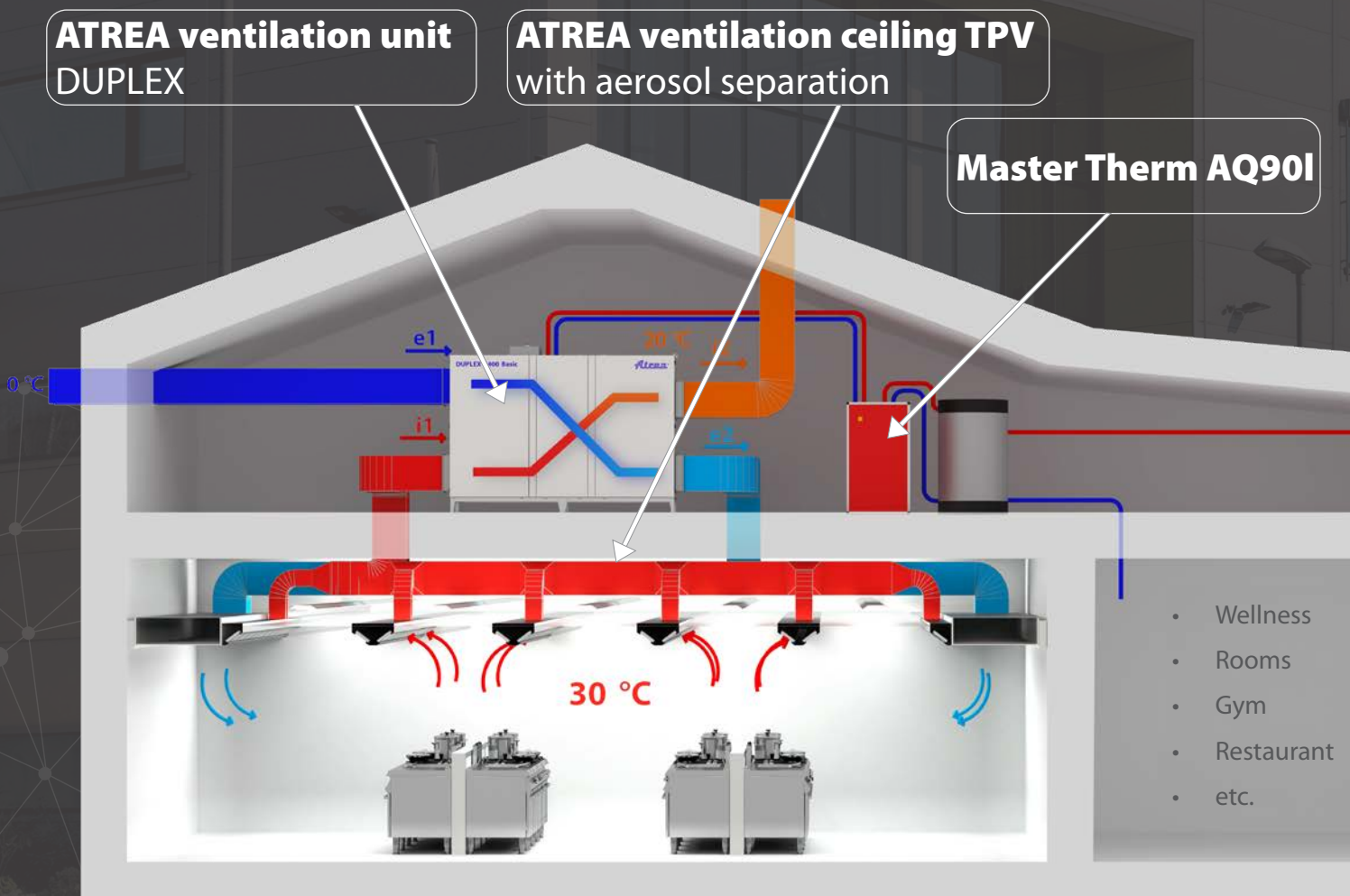
- UV-C filtration for the elimination of residual aerosols and to ensure a long service life without demanding maintenance
- Automatic fire extinguishing system to protect expensive kitchen equipment

NEW:

The Master Therm AQ90I heat pump extracts residual heat after heat recovery and uses it, for example, to heat domestic hot water. With this addition, we can utilise all the waste heat from cooking.

Advantages:

- Master Therm is a member of the ATREA group, so you get a complete system from a single manufacturer, with guaranteed system communication and control
- Economic return on investment from 3 years, depending on the type of kitchen operation and the possibility of drawing subsidies
- Technical and design support (concept design, studies, projects, supervision during implementation, warranty and post-warranty service)
- Warranty up to 7 years





Model technical room with DUPLEX Basic 15100 ventilation unit with heat recovery, Master Therm AQ90I heat pump and heat storage tank

Control

The connection between the aMotion ventilation unit control system and the Master Therm heat pump control system ensures perfect automatic operation of the entire system.



The connection of the new aMotion control to ATREA Cloud is solved using state-of-the-art secure systems that protect communication from hackers.

Data are stored on secure servers and are not personalised – i.e. linked to a specific user name or address. Everything is done on the basis of separate databases according to serial numbers.

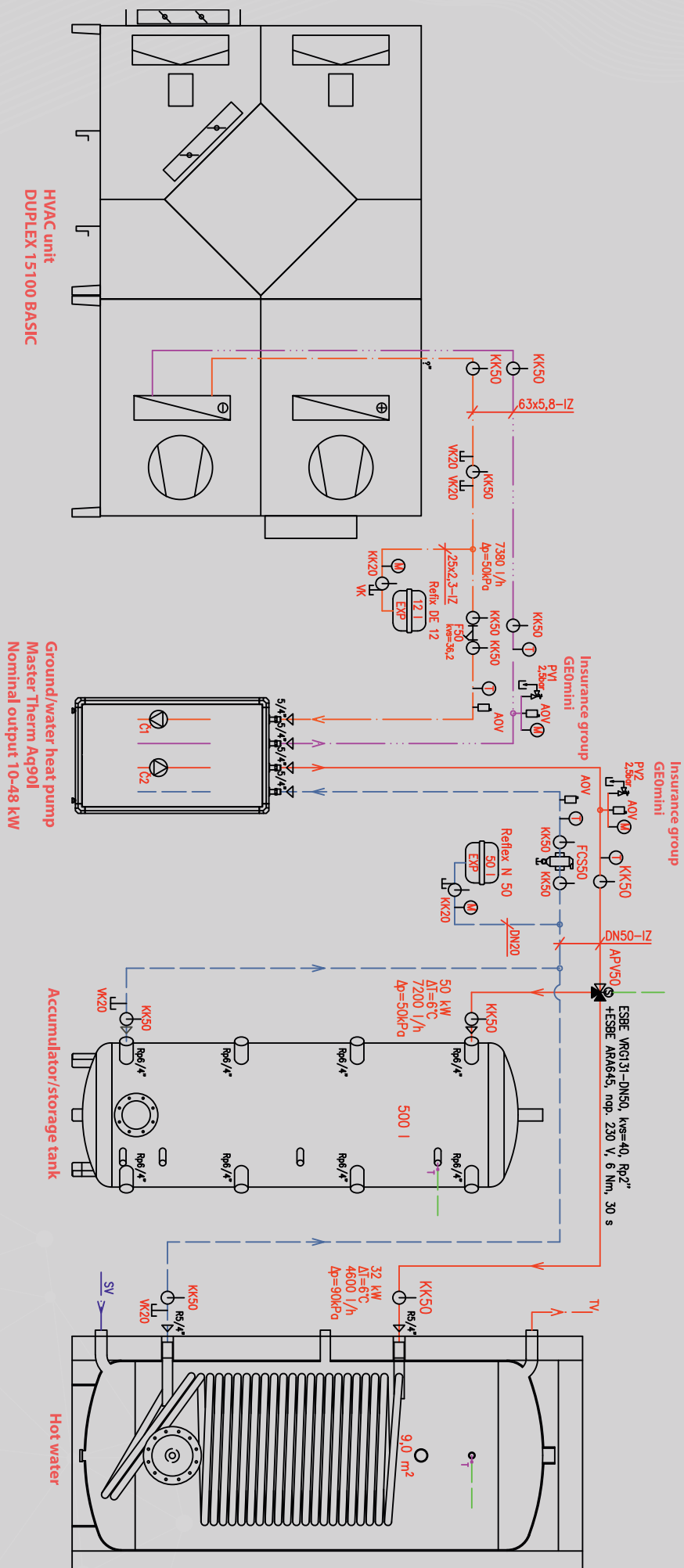


- Almost 100% utilisation of kitchen waste heat
- Heating capacity of heat pump up to 40 kW for air handling unit 10,000 m³/h*
- Return on investment 3.5–5 years
- In summer operation, COOLING of supply air
- Increased working comfort for employees

*

DUPLEX Basic	Output	Heat pump
B8100 5R	29 kW 7/2	AQ90I
B10100 5R	30 kW 7/2	AQ90I
B12100 5R	42 kW 7/2	AQ90I
B15100 5R	45 kW 7/2	AQ90I

Sample thermal connection diagram



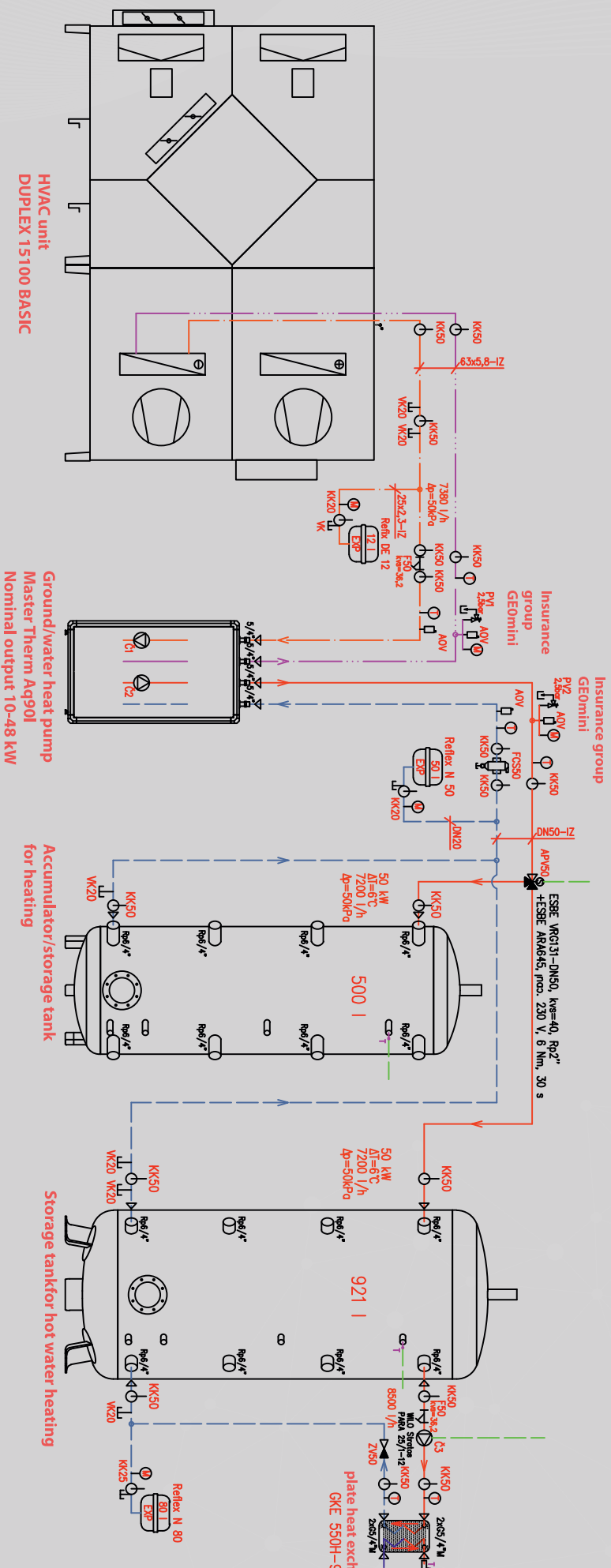
KEY:

	Heating water supply	F	Filter with magnet
	Heating water return	FCS	Magnetic dirt separator and air separator
	Primary circuit of heat pump - supply to heat pump	KK	Ball valve
	Primary circuit of heat pump - outlet from heat pump	M	Monometer
	High-voltage and low-voltage cable	PV	Safety valve
	Automatic vent valve	T	Thermometer
	Circulation pump for heat pump (integrated in heat pump)	VK	Drain valve
	Circulation pump for secondary heat pump (integrated in heat pump)	APV	Three-way switching valve
	Exposure time	EXP	

NOTE:

- Type of piping for secondary circuit distribution according to the piping used for the UV system.
- Primary circuit piping distribution made of PE 100+ pipes connected using electrofusion fittings.
- UV piping equipped with thermal insulation according to Decree No. 193/2007 Coll.
- Primary circuit piping equipped with thermal insulation with a vapor barrier function in accordance with Decree No. 193/2007 Coll.

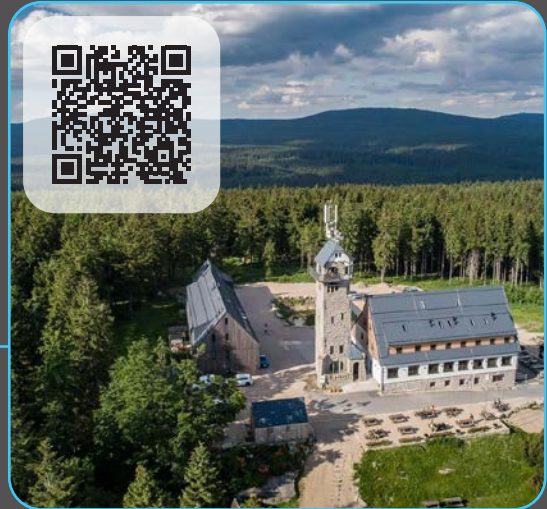
Sample thermal connection diagram — flow-through DHW heating



REFERENCE – Czech Republic



Pralina Chocolate Factory
Jablonec nad Nisou



Královka Restaurant
Bedřichov



Potrefená Husa Restaurant
Liberec



Institute of Nuclear Physics
Řež



National Supercomputing Centre
Ostrava

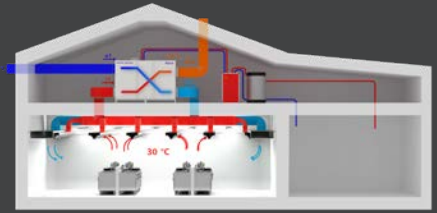
TECHNICAL AND SALES SUPPORT CONTACTS



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WE PROVIDE:

- Consultations
- Support for designers and partners
- Training
- Kitchen ventilation calculation
- Designs for extractor hoods and ventilation ceilings
- Design of waste air heat recovery system
- Structural and architectural design
- Visualisation of the final design of the kitchen with a ventilated ceiling
- Possibility of providing project documentation
- Provision of lighting calculations for the kitchen area



PAYS FOR ITSELF AFTER 3.5 YEARS OF OPERATION



With a heat pump, the ventilation system takes on a significant economic dimension. The investment in a heat pump will pay for itself within 3.5–5 years, and the operation will then begin to generate heat. "free of charge".

EXAMPLE OF A REAL INSTALLATION BY A CLIENT ATREA s. r. o. IN THE CZECH REPUBLIC

Performance and consumption

- Air flow: 10,000 m³/h
- Air cooling by heat pump: approx. 7–8 °C
- Heat pump output: up to 40 kW (due to humidity and condensation on the exchanger)
- COP (coefficient of performance): approx. 4 (at inlet 7/2 °C and outlet 45/50 °C)
- Average heat gain: 28 kW at a cost of 7 kWe heat pump power consumption

Economic calculation

- Electricity price: 3.5 CZK/kWh
- Heat price: CZK 2/kWh
- Net benefit: CZK 31.5/hour of operation
- Daily operation: 14 hours
- Annual operation: 340 days
- Annual profit: approx. CZK 150,000

Investment

- Cost of adding a heat pump to the system: CZK 500,000 to CZK 700,000 Return

Return

- 3.5 to 5 years*

**When drawing on subsidies, the return on investment is significantly reduced.*

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