KAESER COMPRESSORS®

Oil-Water Separators

AQUAMAT i.CF

Safe. Clean. Modular.

For compressor flow rates from 10.3 to 92.6 m³/min

www.kaeser.com

AQUAMAT i.CF series

Intelligent condensate treatment

When generating compressed air, significant amounts of oil-containing condensate are produced. Oil-water separators adsorb the oil, ensuring the discharged water meets regulatory standards. With the AQUAMAT i.CF, KAESER has redefined the concept of condensate treatment. Accordingly, the oil-water separator, available for compressor flow rates from 10.3 to 92.6 m³/min, is equipped with the innovative AQUAMAT CONTROL controller for the first time. This advanced system takes over active process control and ensures clean, predictable maintenance. Thanks to ergonomic cartridges, filter material replacement is performed cleanly and without direct contact with the condensate, thereby safeguarding both the environment and service personnel. The modular design concept means that model capacity can be adjusted retrospectively.

Safe. Active separation

The AQUAMAT CONTROL controller lies at the heart of the AQUAMAT i.CF, actively monitoring the condensate level inside the oil-water separator. When the maximum fill level is reached, the condensate is forced through the filter cartridges by light bursts of compressed air. This has the advantage of using the adsorption capacity of the cartridges much more effectively. As a result, the AQUAMAT i.CF operates reliably and resource-efficiently even under demanding operating conditions. In the unlikely event that a problem arises, the controller recognises it and issues a notification. Should a power outage occur, the AQUAMAT i.CF continues to function as a conventional gravity separator. This active operating concept ensures maximum process reliability and functional safety, and is of course approved by the German Institute for Structural Engineering Berlin (DIBt).

Clean. Ergonomic cartridge concept

The entire system design of the AQUAMAT i.CF sets new standards when it comes to hygiene. Oil is reliably bound inside the cartridges. No contact with the condensate is necessary when changing the cartridges and the whole procedure is contaminant-free, thereby protecting both the environment and service personnel. For added practicality, thanks to the AQUAMAT CONTROL system the cartridges can be automatically drained before replacement. This saves time and makes the emptied cartridges easy to handle.

Modular. AQUAMAT i.CF grows with you

Thanks to its innovative modular design, the capacity of an AQUAMAT i.CF model can be adjusted at any time in the future. This is achieved with retrofit kits that allow parallel connection of multiple cartridges. Since all models use the same cartridge type, spare parts management and supply is greatly simplified, which in turn saves time and money. Moreover, even the smallest AQUAMAT i.CF 10 model can easily be retrofitted with the AQUAMAT CONTROL controller.

Sustainable. Monitored operation

An oil-water separator whose operation is not monitored or is inadequately maintained can potentially contaminate the environment with oil-laden condensate and wastewater. Here, the intelligent AQUAMAT i.CF oil-water separator with AQUAMAT CONTROL provides active environmental protection. The hygienic cartridge concept with automatic drainage and a drip-stop valve at the bottom securely contains the entire volume of oil. The active separation process protects against backflow and consequently prevents condensate overflow. Additionally, the AQUAMAT CONTROL controller continuously displays the remaining cartridge capacity, ensuring maintenance transparency and predictability.

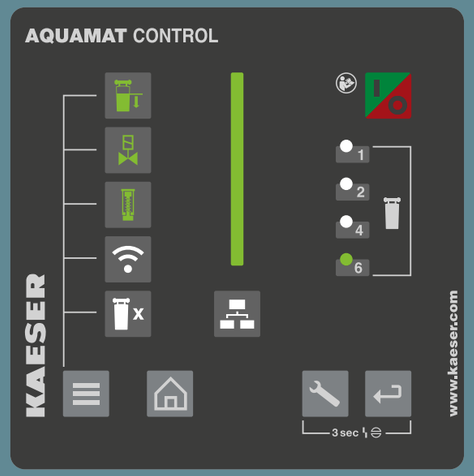
Network-capable. AQUAMAT CONTROL

The AQUAMAT CONTROL controller is equipped as standard with a Modbus TCP interface (Ethernet). Configuration information for the AQUAMAT i.CF, especially alarm and maintenance data, can therefore be transmitted to a master controller via a network. Operation of the AQUAMAT i.CF can also be monitored from a centralised control centre.

Safe. Clean. Modular.

Image shows the AQUAMAT i.CF 60

Safe. AQUAMAT CONTROL – The heart of active separation



Continuous process monitoring

The AQUAMAT CONTROL monitors the condensate level, ensuring defined and trouble-free condensate flow. The controller captures process parameters and reports malfunctions.

Local WLAN

The AQUAMAT CONTROL provides local WLAN access, allowing service personnel to access information regarding system configuration, process data and notifications on mobile devices, even without a network connection.

Remaining cartridge service life

AQUAMAT CONTROL determines the remaining cartridge service life based on sensor and process data, in accordance with load. This makes maintenance easily predictable.

Automatic drainage

AQUAMAT CONTROL drains the cartridges at the push of a button, ensuring that each cartridge weighs less than 25 kg to facilitate clean and ergonomic replacement, while also saving on disposal costs.

Image shows the SIGMA AIR MANAGER 4.0

Network connection

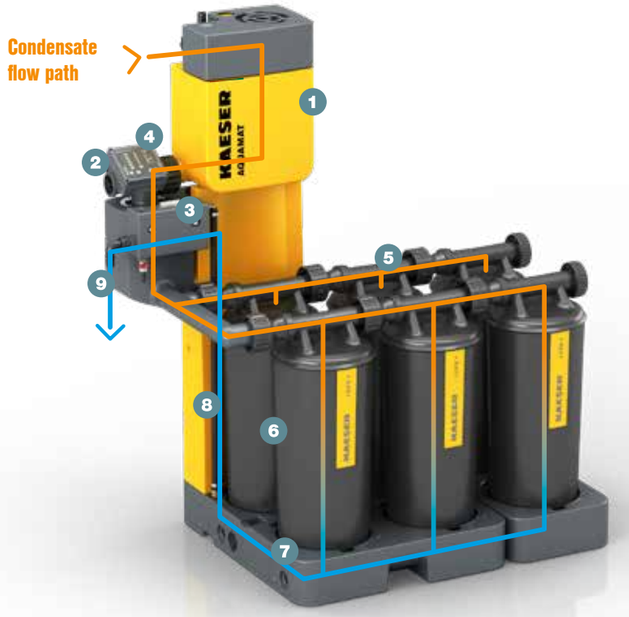
AQUAMAT CONTROL provides process data and notifications via Modbus TCP (Ethernet), enabling process control from master controllers such as the SIGMA AIR MANAGER 4.0.

Active separation. The intelligent condensate treatment process

The oil-laden condensate flows into the pressure relief chamber (1) in the AQUAMAT i.CF, where it is depressurised to atmospheric pressure and then flows through the piston valve (2) into the measuring chamber (3), wherein the AQUAMAT CONTROL controller (4) continuously monitors the fill level. When the maximum level is reached, condensate inflow is interrupted by closing off the piston valve (2). This creates a condensate volume that can be pressurised.
The AQUAMAT CONTROL controller (4) pulses the trapped condensate through the distributor (5) and the cartridges (6) by means of light pressure surges. The activated carbon-free filter material inside the cartridges retains the oil contained in the condensate.
The purified discharge water flows along the bottom of the cartridge into the collector (7) and from there through a riser channel (8) to the outlet (9) of the AQUAMAT i.CF.
When the AQUAMAT CONTROL detects the minimum fill level in the measuring chamber, pulsing is stopped, the piston valve is opened, and condensate inflow is restored. In the event of a failure (e.g. a power outage), the AQUAMAT i.CF continues to operate as a conventional gravity separator.

Active separation offers significant advantages over conventional gravity separators:

- **Overcoming increased differential pressures**, due to contamination for example, by means of pressure pulses
- **Significantly reduced risk of forming impermeable boundary layers** on and inside the filter material (for example, through microbiology), as cartridges are kept below the liquid level
- **Optimised use of filter material** through more homogeneous condensate distribution
- **Continuous determination of remaining cartridge service life** through capture and analysis of condensate flow. This ensures optimal filter material service life and enables predictable maintenance
- **Automated cartridge drainage** via pressurisation for easy and clean replacement

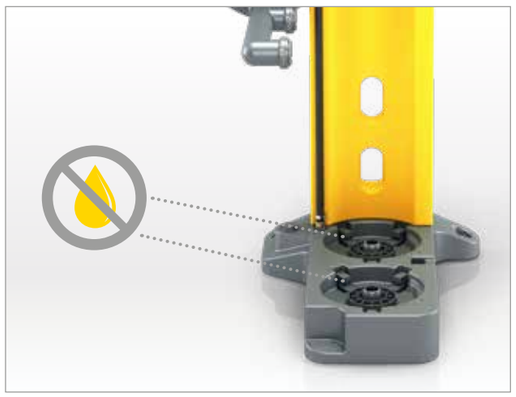


(1) Pressure relief chamber
(2) Piston valve
(3) Measuring chamber
(4) AQUAMAT CONTROL
(5) Distributor (piping)
(6) Cartridges
(7) Discharge water collector
(8) Riser channel
(9) Discharge water outlet

Deutsches Institut für Bautechnik DIBt

With regulatory approval from the German Institute for Structural Engineering Berlin (DIBt).

Clean. An innovative system concept that not only impresses service technicians!



Bayonet and drip-stop valve

Cartridge replacement is simple and clean thanks to the practical bayonet fitting. The valve in the cartridge prevents liquids from leaking. Supplied blanking plugs provide additional security to prevent any leakage of liquids.

Ergonomic handle

The cartridge inlet pipe is designed as a non-slip, stable handle. Cartridge transportation and installation are therefore exceptionally ergonomic. The cartridge is lifted out of the bayonet fitting with a 45° turn using its ergonomic handle. Fully saturated, it weighs a maximum of 25 kg.

Drainage at the push of a button

Thanks to active separation, the cartridges are drained using light pressure pulses. Lengthy and contaminant-laden dripping when changing the filter material is therefore eliminated. This controlled drainage means that a fully saturated cartridge weighs less than 25 kg.

One cartridge for all versions

All models in the AQUAMAT i.CF series use the same cartridge. This not only simplifies procurement and storage, but also reliably prevents incorrect orders.

Entire oil volume contained

Thanks to generous sizing and optimised filter material utilisation, the entire oil volume is permanently bound inside the cartridge. Touch contact with service personnel and environmental contamination are therefore reliably avoided.

Predictive warning

AQUAMAT CONTROL continuously monitors condensate flow and reports any potential malfunctions. This allows early detection of possible condensate backup and, thanks to active separation, prevents the system from overflowing.

Ergonomic cartridge change.

Not just clean, but quick and easy!

1

Active drainage of the cartridges is initiated at the push of a button.

2

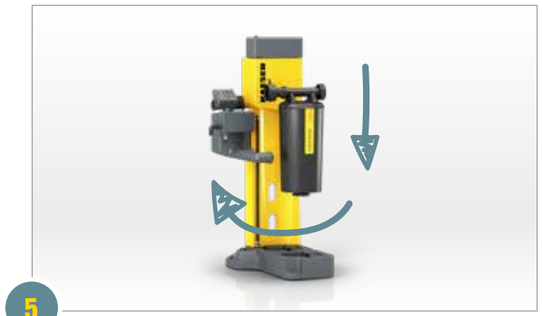
The clamping nuts on the cartridge screw connection are then loosened.

3

The cartridge is lifted out of the bayonet fitting with a 45° turn using its ergonomic handle. Fully saturated, it weighs a maximum of 25 kg.

4

The used cartridges are reliably sealed with the supplied blanking plugs. A bottom valve prevents any liquid from escaping.



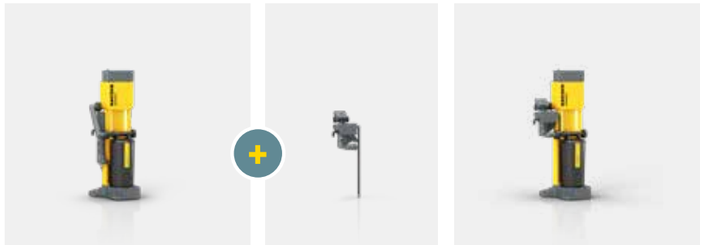
5

The new cartridges are inserted in reverse sequence accordingly. The screw connection clamping nuts are tightened – refer to step 2.

6

Cartridge replacement is acknowledged on the controller. The display indicates 100% capacity again.

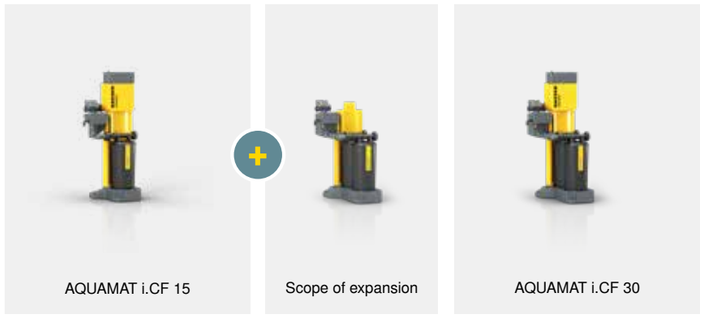
Modular.
Systems that grow with you!



AQUAMAT i.CF 10 | Scope of expansion | AQUAMAT i.CF 15

From 10 to 15

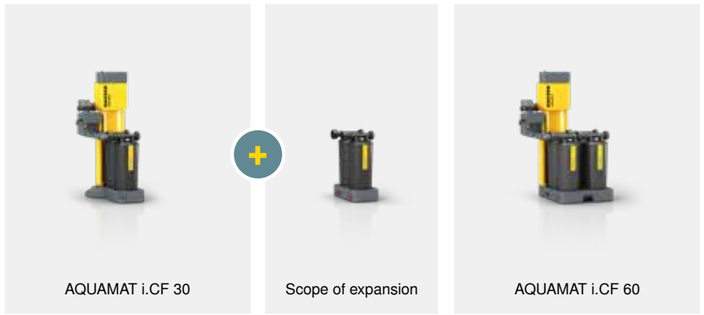
The entry-level model comes equipped with the AQUAMAT CONTROL controller and the measuring chamber, enabling active separation. This increases capacity by 50%. The retrofit kit also includes a matching riser channel and a new cartridge.



AQUAMAT i.CF 15 | Scope of expansion | AQUAMAT i.CF 30

From 15 to 30

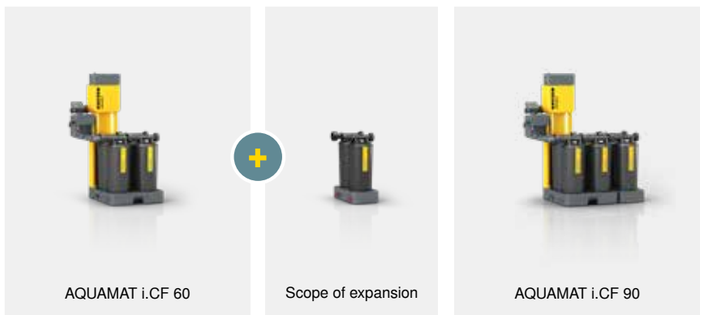
The retrofit kit includes two new cartridges, the matching collector, the corresponding distributor pipe and a larger measuring chamber. This doubles the original capacity.



AQUAMAT i.CF 30 | Scope of expansion | AQUAMAT i.CF 60

From 30 to 60

The retrofit kit comprises two new cartridges for the base unit and an add-on module. The module includes a collector and the two corresponding cartridges. It is simply attached to the side of the AQUAMAT i.CF 30.



AQUAMAT i.CF 60 | Scope of expansion | AQUAMAT i.CF 90

From 60 to 90

The retrofit kit comprises four new cartridges for the base unit and an add-on module. The module includes a collector and the two corresponding cartridges. It is simply attached to the side of the AQUAMAT i.CF 60.

Safe. Clean. Modular.
With active separation

Image shows the AQUAMAT i.CF 30

Safe.

AQUAMAT CONTROL takes over active process control: optimal utilisation of filter material, load-dependent determination of remaining capacity, predictable maintenance, and drainage at the push of a button. This is what sustainable condensate treatment looks like today – network-capable and type-tested by the German Institute for Structural Engineering Berlin (DIBt).

Clean.

To keep everything clean: complete oil retention inside the cartridge, ergonomic handle, maximum 25 kg for the drained cartridge, bayonet fitting on the collector, and a drip-stop valve at the cartridge bottom to prevent dripping. Maintenance has never been so fast – and with reliable protection for service personnel and the environment.

Modular.

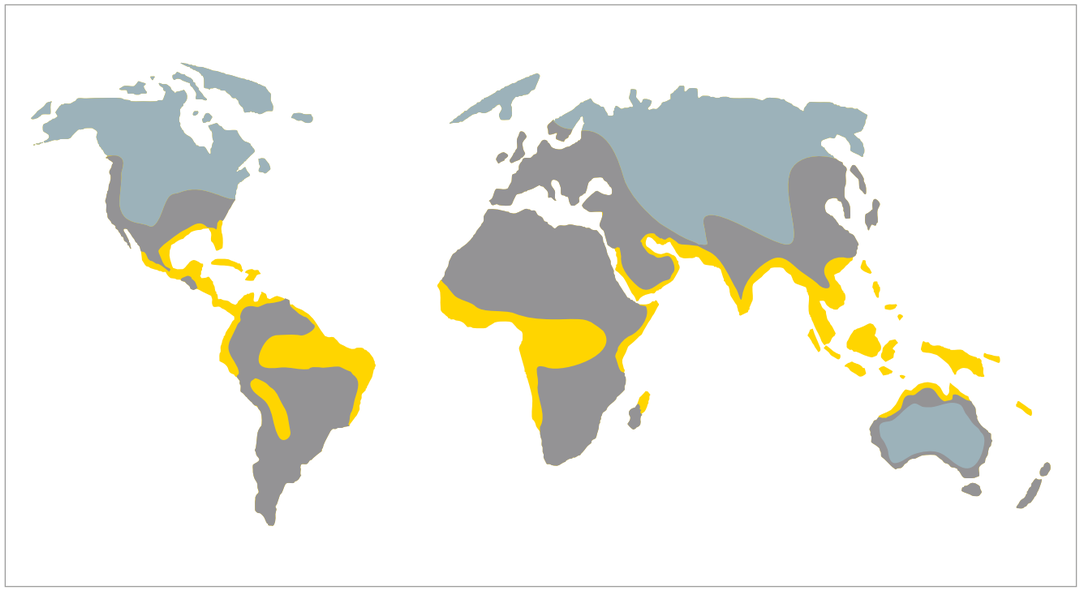
The AQUAMAT i.CF grows with its responsibilities: one cartridge size for all models. Practical retrofit kits for subsequent capacity adjustment.

Technical data

Model		AQUAMAT i.CF 10	AQUAMAT i.CF 15	AQUAMAT i.CF 30	AQUAMAT i.CF 60	AQUAMAT i.CF 90
Climate zone 1 (Ta = 30°C, r.h. 60%)	m³/min	12.1	18.1	36.3	72.4	108.7
Climate zone 2 (Ta = 30°C, r.h. 70%)	m³/min	10.3	15.4	30.9	61.7	92.6
Climate zone 3 (Ta = 30°C, r.h. 80%)	m³/min	9.0	13.4	26.9	53.8	80.7
Max. hydrocarbon concentration in discharge water [1]	mg/l	≤ 20				
Max. gauge pressure at condensate inlet	bar	16				
Control air gauge pressure	bar	–	3 – 15			
Min. / max. temperature – Condensate inflow	°C	+5 – +50				
Min. / max. temperature – Control air	°C	+5 – +50				
Min. / max. temperature – Ambient	°C	+5 – +50				
Power supply		–	90 – 264 VAC / 24 VDC I 1 Ph I 50 – 60 Hz			
Electrical power consumption	VA	–	10			
Protection type		–	IP 54			
Connection – Condensate inflow		3 x G1/2 I 1 x G1 / Male hose coupling for internal Ø 13 mm				
Connection – Condensate discharge		Male hose coupling for internal Ø 23 mm				
Connection – Control air		–	Male hose coupling for internal Ø 8 mm			
Connection – Power supply		–	M12 plug-in connector, included			
Connection – Modbus TCP (Ethernet)		–	M12 plug-in connector, user-provided			
Weight	kg	21	24	31	45	60
Width	mm	625	774	774	973	1308
Depth	mm	540	540	790	790	790
Height	mm	1482	1482	1482	1482	1482
Maximum operating height	mm	2000				

[1] Performance data as per the German Institute for Structural Engineering Berlin (DIBt).

Climate zones



- Climate zone 1 (Ta = 30 °C, r.h. 60%)
- Climate zone 2 (Ta = 30 °C, r.h. 70%)
- Climate zone 3 (Ta = 30 °C, r.h. 80%)

Due to the unique active functionality of the AQUAMAT i.CF, the compressor flow rate and the climate map are sufficient to select the most appropriate oil-water separator.

A climate zone defines the maximum humidity level of the ambient air that can accumulate as condensate for oil-water separation. The type of compressor and the compressor oil used are no longer considered to be design factors.

Options

Retrofit kits

For easy capacity expansion of the AQUAMAT i.CF 10 to 60 models to the next model size up.

Alarm sensor for level sensor

The alarm sensor (changeover) registers when the level sensor for the pressure relief chamber indicates the maximum fill level. This provides easy function monitoring for the AQUAMAT i.CF 10 model.

Condensate distributor

For distribution of the condensate volume to up to 4 different oil-water separators, for example, to combine older versions with the current one or for parallel arrangement of multiple AQUAMAT i.CF 90 models. Available as a heated “standard” version and in the non-heated “basic” version.

Collection pan

Fluid-tight pans, Sendzimir-process galvanised, in accordance with the steel trough guidelines (StawaR) of the German Institute for Structural Engineering Berlin (DIBt). Permitted for the installation of oil-water separators and for the containment and retention of escaping water-polluting substances.

High-pressure relief chamber

For intake pressures up to 40 bar. The oil-laden condensate-air mixture is depressurised to atmospheric pressure in the relief chamber and can be fed to the AQUAMAT i.CF through free discharge via a collection line. The depressurised air, now cleaned, exits through the activated carbon mat into the ambient surroundings.

Views

AQUAMAT i.CF 10

AQUAMAT i.CF 15

AQUAMAT i.CF 30

Example compressed air station

AQUAMAT i.CF 60

AQUAMAT i.CF 90

More compressed air for less energy

The world is our home

As one of the world's largest manufacturers of compressors, blowers and compressed air systems, KAESER KOMPRESSOREN is represented throughout the world by a comprehensive network of wholly owned subsidiaries and authorised distribution partners in over 140 countries.

By offering innovative, efficient and reliable products and services, KAESER KOMPRESSOREN's experienced consultants and engineers work in close partnership with customers to enhance their competitive edge and to develop progressive system concepts that continuously push the boundaries of performance and technology. Moreover, decades of knowledge and expertise from this industry-leading systems provider are made available to each and every customer via the KAESER group's advanced global IT network.

These advantages, coupled with KAESER's worldwide service organisation, ensure that every product operates at the peak of its performance at all times, providing optimal efficiency and maximum availability.

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