

### General description

KMA ULTRAVENT® Tandem is a high-performance filter system for exhaust air purification of dust and oil particles as well as for processing heat recovery from the exhaust air. The KMA ULTRAVENT® Tandem product line, well-proven over many years, essentially consists of 3 main components:

- ▶ Heat recovery system
- ▶ Electrostatic particle filter
- ▶ Integrated cleaning system with wash tank

Additionally, the units are equipped with an inlet hood including a mechanical lint filter and an integrated bypass.

ULTRAVENT® Tandem is available for exhaust air volumes of 15.000 m³/h, 20.000 m³/h or 30.000 m³/h. Each size is available in the following configurations:

- ▶ Air/air heat exchanger & electrostatic particle filter (CC/EE)
- ▶ Air/water heat exchanger & electrostatic particle filter (WW/EE)
- ▶ Combined air/air and air/water heat exchanger & electrostatic particle filter (CCW/EE)

The heat recovery or the electrostatic particle filter part of KMA ULTRAVENT® tandem can also be installed separately, when only one function is required. In this case, the tandem is designed to allow the other component to be retrofitted at a later stage. The housing modules that are in contact with the exhaust air are made out of stainless steel sheet (X5CrNi18/1.4301) and the surfaces are passivated. The unit must be operated in negative pressure and major pressure fluctuations must be avoided to protect the system. Please be aware that surfaces can become hot during operation and cleaning.

### Heat recovery

KMA ULTRAVENT® Tandem integrates powerful heat exchangers for effective recovery of process heat energy from the exhaust air as well as for cooling and condensation during exhaust air purification, depending on the chosen configuration:

- ▶ Air/air cross-flow heat exchanger in modular design, especially for heating up fresh air, available in aluminium or stainless steel
- ▶ Air/water finned-tube heat exchanger for heating of water or solar fluid with fins available in aluminium or stainless steel.

The chosen material of the heat exchangers has impact on heat transfer efficiency. The risk of corrosive substances for aluminium must be clarified in advance by the user. The lane spacing of heat exchangers is especially designed for the automatic cleaning system.

### Electrostatic particle filter

KMA ULTRAVENT® Tandem is equipped with a highly efficient electrostatic particle filter. The KMA UVFF 1350 filter cell offers superior filter technology:

- ▶ Robust collector plates made of aluminum with a stainless steel frame
- ▶ Extra-large ceramic insulators
- ▶ Precision lasered stainless steel profile ionizers

Stainless steel demisters are installed above and below the filter cells, for protection against larger fragments and for de-ionizing.

### Automatic cleaning system (Cleaning in Place)

The automatic cleaning system provides highly efficient cleaning of heat exchangers and filter cells. Surfaces of heat exchangers and filter cells are sprayed with hot wash water. Moving spray bars ensure proper cleaning results in all areas. Deposits are removed, to maintain a constant high heat recovery and particle filtration performance. The wash water is circulated during cleaning. It must be changed as required before the next cleaning. A suitable, non-corrosive cleaning agent with defoamer must be added to the wash water in a suitable dosage. For the best cleaning result, KMA recommends the cleaning agent KMA 822. Dosage of fresh water and detergent is automatic.

In the standard version, the wash water is heated by means of steam, which is provided by the user. Alternatively, the wash water can be heated electrically. Depending on the amount and type of emissions as well as the practiced frequency of automatic cleaning, occasional manual cleaning may be required.

- ▶ Rotating, electrically driven spray bar system and copper piping system
- ▶ Integrated cleaning tank with lint trap sieves and mechanical water filters
- ▶ Automatic dosing of fresh water and cleaning agent
- ▶ Skimmer-device with drain for discharge of floating pollution
- ▶ Separate drain with automatic valve for oil and condensate during filter operation

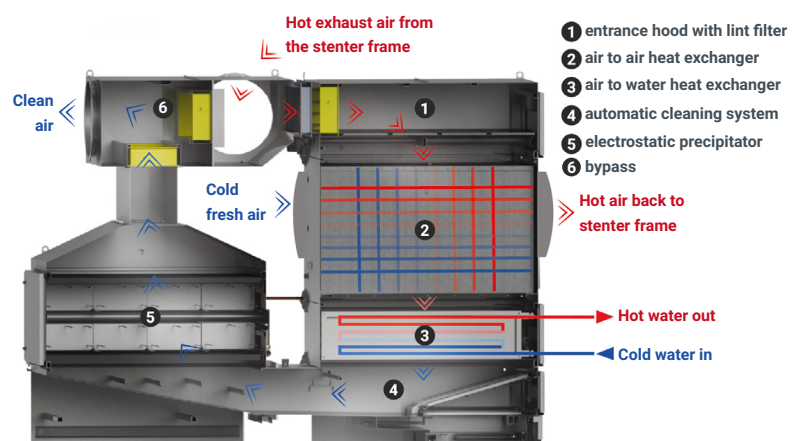
### Inlet Hood with lint filter

A stainless steel wire mesh pre-separator is installed at the inlet of the ULTRAVENT® tandem to prevent lint and fibers in combination with condensed oil from clogging the heat exchangers. The lint filter must be cleaned manually. It is recommended to order a second set directly.

### Integrated Bypass

The integrated bypass ensures that production can continue at the stenter frame during maintenance or cleaning of the system. By switching automatic shutter flaps, the air is either directed into the system or past it.

### Overview of the modular system based on the example of the UV-T 20000:



## Data sheet: KMA Filtration System

### ULTRAVENT® Tandem 30000



#### Automation and sensors

KMA ULTRAVENT® Tandem is delivered with a separate stand control cabinet.

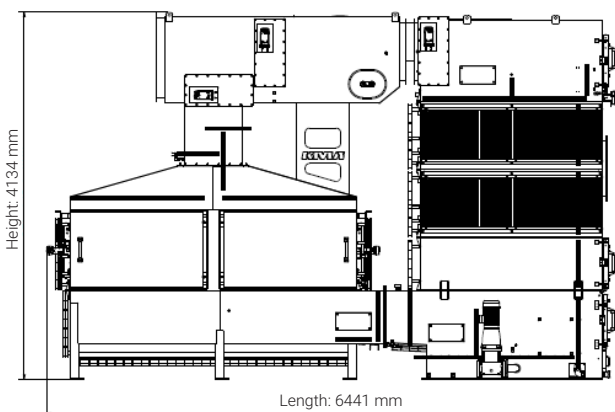
- ▶ Up to 15 m electrical cable from the system to the control cabinet
- ▶ Control panel in the control cabinet door (remote control optional)
- ▶ Remote access via router
- ▶ Integrated air conditioning unit for the control cabinet
- ▶ Material: Sheet steel, painted RAL7035 light grey

All functions are automated with a Siemens PLC S7 series incl. 7" touch display and Ethernet/Profinet interface. The colour display offers convenient functions for permanent filter monitoring, logging, operating assistance, and diagnostics. Operating and fault messages are shown as symbols or in plain text on the display. The PLC controls of the CIP cleaning system enable convenient programming of cleaning times, cleaning temperatures and many other parameters. The PLC control enables interfaces, for example to a central control system (CCS) or remote monitoring.

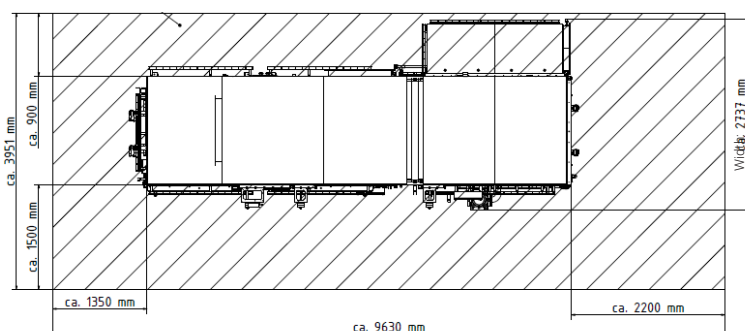
KMA ULTRAVENT® Tandem is equipped with various temperature sensors to monitor temperatures of waste air, fresh air or circulating fluids. In the event of excess temperatures, the system is automatically switched to bypass operation. In this case, steam can be fed into the system via automatic valves, which is provided by the user. In addition, sensors measure the pressure conditions in the system, especially to monitor the passage of the lint filters and heat exchangers.

#### Dimension sheet

##### Side view



##### Top view with marking of maintenance area



#### Dimensions & Weight

Filter model	Length	Width	Height	Weight
UV-T 30000CC/EE	6500mm	2800mm	4400mm	6100 kg
UV-T 30000CCW/EE	6500mm	2800mm	4200mm	6000 kg
UV-T 30000WW/EE	6500mm	2800mm	3600 mm	5900 kg

Attention: Please observe the maintenance area around the filter unit.

For the cleaning of the lint filters, a (mobile) access platform must be provided on site.

#### Technical data, power consumption & additional options

ULTRAVENT ® Tandem	30000
Precipitator cells (Typ: UVFF 1350 A)	1,0 kW
Control cabinet/Cooling unit	1 kW
Fresh air temperature requirements	10-30°C
Water quality requirements for heat recovery	total hardness ~ 0 ° dH
Main connection:	3P+N+PE 400 V 50 Hz
Cleaning system	
Standard Cleaning	8 kWh * + 26 kWh**
Cleaning with electrical heating (option)	8 kWh* + 40 kWh**
Heating elements in case of electrical heating	4 x 9 kW
Total capacity [liter]/[gal]	310/81
Fresh water [inch]	G 1" / 4 - 6 bar, < 7 °dH
Waste water [inch]	G 2"
Required steam connection	0,5 bar (g) 50 kg/h
Item number	Additional options
128784	Pump group for transfer liquids, incl. expansion vessel
131265	Plate heat exchanger/water with automatic water flow valve
135291	standard supply air fan
132187	frequency converter for supply air fan
135297	standard cooling fan
138058	frequency converter for cooling fan
140114	19" Panel in exchange to the 7" panel
140589	Electrical heating unit for cip washing system (instead of steam heating)
140117	Waste water pump for floor installation
140112	Deviating network configuration
135767	2nd set lint filter
140113	additional HDMI for remote control

Other special designs require individual enquiry.

\*Consumption of the washing water pump during cleaning

\*\*Consumption of the heating to heat the wash water

