

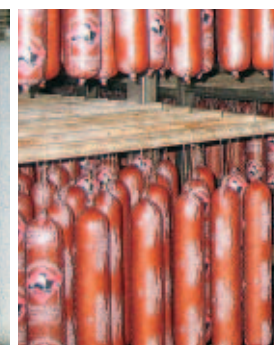
Air-conditioned chambers MAUTING



Smoke ripening chambers KMZ

Maturing chambers KMD

Defrosting chambers KMR



Air-conditioned chambers MAUTING

- ❖ **MAUTING air-conditioned chambers provide for optimal flow, speed, direction and exchange of circulatory air, which ensure uniform temperature and humidity distribution in the whole area of the room.**
- ❖ They are designed for technological process for thermally non-processed fermented products.
- ❖ They are suitable for fermented products with starting culture.
- ❖ They are convenient for technology with GDL or classic production of salamis, sausages, ham and smoked meat.
- ❖ A central fan ensures optimal and uniform air-flow in all places of the room.
- ❖ System of inlet ducts with jets for air inlet and exhaust ducts provides for uniform air-flow in the whole chamber.
- ❖ System of changing flaps of circulatory air supports perfect and uniform drying of all products.
- ❖ Regulation of circulatory air with use of fresh air, enthalpy and regulation according to the absolute humidity enables to reduce the energy consumption by c. 30%.

Division of air-conditioned chambers:

Smoke ripening chambers KMZ

– are designed mostly for the first phase of fermentation of thermally non-processed meat products.

- The first phase of fermentation, start of fermentation
- Smoking by cold smoke
- Maturing
- Intensive drying.

Operative temperature range is 18 ÷ 30 °C at regulated humidity in the range of 65 ÷ 95%. Standard dehumidifying output of the equipment is up to 3% / 24 hours at the chamber temperature of 18°C and relative humidity of 75%. Smoke generation can be carried out either in the wooden chip or friction smoke generator according to the client's requirement.

Maturing chambers KMD

– are designed for the second phase of fermentation of thermally non-processed products or drying of thermally processed products. They can be equipped with smoke generators for creation of smoke aroma at products.

- The second phase of fermentation
- Drying
- Storage of sausages, ham, speck, meat, etc.

Standard operative temperature range is 15 ÷ 22 °C at regulated humidity in the range of 65 ÷ 90%. Dehumidifying output of the equipment is 1-1,5% / 24 hours on the average according to the type of the product, casing and production technology related to the temperature of 15 °C and relative humidity of 70%. The Cross Flow system allows the dehumidification up to 2,5% / 24 hours.



KMZ 20 – DAF 2



KMD 256 – Classic



KMD 90.E – CrossFlow



2 x KMZ 12 – DAF 1



KMD 256 – Classic



2 x KMZ 12 – DAF 1



2 x KMZ 20 – DAF 2



KMD 60 – Classic



KMD 60 – Classic



KMD 40 – Classic



6 x KMD 84



KMD 98 – Classic



KMD 120 – Central

Energy saving principle:

Absolute humidity:

Relative humidity is a value dependant on the temperature. At existing volume of water vapours in the air the relative humidity increases with the falling temperature and vice versa. If the chamber is regulated classically, i.e. according to the relative humidity, the humidity regulator is to respond at each temperature change as the relative humidity changes.

Regulation of parameters in the Mauting equipment proceeds on the basis of the absolute humidity. The absolute humidity is a value, which is not dependant on the temperature. Then the regulator controls two on each other independent variables – temperature and humidity. Thus redundant interventions of the regulator are prevented and that by itself – in comparison with the classical regulation according to the relative humidity – means operational energy savings on heating and cooling by 10 – 20% depending on a running program. Relative humidity, which is calculated from temperature and absolute humidity, is displayed and set on the control panel.

Utilization of external air energy:

Mauting chambers can be fitted with the system of external air energy utilization. The regulator can operate either with fresh air only without use of a cooler or it can modify the external air by means of a cooler.

On right conditions inside and outside the chamber the regulator analyzes that it is preferable to keep entered parameters in the chamber by means of the external fresh air and sets the chamber to the proper mode.

Chambers can be equipped with the following types of an evaluation process:

- **On the basis of the temperature:** the regulator analyzes external air temperature, a difference between the required chamber temperature and external air temperature.
- **On the basis of external air enthalpy:** the external air enthalpy is measured and on the basis of its result the regulator calculates the necessary output for heating and cooling in case of external air use and compares it with outputs needed for only the chamber air treatment.
- **On the basis of real costs:** the attendance enters the real energy price for heating and cooling (if it is known) and the regulator switches the chamber into the mode with minimal operating costs.

Utilizing this system the energy consumption in the chamber changes in dependence on outdoor conditions. In the summertime the fresh air consumption is limited to a minimum and the regulator operates only with the chamber air. In springtime and in autumn the fresh air is used in a limited amount so that the energy consumption demands are reduced and in wintertime the need of cooling is more or less zero. **The total energy consumption savings foots up to 60%.**

Air-conditioned chambers are equipped with:

- A technology made of stainless steel. It can be placed behind or above the chamber.
- As for ripening chambers it can be located also inside the chamber.
- A circulatory fan made of stainless steel with a stepless speed control.
- Electric, warm-water or steam air heating.
- Air cooler – medium: ammonia, freon, glycol.
- A water drop separator made of stainless steel.
- Air inlet ducts fitted with jets – made of stainless steel.
- Air outlet ducts from the chamber to the technology made of stainless steel.
- Changing flaps in air inlet piping, which change cyclically amount of incoming air to the ducts from the left and right side.
- Flaps are driven by an electromotor.
- At the CrossFlow system there are changing flaps reversing the air-flow top down and bottom-up.
- At the DAF system there are changing flaps changing the air-flow direction to the chamber horizontally and vertically and air exhaust from the chamber by ducts placed above, eventually below, alongside the chamber walls.
- Regulated fresh air inlet.
- Air recirculation flaps.
- Chamber temperature and humidity sensors.
- Conditioned air temperature and humidity sensors.
- External air temperature sensors with fresh air automatics.
- Foam cleaning system.
- Control system regulating and controlling automatically the whole process according to the set parameters.



KMD 150 – CrossFlow



KMD 150 – CrossFlow

Defrosting chambers KMR

- Are designed for defrosting of frozen meat blocks, fish end poultry before their next processing.
- Are designed in the same way as ripening chambers.
- The defrosting process is carried out according to the program regulating the circulatory air temperature, amount and humidity.
- The defrosting process is carried out according to the program so, that the **raw material deterioration** by a temperature difference between the core and the surface of the raw material, is **prevented**.
- The defrosting process minimizes microbiological raw materials contamination.



KMR – Classic



KMR 16 – Central



KMD 150 – CrossFlow

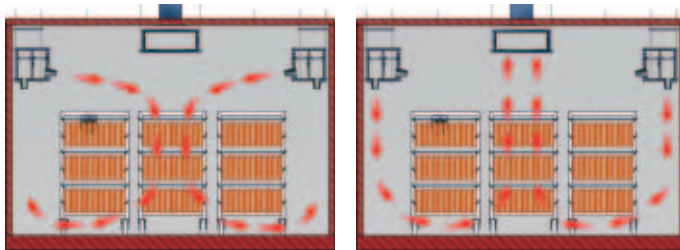
Air-flow systems:

Various type of air-flow in the chamber can be used according to the construction solution:

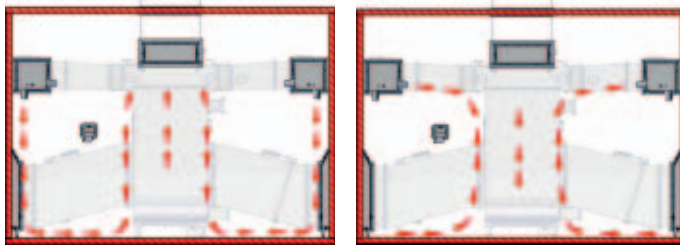
1. DAF and CrossFlow ensure the perfect uniform drying in all spots of the room and guarantee the maximal possible dehumidification without decrease in the product quality. The system enables to modify arbitrarily an amount of air blown from above or from below so that the fastest possible product drying to the required water activity with a limited risk of the dry rim at the product is ensured.

2. DAF system (Dual Air Flow system) – circulatory air entering the chamber is cyclically led in the horizontal direction above trolleys and in the vertical direction alongside the chamber walls. The amount of the air from the left and right side is continually changed from 30% to 70%.

❖ **DAF 1 system** – air is sucked from the chamber by the ducts placed above the trolleys.



❖ **DAF 2 system** – air is sucked from the chamber cyclically by the ducts placed above the trolleys and alongside the chamber walls.



Recommended usage:

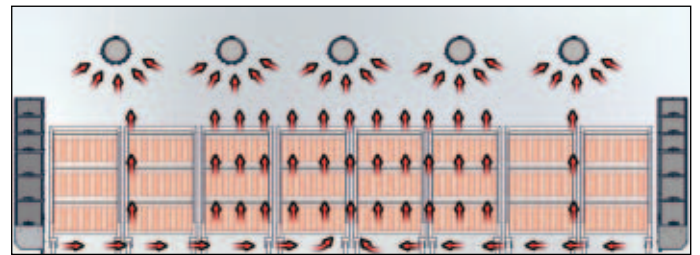
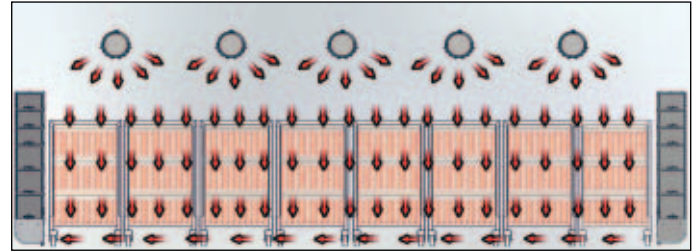
- KMZ smoke ripening chambers for the first phase of fermentation.
- KMD maturing chambers for drying and maturing.
- For fermented products with high dehumidification.
- For products placing a special stress on fast and uniform processing.
- DAF 1 is designed for KMZ equipment having up to 2 rows and KMD equipment up to 7 rows.
- DAF 2 is designed for KMZ equipment up to 4 rows.



KMD 60 – DAF 1

3. Patented CrossFlow system – circulatory air is taken to the chamber cyclically by ducts placed above trolleys and is sucked out by ducts placed alongside chamber walls and according to the program the air-flow is reversed and taken from below upwards and sucked out by ducts above the trolleys.

CrossFlow system enables the fastest possible drying of the product to the required water activity with a limited risk of the dry rim at the product.



Recommended usage:

- KMD Maturing chambers for drying and maturing.
- For maturing of fermented products with high dehumidification.
- For drying and maturing of thermally processed products with high dehumidification.
- For products placing a special stress on fast and uniform processing.
- For large KMD equipment.



KMZ 18 – DAF 2

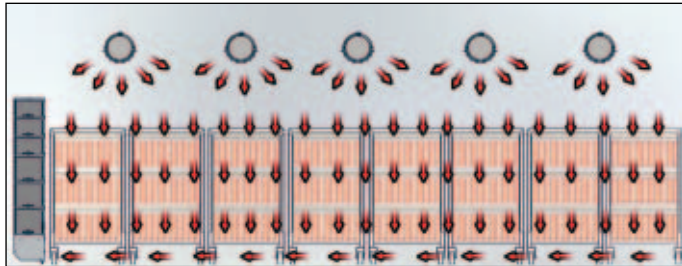


KMZ 20 – DAF 2



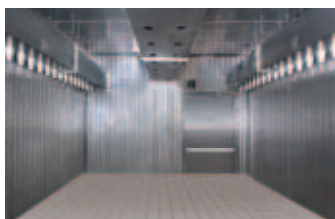
KMD 84 CrossFlow

4. EquiFlow system – circulatory air is taken to the chamber from above by the ducts placed above trolleys and is sucked out by one or two ducts placed alongside chamber walls.



Recommended usage:

- For final drying and maturing of standard fermented products.
- For final drying of fermented products which had the first phase of fermentation carried out in the KMZ Classics equipment.

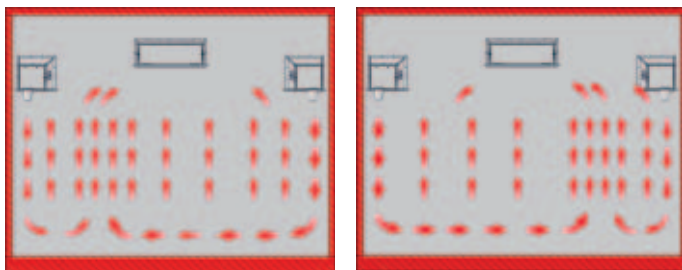


KMZ 21 – Classic



KMD 84 – Classic

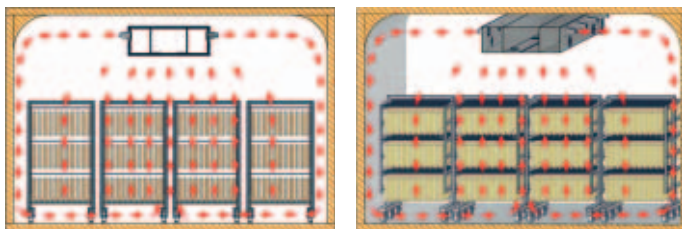
5. Classic system – Circulatory air is taken to the chamber vertically by ducts placed alongside chamber walls and sucked out by ducts placed above trolleys. The amount of the air from the left and right side is cyclically changed from 30% to 70%.



Recommended usage:

- For KMZ equipment with the dehumidification requirement maximally up to 3%/24hours and maximally for 2 rows of trolleys.
- For standard fermented products with dehumidification requirement up to 1,5% in the KMD equipment.
- For KMR defrosting chambers.

6. Central system – Circulatory air is distributed by central three-chambered duct placed above trolleys. The central chamber of the duct serves for the air sucking out from the chamber, side chambers of the duct serve for horizontal distribution of air to the chamber.



Recommended usage:

- For standard maturing of fermented products and drying of thermally processed products in KMD equipment.
- For products with relatively low dehumidification requirement.
- An option of usage to atypical rooms with irregular shapes, columns, etc.
- For KMR defrosting chambers.

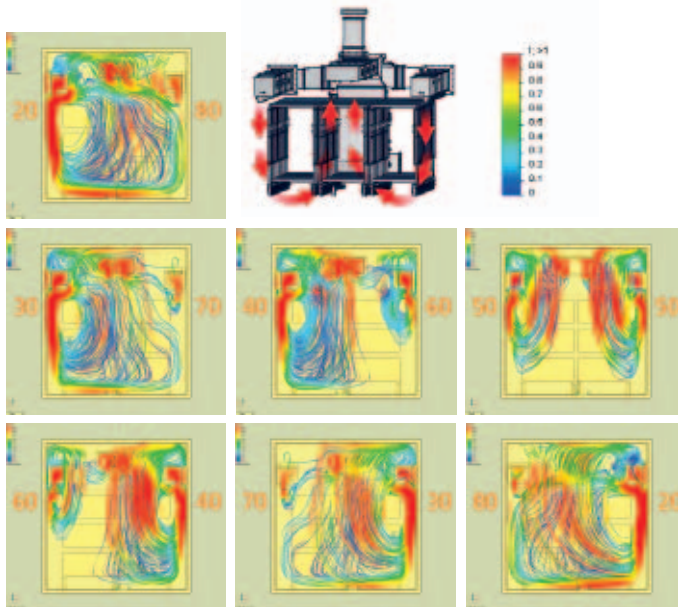


KMD 100 – Classic



KMD 220 – Classic

TRAJECTORIES – Air flow



SMOKE GENERATOR



Friction smoke generator – HORIZONTAL



Friction smoke generator FVK – VERTICAL



Smoke generator VK 02



Smoke generator VK 03

Microprocessor control system

Serves for automatic control of:
KMZ smoke ripening chambers
KMD maturing chambers
KMR defrosting chambers

Based on the client's requirement the equipment can be delivered with the following regulator:

- MAUTING M2015, MAUTING M2016
- Programmable automat (PLC) PP 420 with TouchScreen.

Control systems MAUTING M2015, MAUTING M2016 and PP 420:

- Regulate chamber temperature and relative humidity.
- Regulate and operate smoke generators, control the process of automatic chamber washing and the fan speed.
- Monitor chamber temperature, product core temperature and smoke generator temperature.
- Operate additional facilities.

The display of the regulator MAUTING M2015, MAUTING M2016 indicates:

- Real and required values of chamber temperature, product core temperature and relative humidity.
- Time of a running step, respectively the time remaining to the termination of the set step.
- A product name and a name of the running program step.
- The regulator allows to load 99 programs, each containing up to 20 steps (phases).
- Resistance sensors Pt 100 are connected to the regulator inputs for measuring of chamber temperature and relative humidity, product core temperature and smoke temperature in the piping behind the smoke generator.
- The relays numbering from 32 to 40, according to the type of the regulator, form the regulator outputs. They are used either as regulating elements or for program control of actuating units of the air-conditioned chamber.
- Standardly the regulator is fitted with Ethernet connection for PC for sake of the process data collection and processing.

VisuNet, MautingNet – software for data collection and diagnostics – the program is designed for collection, loading, identification, retrieval, print and back-up of data and information on the course of the thermal process carried out in the chamber and the control unit program settings.

The program consists of two parts:

- **Data collection program** – collects data from control units of air-conditioned chambers or defrosting chambers and records them into tables running on the Windows background.
- **Diagnostics and configuration change program** – enables to perform diagnostics and service of regulators.

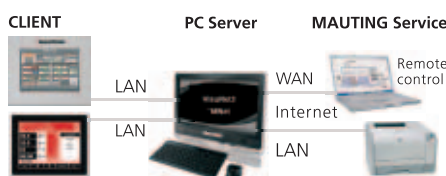
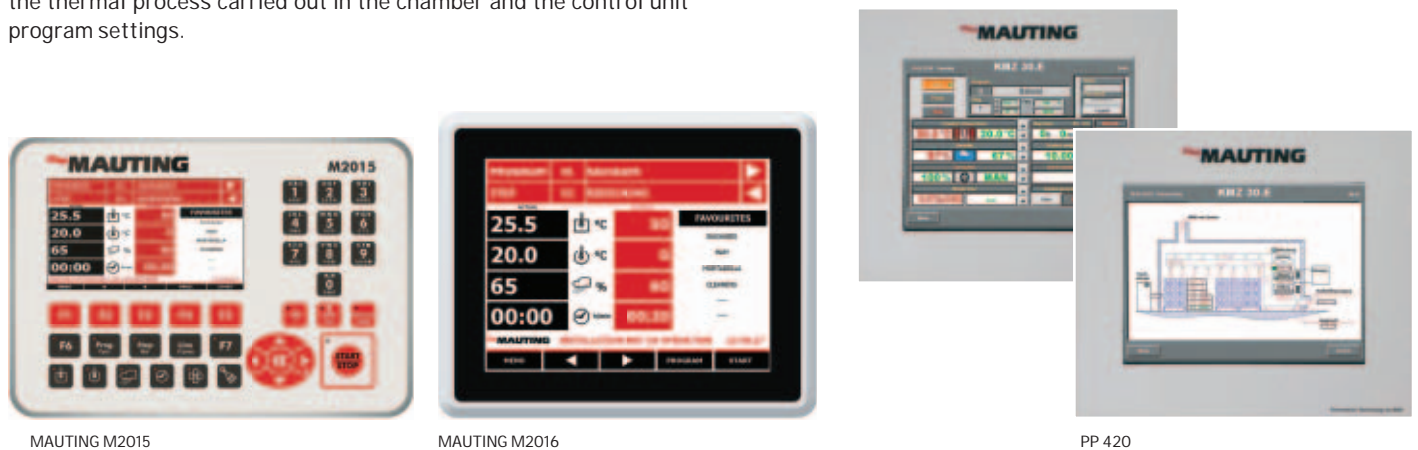
Programmable automat PP 420 (PLC) serves for monitoring, control and visualization of technological processes in the chamber. The process control proceeds according to the absolute humidity principle. It provides filing of technological process data. The display and control panel with the 10,4" touch-screen is a part of PLC. All the values and data necessary for control and setting of parameters of the control unit are displayed on the touch-screen. The control is carried out by means of buttons showing used symbols. The control unit can hold up to **100 programs**. Each program has a unique name. The required chamber temperature, humidity, fan speed and the step length can be programmed in every single step. The values are together with real values displayed on the control unit screen. Text information is provided to the user to be **informed on a program name, a program step, an error message and other information. Values are entered through the touchscreen.**

The control unit enables connection of resistance sensors Pt 100 for chamber temperature and humidity measurement and additional temperature measurement.

The Ethernet interface allows data transfer between the control panel and the PC with a printer. It also provides connection of more regulators to the central system on the network to monitor temperature records, humidity curves and course of individual procedures, which guarantees the quality control of all products processed in the equipment.

The control unit provides for setting in several world languages, the system setting according to the type of the controlled chamber, **writing and editing of production programs, failure state management, remote control via the LAN-net or the Internet** and thus to adjust the environment to the user.

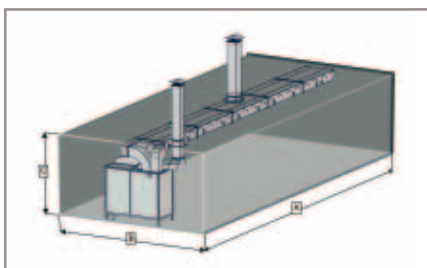
The second component of HW is a unit enabling connection of PLC with the regulated system-chamber. This unit contains analogue and digital inputs and outputs.



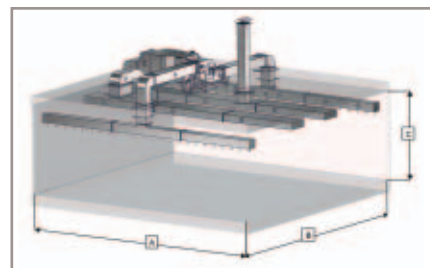
Technical data

KMD / KMR

No. of trolleys	(A)	(B)	(C)
2 x 5 = 10	5 350	2 700	2 700 - 2 900
3 x 6 = 18	6 400	3 800	2 700 - 2 900
4 x 7 = 28	7 450	5 000	2 700 - 2 900
5 x 8 = 40	8 500	6 000	2 900 - 3 000
6 x 9 = 54	9 600	7 150	2 900 - 3 000
7 x 10 = 70	10 600	8 200	2 900 - 3 000
8 x 20 = 160	21 300	9 300	3 000 - 3 100
9 x 25 = 225	26 600	10 400	3 000 - 3 100



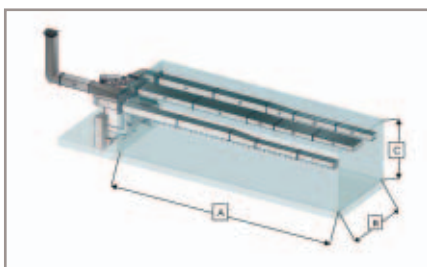
KMD – Central (Technology inside)



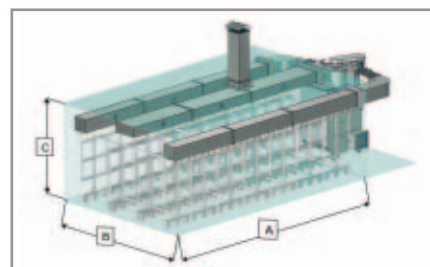
KMD – Classic (Technology on the Top)

KMZ

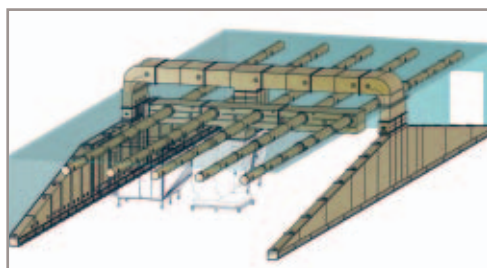
No. of trolleys	(A)	(B)	(C)
2 x 4 = 8	4 350	3 000	2 900 - 3 000
2 x 8 = 16	8 500	3 100	2 900 - 3 000
3 x 6 = 18	6 400	4 100	2 900 - 3 000
3 x 7 = 21	7 450	4 100	2 900 - 3 000
3 x 8 = 24	8 500	4 100	2 900 - 3 000
3 x 10 = 30	10 600	4 100	2 900 - 3 000
4 x 10 = 40	10 600	5 200	2 900 - 3 000
4 x 12 = 48	12 800	5 200	2 900 - 3 000



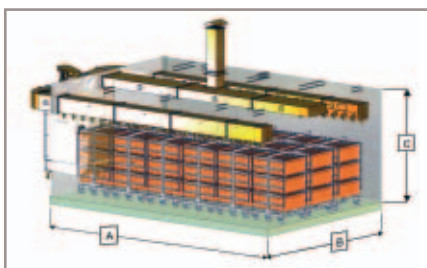
KMZ – Classic (Rear Technology)



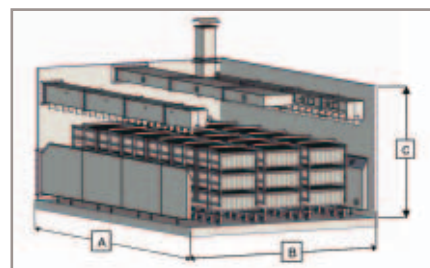
KMZ – Classic (Rear Technology)



KMD – CrossFlow (Technology inside)



KMZ – DAF 1 (Rear Technology)



KMZ – DAF 2 (Rear Technology)

MAUTING produced

	Smoking chambers UKM Classic		Smoking chambers UKM Central		Smoking chambers UKMH Horizontal		Chilling chambers ZKM
	Smoking chambers UKM Compact		Baking chambers PKM Roto		Smoking chambers UKM Junior		Cooking Kettles
	KMU Mini universal air conditioned mini chamber		Lifting device PMM		Automated transfer and warehouse management system		Slaughter houses
							Deboning lines

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