

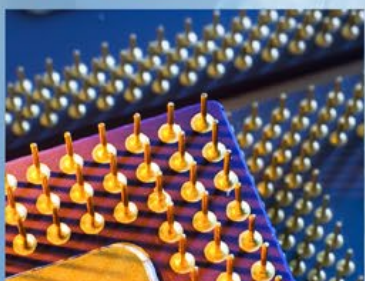


Defensor Mk5

Getting rid of scale

The steam humidifier with scale management.
Low maintenance. Reliability.
And superior control accuracy





Key benefits

Why Defensor Mk5?

Flexible.

The resistive heating elements of the Defensor Mk5 generates – with demineralize or normal drinking water – between 5 and 80 kg/h steam.

Genial.

The patented, unique scale management guarantees long durability and short maintenance times.

Approved.

The Defensor Mk5 convinces users, planners and installers in all world and belongs since many years to the leading steam humidifiers.

Completely hygienic steam

A major advantage for planners and users: the Mk5 provides maximum safety in hospitals, clean rooms, food production and everywhere where an hygienic environment is of the utmost priority.

Patented scale management

Scale is collected in the spacious scale collector tank. This means: Long operation periods and very short maintenance interruptions.

High-quality materials

The stainless steel cylinder, level unit and heating elements are practically indestructible. The Mk5 is therefore still providing loyal service long after the accounts department has written it off.

Control accuracy of up to $\pm 1\%$

Logic and technology complement each other perfectly. The Mk5 is easy to install, safe to use and the required humidity can be simply set at the touch of a button: 48%, 72% or 97% – the Mk5 regulates linear and very precise.

Building management integration

The Defensor Mk5 is the perfect partner. It can be selectively operated with Modbus Standard, BACnet or LonWorks protocols, accepts all common control signal levels and indicates operating status and malfunctions. This saves time and enhances reliability.

Defensor Mk5

HUMIDIFICATION



Defensor Mk5



Drinking water and
demineralised water

Mk5 steam humidifiers have a resistance heating system that operates regardless of the water quality. A major advantage of this is that the units work perfectly with both drinking water and demineralised water. Patented scale management ensures a high degree of reliability where drinking water is used and enables simple and speedy unit maintenance. Maintenance work is reduced to a minimum where treated water is used.



External scale collection tank



Patented scale management



Scale-free cylinder purging water

Thanks to the external scale collection tank, the length of maintenance intervals is extended considerably and necessary maintenance tasks reduced to a minimum. Excellent access is ensured by the external arrangement of the scale collection tank under the unit. It can be removed from this position and emptied without opening the unit housing. Maintenance measures can be realised much easier and considerably quicker as a result.

The patented scale management system removes separated minerals from the steam cylinder during operation and conveys them automatically to the scale collection tank provided for this purpose. Scale particles are collected here and can then be easily emptied. Maintenance work is drastically reduced as a result, while operational reliability is simultaneously ensured to a maximum degree. The patented scale management system thus ensures short maintenance operations and a long service life for Mk5 steam humidifiers.

The descaling pump is located directly above the scale collection tank. It descales clear water, with the deposits remaining in the collection tank. This ensures that the pump and waste water lines are kept free. This intelligent descaling pump configuration protects the on-site drainage system against undesired and problematic deposits.



Precision control

Mk5 steam humidifiers can be controlled at the push of a button via an ergonomic membrane keyboard. Continuous control of steam capacity is achieved within the entire range from 0..100%.

The innovative control of Mk5 steam humidifiers ensures an exact steam output over the entire capacity range. This achieves an extremely high control quality during both full and partial load operation.

Integration in the building services management system

The optionally-available e-Links enables the linking of steam humidifiers to the building services management system. Control and monitoring of the units can therefore be realised in comfort from a PC.

The e-Links card can be inserted with a minimum of effort. Units can then be individually addressed, monitored and controlled. The interface is compatible with the following common systems: Modbus, BACnet/IP, Lon-Works.

Two variants, two models: The choice is yours...

The **Mk5 Visual** is the all-rounder for application areas with a control accuracy of up to $\pm 2\%$ for 0 to 100% steam output.

The **Mk5 Process** can be controlled with up to $\pm 1\%$ accuracy, making it ideal for applications in laboratories and clean rooms.

DEFENSOR Mk5

Characteristics

	Standard	Optional
Display	●	
Keep warm feature	●	
Internal PI humidity controller	●	
Self-diagnosis system	●	
Maintenance counter	●	
Precision 5-stage water level control	●	
Variable steam production 0...100%	●	
Pressure compensation set up to 10'000 Pa		●
Remote indication board		●
RS 485 interface with Modbus protocol		●
e-LINKS Building Management System, BACnet or LonWorks		●

Technical Data

Model		5	8	10	16	20	24	30	40	50	60	80
400VAC/3, 50..60Hz	kg/h	5.0	8.0	10.0	16.0	20.0	24.0	30.0	40.0	50.0	60.0	80.0
	kW	3.8	6.0	7.5	12.0	14.9	18.1	22.3	30.0	37.2	44.6	60.0
415VAC/3, 50..60Hz	kg/h	5.1	8.4	10.3	16.7	20.6	25.1	30.6	41.5	51.2	61.2	83.0
	kW	4.0	6.5	8.0	13.0	16.0	19.5	24.0	32.3	40.0	48.0	64.6
220VAC/3, 50..60Hz	kg/h	4.6	7.3	9.0	14.6	18.0	21.9	27.0	36.2	45.0	54.0	72.4
	kW	3.4	5.5	6.7	10.9	13.5	16.4	20.2	27.2	33.7	40.4	54.4
200VAC/3, 50..60Hz	kg/h	3.9	5.8	7.1	11.6	14.3	17.4	21.5	28.8	35.8	43.0	57.6
	kW	3.0	4.5	5.5	9.0	11.1	13.5	16.7	22.4	27.8	33.4	44.8
240VAC/1, 50..60Hz	kg/h	5.1	8.7	10.3								
	kW	4.0	6.5	8.0								
230VAC/1, 50..60Hz	kg/h	5.1	8.0	10.0								
	kW	4.0	6.0	7.4								
Operating weight empty (per unit)		36	36	37	38	41	43	43	44	84	86	88
Operating weight filled (per unit)		51	51	52	53	71	73	73	74	144	146	148
Number of units		1	1	1	1	1	1	1	1	2	2	2
Dimensions (W x H x D) in mm (per unit)		500 x 1087 x 437				594 x 1087 x 392						
Control voltage		230VAC/1, 50..60Hz										
Control signal		on/off, 0..1VDC, 0..5VDC, 0..10VDC, 1..5VDC, 2..10VDC, 0..20VDC, 0..20mA, 4..20mA, 140Ohm..10kOhm										
Admissible duct air pressure	Pa	-1000 ... 1500										
Water quality		untreated drinking water, softened or fully demineralized water										
Protection		IP 21										
Conformity		SEV,VDE										