

TAE_{evo}

Industrial Chillers & Heat Pumps
(TAE_{evo} - TWE_{evo} - HAE_{evo} - TAE_{evo} Laser)



PURE ENERGY



Cooling your industry,
optimising your process.



Cooling, conditioning, purifying.

TAE_{evo}

THE APPLICATION OF A CHILLER IN INDUSTRIAL PROCESSES OFFERS SIGNIFICANT PRODUCTIVITY IMPROVEMENTS AND COST REDUCTIONS. TAE_{evo}, THE WORLD'S FAVOURITE INDUSTRIAL CHILLER, GOES ONE STEP FURTHER, HAVING BEEN SPECIFICALLY DESIGNED FOR, AND TOGETHER WITH, THE INDUSTRIAL USERS. NUMEROUS BENEFITS ARE COUPLED WITH EXTREME FLEXIBILITY TO ALL INDIVIDUAL NEEDS, BORN FROM MTA'S EXTENSIVE INDUSTRIAL COOLING KNOWLEDGE.



Suited to all conditions

Water inlet limits of -5 to 35°C and outlet limits of -10 (0°C on M03-10) to 30°C ensure TAE_{evo} is suited to all industrial applications. IP54 protection (from 031), full frontal access, easily removable panels and a separate refrigeration compartment (from 015) facilitate ease of use.

Maximum control

The large tank and evaporator ensure steady water temperatures, even during sudden load variations. This is further enhanced by passing the water through the evaporator before entering the tank, offering a ready chilled water supply. HP, LP and water manometers (from 031) give a quick overview of status.

Assured quality

All models are individually water-side tested at nominal operating conditions, and also undergo operating tests, refrigerant charge and leakage controls, and microprocessor and safety device setting verifications. Leading brand components are used throughout, ensuring long term reliability.

Fail-safe operation

TAE_{evo} always operates in all conditions, thanks to an internal trace water by-pass, numerous safety devices, generous water temperature limits, a 46°C ambient temperature limit, antifreeze protection and an internal water level sensor. The advanced microprocessor ensures fail-safe operation at all times.



Easy frontal access



Large buffer tank



Extensively lab tested



Advanced microprocessor

PERSONALIZE TAE_{evo} TO YOUR INDIVIDUAL NEEDS

As industrial applications differ, so TAE_{evo} can be adapted to each individual need thanks to numerous configurations and accessories:

Pump options – 3bar pumps are supplied as standard, 5bar pumps or no pump on request (from 015). Twin pumps are also offered (from 201).

Water circuit – A non-ferrous option (stainless steel water tank, copper/brass exchanger, stainless steel pump if not already standard) is offered on models 015-351. Alternatively models 015-351 can be supplied with a prismatic stainless steel tank and an external stainless steel plate heat exchanger (designed for open circuit operation); this configuration is also available with an evaporator flow switch which protects against water flow stoppages.

Condenser section – Electronic fan speed control is offered from model 031. Centrifugal fans (from 031) are ideal for ducted or indoor installation. Pre-treated, blygold-type treated and copper-copper condenser coils (all from 015) cater for harsh ambients.

Low ambient temperature operation – The -20°C ambient version (from 031) offers electrical panel heating, electronic fan speed control and a crankcase heater. Antifreeze heating and pump trace heating are also available (from 015).

Special voltages – 60Hz versions with or without UL approval are available.

Close Control version – The Laser version offers extremely precise temperature regulation (+/- 0,5°C) thanks to the application of hot gas by-pass control.

HAE_{evo} options – Transport wheels and handles (031-161) and stainless steel panels (031-351) are available.

Other accessories – Differing refrigerants (R134a, R22) can be supplied on request, as can NPT water connection adapters (standard on 60Hz/UL units). Crankcase heaters and a glycol fill kit (all from 015) are also offered.



Internal pump



Centrifugal fans



Stainless steel plate exchanger

Atmospheric pressure fill kit

This kit (from 015) is simply installed onto the back of the chiller itself, and features a generous tank (with an easy to read water level indication) encased within a tough galvanized steel cabinet. A tap offers easy chiller water tank filling. The fill kit is standard on models M03-10.



Atmospheric pressure fill kit

Pressurised fill kit

This kit, available from model 015, is used in pressurised water circuit applications (up to 6barg). The kit features all components required for safe and easy operation, including a pressure reducer, water inlet valve, pressure gauge, automatic relief valve, safety valve and expansion tank.



Pressurised fill kit

Remote control options

The following remote control options are offered from model 015:

- Simple remot control module (on/off, unit status) for installation at up to 150m from unit;
- Advanced remote control module (full control), for installation at up to 150m from unit.



Remote control

Supervisor options

The microprocessor can be linked to various external Supervisor systems:

- RS485 serial connection to an external Supervisor (MODBUS and other leading systems);
- XWEB300 Supervisor kit, operating via Internet;
- Remote GSM connection directly to a cellular phone.



XWEB300 Supervisor

EVAPORATOR-IN-TANK CONFIGURATION

The innovative evaporator-in-tank configuration (co-axial copper coil with stainless steel tank on M03-10, finned aluminium/copper coil with carbon steel tank from 015), allows operation even with impure liquids. Unit dimensions are reduced, and a steady water temperature is ensured as the evaporator also cools the tank itself. Ambient heat gain is reduced, increasing efficiency.

Choose between atmospheric pressure or (from 015) pressurised (max 6 barg) operation, with matching fill kits.

Bleed and drain valves and a water level sensor are fitted (from 015); the water by-pass and antifreeze warning ensure fail-safe operation.

The oversized evaporator design improves efficiency and reduces pressure drops. The tank is insulated and is removable.

PUMPS

A 3 bar pump, standard on all models, is mounted within the chiller itself. Various other pump options are available. Centrifugal pumps are fitted (from 015), models 015-251 feature a stainless steel water-side.

COMPRESSORS

Piston (M03 and 015-051), rotary (M05-10) or scroll (from 081) compressors are utilised. Scroll compressors offer reduced energy consumptions, low vibrations, less moving parts and high resistance to liquid refrigerant returns.



THE TAE_{evo} PRODUCT FAMILY

TAE_{evo} (M03-602)

The most popular solution, with an air-cooled condenser allowing quick and easy installation and high versatility in a multitude of applications. As per the rest of the range, the internal tank and pump offer a fully packaged solution.



Robust fan section

TWE_{evo} (015-602)

Water-cooled models offer elevated energy efficiency (EER) levels, and are well suited to hot ambients, or those where indoor installation is required. Noise levels are also reduced notably. (separate document available)



Shell & tube condenser

HAE_{evo} (031-351)

Heat pumps produce chilled and hot water, offering extreme versatility. A 4-way valve allows easy cycle inversion. MTA's unique Frost Detection System offers intelligent defrosting with efficiency gains. (separate document available)



4-way valve

TAE_{evo} Laser (051-351)

This Laser chiller, supplied to renowned OEM accounts, features a non ferrous water circuit and close control temperature regulation via a hot gas by-pass. A 6 bar pump and tank electrical heater are standard. (separate document available)



Laser chiller

THE OPTIMUM INDUSTRIAL CHILLER

Reduced costs & improved productivity - TAE_{evo} offers precise water temperature control, with numerous benefits:

- Increased productivity and reduced production cycle times.
- Reduced production costs, as well as less wastages.
- Reduced maintenance times and fewer interruptions during production.

Closed circuit operation - TAE_{evo} operates in a closed circuit, offering the following advantages:

- Extremely precise water temperature control, independent of ambient conditions.
- Quick reaction to any sudden load changes, ensuring steady operating conditions.
- The same water is continuously reutilised, thereby avoiding both unwanted wastage of this precious resource and the health hazards of water born bacteria.

A chiller designed for industry – Unlike typical chillers, TAE_{evo} has been designed specifically for industry. Fruit of over 20 years in the industrial chilling market, with hundreds of thousands of refrigerating machines installed worldwide, TAE_{evo} perfectly matches the needs of a diverse range of industries. This thanks to:

- Generous operating limits, both as regards the water inlet and outlet temperature.
- A robust construction with high ambient temperature limits, allowing operation in all conditions worldwide.
- An extensive range of accessories which allows TAE_{evo} to be personalised to all individual applications.
- A fully packaged and easy to use solution, with integrated pump and tank, perfectly suited to the needs of the industrial User.

Lowest operating costs – Thanks especially to energy efficient scroll compressors, the oversized evaporator and the unique evaporator-in-tank configuration, TAE_{evo} achieves leading energy efficiency levels. This is mated to low maintenance needs, ensuring TAE_{evo} is a highly economical long-term proposition.

TAE_{evo} IS THE PERFECT SOLUTION, WHATEVER YOUR APPLICATION

- **Plastics & rubber** (presses, injection moulding, extrusion (sheet & profile), blow moulding, thermoforming, PET)
- **Lasers** – with a specific **Laser chiller** (cutting, welding, profiling, optics, medical, engraving)
- **Food & drinks** (confectionary, bakeries, distilleries, breweries,

wineries, dairies, bottling, carbonation, meat & fish processing, vegetable & salad processing, storage)

- **Chemical & pharmaceutical** (jacketed vessels, polyurethane foam mixers, natural gas, industrial cleaning, laboratories, healthcare, solvents, paints)

- **Metal working** (processing & transformation of precious metals, aluminium working & processing)

- **Mechanical & Engineering** (machine tools, welding machines, rolling mills, presses, extruders, cutting, profiling, polishing, electric spark machinery, hydraulic

control unit oil cooling, pneumatic transport, heat treatment)

- **Paper & related applications** (printers, cardboard, labels, plastic film)

- **Other applications** (ceramics, textiles, wood, rental, air compressor cooling, other applications)



Plastics industry



Laser industry



Chemical industry



Winery



Cooling, conditioning, purifying.

ADVANCED MICROPROCESSOR

The microprocessor (from M05) offers icon messages and a digital water outlet temperature reading. Up to 10 alarms are offered, plus extensive programming to individual needs. An alarm history, volt free general alarm contact and protective plastic cover are standard from model 015.

CONDENSING SECTION

Air-cooled condensers (copper tubes / aluminium fins) are fitted on one side only, reducing space needs. A pre-filter is standard (from 031).

Water-cooled models feature a plate (015-020), co-axial (031-161) or shell & tube (201-602) configuration.

HA_{Evo}'s maximizes efficiency in the heat pump mode, when it inverts to an evaporator function.

MULTIPLE COMPONENTS

Units with 2 compressors (from 201) or 4 compressors within 2 circuits (from 402) feature compressor rotation and a compressor unloading function which improves operation in harsh conditions. Models from 402 feature multi-step fan speed control.

MTA COVERS ALL YOUR NEEDS

Larger chillers

MTA offers industrial air and water-cooled chillers up to 1500kW, with multiscroll, piston, screw or centrifugal compressors. Freecooling units, ideal for industrial applications, are also available. (separate documents available)



Phoenix Plus chiller

Hydraulic circuit design

In many cases the chiller forms part of a complex hydraulic network. MTA offers expert consultancy born from extensive field experience in countless applications, allowing Users to obtain the most from their chilled water network.



Process cooling application

			M03	M05	M10
TA _{Evo}	Cooling capacity (1)	kW	1,4	2,5	4,4
	Absorbed power (1)	kW	0,5	0,73	1,32
	Cooling capacity (2)	kW	0,9	1,8	3,2
	Absorbed power (2)	kW	0,52	0,77	1,36
TW _{Evo}	Cooling capacity (3)	kW	-	-	-
	Absorbed power (3)	kW	-	-	-
	Cooling capacity (4)	kW	-	-	-
	Absorbed power (4)	kW	-	-	-
HA _{Evo}	Cooling capacity (1)	kW	-	-	-
	Absorbed power (1)	kW	-	-	-
	Cooling capacity (2)	kW	-	-	-
	Absorbed power (2)	kW	-	-	-
	Heating capacity (5)	kW	-	-	-
	Absorbed power (5)	kW	-	-	-

General data

Refrigerant	-	R134a	R407C	
Power Supply	V/Ph/Hz	230±10%/1/50		
Protection Class	-	IP20	IP33	
Total installed power (6)	kW	1,03	1,64	2,06
Compressors / Circuits	N°	1 / 1	1 / 1	1 / 1

Air-cooled models

Axial Fans	N° Fans	N°	1	1	1
	Nominal power (each)	kW	0,065	0,146	0,146
	Total air flow	m³/h	900	2200	2100
	Noise level (7)	dB(A)	48,2	48,3	48,3
Centrif. Fans	N° Fans	N°	-	-	-
	Nominal power (each)	kW	-	-	-
	Available head pressure	kPa	-	-	-
	Total air flow	m³/h	-	-	-
	Noise level (7)	dB(A)	-	-	-

Water-cooled models

Water flow	m³/h	-	-	-
Condenser water connections	In	-	-	-

Pump section

P3	Water Flow (nom. with ΔT 5°C / MAX)	m³/h	0,24/0,34	0,43/1,2	0,76/1,2
	Available head pressure (nom./min.)	bar	1,18/0,54	2,78/0,46	2,78/0,46
	Nominal Power	kW	0,25	0,33	0,33
P5	Water Flow (nom. with ΔT 5°C / MAX)	m³/h	-	-	-
	Available head pressure (nom./min.)	bar	-	-	-
	Nominal Power	kW	-	-	-

Dimensions (8)

Width	mm	325	575	575
Depth	mm	728	652	652
Height	mm	540	805	805
Operating weight (with P3 pump)	kg	63	106	113
Tank volume	l	8	25	25
Evaporator water connections	In	1/4"	1/2"	1/2"

- (1) Evaporator water inlet/outlet temperature 20/15°C, external air temperature 25°C;
- (2) Evaporator water inlet/outlet temperature 12/7°C, external air temperature 32°C;
- (3) Evaporator water inlet/outlet temperature 20/15°C, condenser water inlet/outlet temperature 40/45°C, external air temperature 10°C;
- (4) Evaporator water inlet/outlet temperature 12/7°C, condenser water inlet/outlet temperature 40/45°C, external air temperature 10°C;
- (5) Condenser water inlet/outlet temperature 40/45°C, external air temperature 10°C;
- (6) Unit with P3 pump and ON/OFF fan speed control (if fitted);
- (7) Sound pressure level in free field at 10m from unit condenser side and 1,6m from ground level;
- (8) For unit with standard power supply, axial fans, ON/OFF fan speed control.

Air-cooled models operate at external air temperatures of up to 46°C (with 12/7°C water inlet/outlet temperature). For data concerning TAE_{Evo laser} contact MTA.

The capacity correction factors in the following table should be used as a guide only under conditions differing from the above the selection software should be utilised.

Water outlet temperature ≠ 15 °C	°C	-10	-5	0	5
Correction factor	K1	0,36	0,44	0,56	0,74
Correction factor (M series)	K1	-	-	0,57	0,73

Evaporator ΔT ≠ 5 °C	°C	4	5	6	7
Correction factor	K2	0,994	1	1,005	1,010

External air temperature ≠ 25 °C	°C	20	25	30	
Correction factor	K3	1	1	0,95	0,9
Correction factor (M series)	K3	1,04	1	0,95	0,9

Ethylene glycol solutions	%	0	10	20	
Correction factor	K4	1	0,99	0,98	0,9

Condenser ΔT ≠ 5 °C (TWE _{Evo})	°C	5	10	
Correction factor	K5	1	0,96	

015	020	031	051	081	101	121	161	201	251	301	351	402	502	602
7,3	9,5	13,8	20,4	28,4	41,9	52,2	59,2	67,4	80,8	88,3	100,1	126,2	146,5	175,3
1,9	2,1	3,6	5,0	6,3	8,5	10,3	13,0	15,3	17,3	19,4	22,7	27,0	30,3	36,0
5,0	6,6	9,9	14,4	21,0	30,8	38,5	43,6	49,8	59,2	65,7	73,5	92,6	106,6	129,3
1,7	2,0	3,4	4,9	6,7	9,0	10,8	13,5	16,1	18,2	20,4	23,9	28,9	32,5	38,2
7,0	8,5	13,0	21,2	28,7	38,6	50,6	57,8	64,9	75,5	85,8	98,6	125,5	143,2	169,8
1,7	2,1	3,3	5,2	5,9	7,5	10,1	11,5	14,3	17,0	20,2	24,8	28,7	33,7	40,2
5,1	6,2	10,6	15,6	21,9	30,9	39,8	44,5	52,1	60,8	67,0	75,9	96,6	112,0	133,3
1,5	1,9	3,1	4,5	5,8	7,5	10,0	11,4	13,8	16,4	19,4	24,5	28,1	32,6	38,9
-	-	13,4	19,7	27,7	40,0	50,2	56,5	65,0	78,3	85,4	97,0	-	-	-
-	-	3,7	5,6	6,3	8,5	10,2	12,8	15,2	17,2	19,4	22,7	-	-	-
-	-	9,7	14,2	20,3	29,2	36,9	42,1	48,5	57,2	63,8	71,7	-	-	-
-	-	3,4	4,9	6,7	9,0	10,8	13,5	16,0	18,2	20,4	23,9	-	-	-
-	-	12,0	17,0	25,1	33,0	41,5	47,1	54,0	65,1	76,1	86,7	-	-	-
-	-	3,4	4,6	6,7	8,6	11,2	12,8	14,8	17,2	19,7	24,2	-	-	-

R407C														
400±10%/3/50														
IP44					IP54									
3,19	3,83	5,96	7,85	10,78	14,46	18,37	21,17	23,62	27,00	31,16	37,27	48,35	55,11	61,02
1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	2/1	2/1	2/1	2/1	4/2	4/2	4/2

1	1	1	1	1	2	2	2	2	2	3	3	2	2	2
0,27	0,27	0,54	0,54	0,79	0,79	0,79	0,79	0,79	0,79	0,79	0,79	2,0	2,0	2,0
3500	3100	6600	6200	8500	15100	13500	13500	16900	16300	22350	22350	45600	44000	42500
52,4	52,4	53,1	53,1	53,6	54,1	54,1	55,0	56,3	56,3	58,0	58,0	64,0	64,0	64,0
-	-	1	1	2	2	2	2	3	3	3	3	2	2	2
-	-	1,1	1,1	1,1	1,1	1,1	1,1	1,1	1,1	1,1	1,1	5,5	5,5	5,5
-	-	166	185	260	140	125	138	237	245	150	150	245	230	215
-	-	6900	6400	9200	13600	13500	12780	18200	17600	20145	20145	40000	40000	40000
-	-	58,8	58,8	61,2	61,2	61,2	61,2	63,1	63,1	63,1	63,1	65,0	65,0	65,0

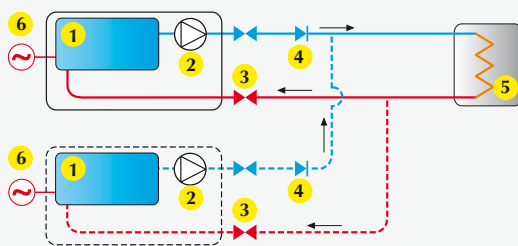
0.25/1.2	0.3/1.6	1.0/5.0	1.0/5.0	1.3/6.0	1.6/8.0	1.9/10.0	2.5/15.0	3.3/14.0	3.3/14.0	4.0/16.6	4.0/16.6	3.3/14.0	3.3/14.0	4.0/16.6
3/4"	3/4"	1 1/4"	1 1/4"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	2"	2"	2"	2"	2 1/2"	2 1/2"	2 1/2"

1,3/4,8	1,6/4,8	2,4/6	3,5/6	4,9/9,6	7,2/9,6	9,0/18	10,2/18	11,6/18	13,9/18	15,2/27	17,2/27	21,7/48	25,2/48	30,1/48
2,9/1,4	2,8/1,4	2,8/1,5	2,6/1,4	2,5/1,3	2,1/1,5	2,6/1,6	2,5/1,7	2,5/2,0	2,4/2,0	2,6/0,9	2,4/0,8	3,4/1,5	3,2/1,5	2,9/1,5
0,55	0,55	0,75	0,75	0,9	0,9	1,85	1,85	1,85	1,85	2,2	2,2	4	4	4
1,3/4,8	1,6/4,8	2,4/4,8	3,5/4,8	4,9/13	7,2/13	9,0/13	10,2/13	11,6/30	13,9/30	15,2/30	17,2/30	21,7/48	25,2/48	30,1/48
5,2/2,9	5,1/2,9	4,9/3,1	4,2/3,2	4,9/2,8	4,6/3,1	4,2/3,1	4,0/3,2	4,6/1,8	4,4/1,8	4,3/1,9	4,0/1,8	5,1/3,0	4,9/3,0	4,6/3,0
1,1	1,1	1,1	1,1	2,2	2,2	2,2	2,2	4	4	4	4	7,5	7,5	7,5

560	560	660	660	760	760	760	760	866	866	866	866	1255	1255	1255
1266	1266	1310	1310	1860	1860	1860	1860	2240	2240	2240	2240	3294	3294	3294
810	810	1400	1400	1447	1447	1447	1447	2064	2064	2064	2064	2140	2140	2140
188	193	316	336	474	644	663	674	916	1008	1118	1134	1812	1847	1911
60	60	115	115	140	255	255	255	350	350	350	350	500	500	500
3/4"	3/4"	1"	1"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	2"	2"	2"	2"	2 1/2"	2 1/2"	2 1/2"

Typical closed circuit configuration

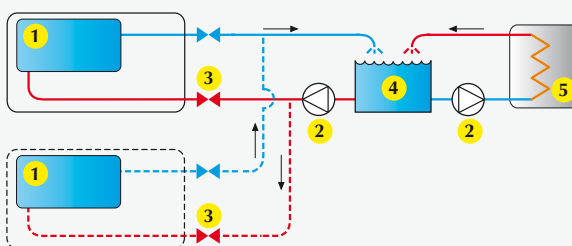
Pressurised closed circuits always require an expansion tank; this can be either manual or automatic, but if two or more chillers are installed in parallel the automatic configuration is required.



- 1 Accumulation tank
- 2 Pump
- 3 Valve
- 4 Non return valve
- 5 User
- 6 Expansion tank

Typical open circuit configuration

In atmospheric pressure open circuits the water is in contact with the ambient air, and as such an expansion tank is not required. In these applications an external pump is normally used, consequently the chiller should be fitted without a pump.



- 1 Accumulation tank
- 2 Pump
- 3 Valve
- 4 Open tank
- 5 User

temperature 40/45°C;
temperature 40/45°C;

ground;

er temperature).

y, for accurate selection at

7	11	15
0,79	0,89	1
0,79	0,89	1

8	9	10
1,017	1,021	1,025

32	35	40
0,92	0,89	0,83
0,92	0,87	0,83

30	40	50
0,97	0,96	0,93

15
0,92

ENERGY FOR THE FUTURE

MTA was born over 25 years ago with a clear objective: improving mankind's relationship with two distinct natural resources, air and water, and optimising their transformation into energy sources. And as each application differs, so MTA offers a personalised energy solution perfectly aligned to each individual need. At MTA energy is our business, and improving your relationship with your energy is our aim.

www.mta-it.com

STRATEGIC DIVERSIFICATION

MTA covers three distinct market segments. As well as Industrial Process Cooling, MTA offers products for Air Conditioning, as well as Compressed Air & Gas Treatment solutions. MTA is renowned for the innovation it brings into each of these three sectors; in fact our strategic diversification offers our Customers unique benefits unseen in their individual fields.

FAR REACHING BUT ALWAYS CLOSE BY

MTA is present in over 80 countries worldwide. 8 MTA Sales Companies cover 4 continents. Expert knowledge and an accurate attention to application consultancy and service support guarantees that our Customers can look forward to long term peace of mind and an optimized energy solution. We always remain close to our Customers, so wherever you may be, we are close by.

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Cooling, conditioning, purifying.



MTA is ISO9001:2000 certified, a sign of its commitment to complete customer satisfaction.



MTA products comply with European safety directives, as recognised by the CE symbol.



MTA participates in the Eurovent certification programme. Certified products are listed on www.eurovent-certification.com.

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