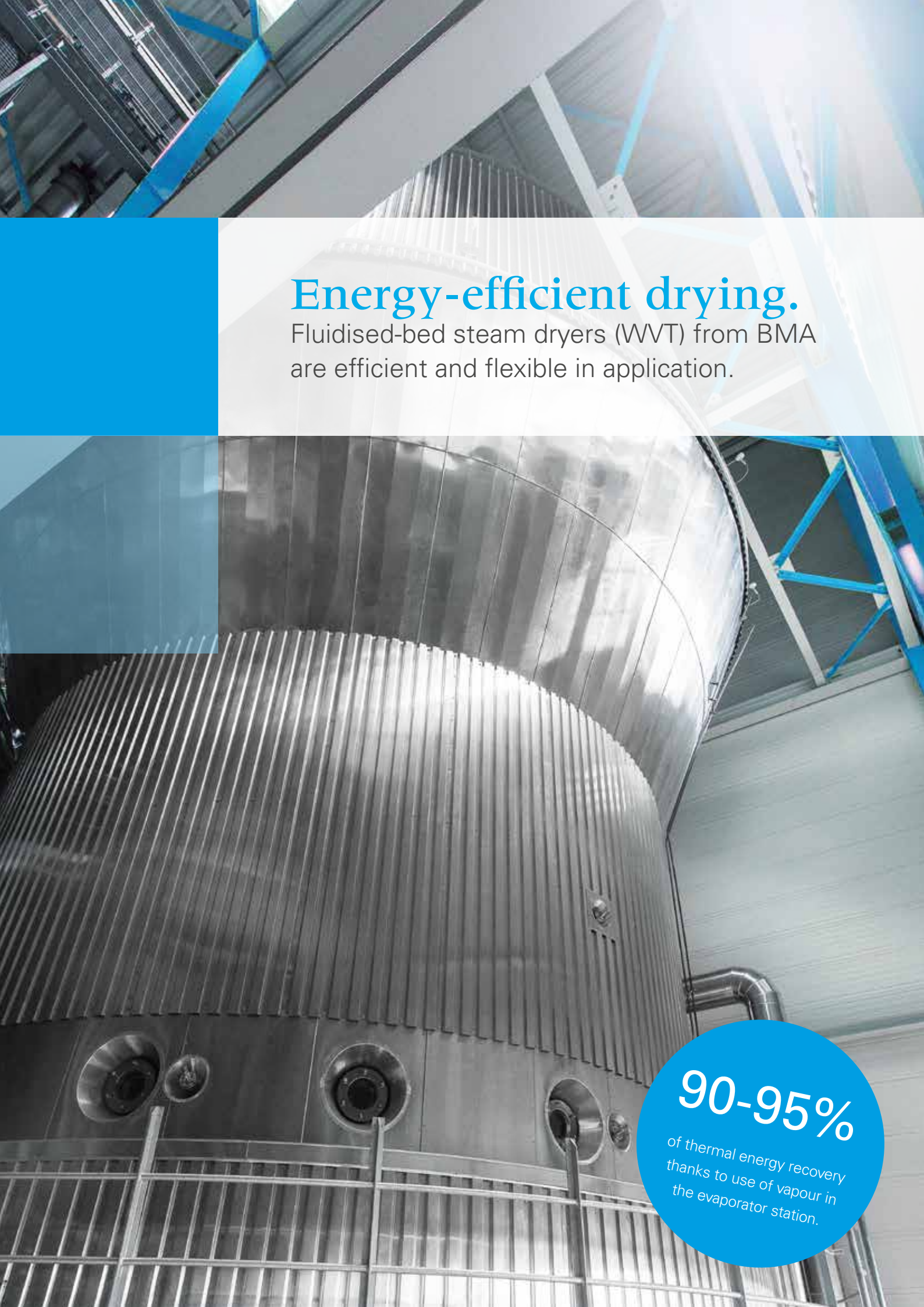
Energy-efficient drying.

Fluidised-bed steam dryers (WVT) from BMA are efficient and flexible in application.



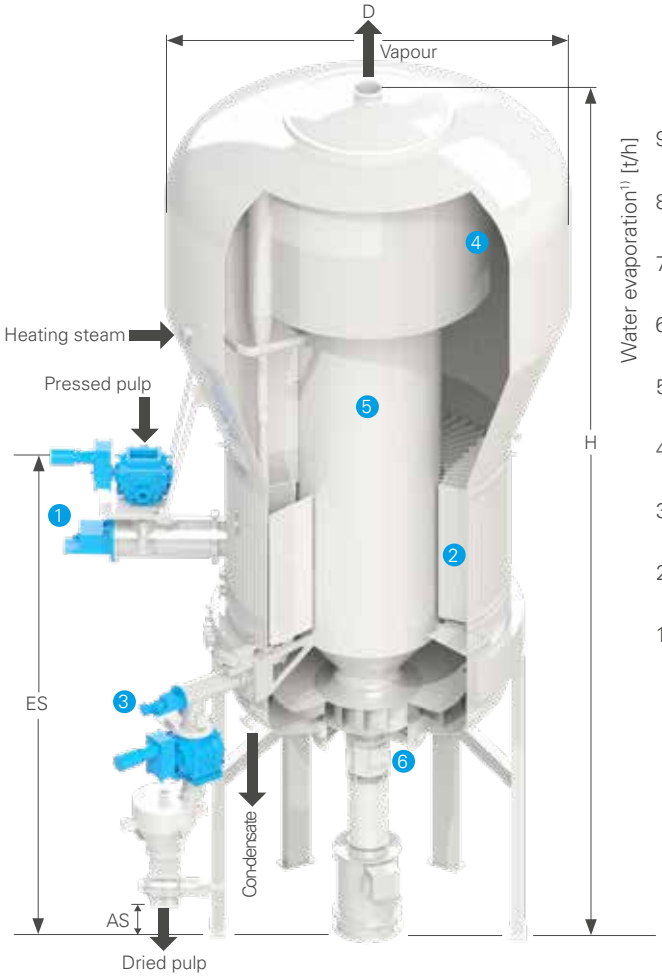
90-95%

of thermal energy recovery thanks to use of vapour in the evaporator station.

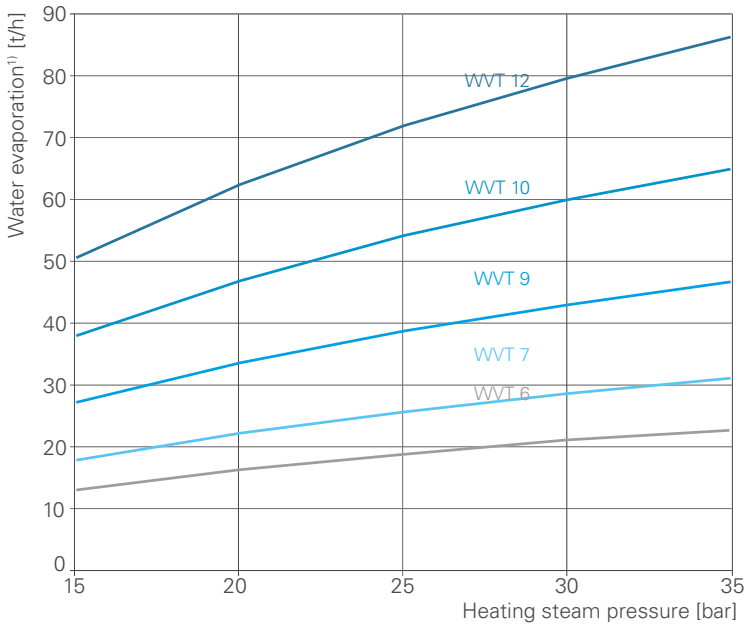
Performance in brief.
Facts and figures about the WVT from BMA.

Pressschnitzel

Fluidised-bed steam dryers (WVT) from BMA are fully enclosed pressure vessels with a circular footprint. They can be partly or fully integrated into a factory building. With our updated size range, we can offer a portfolio of WVT that are tailored to the beet processing rates of today's sugar factories. What affects the water evaporation rate most is the level of heating steam pressure available. The technical design of our standard sizes can to some extent be tailored to special operator requirements.



Impressive water evaporation rates[1)]



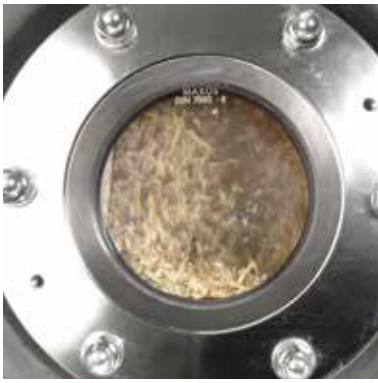
1) Subject to product configuration. Actual water evaporation rates will depend on specific site conditions.

Variety of sizes

Approx. dimensions[1)] in mm	WVT6	WVT7	WVT9	WVT10	WVT12
Cylinder diameter (D)	6,500	7,500	9,000	10,500	12,000
Overall height (H)	19,500	20,500	23,500	25,000	32,500
Connection height (DL[2)])	3,500	3,500	3,000	2,000	2,000
Connection height (FL[3)])	10,500	11,000	12,000	13,500	15,000

1) Determined by the infrastructure on site; without insulation; exact dimensions when order is placed.
2) Discharge lock
3) Feed lock

Optimised for a factory's energy balance.
Fluidised-bed steam dryers.

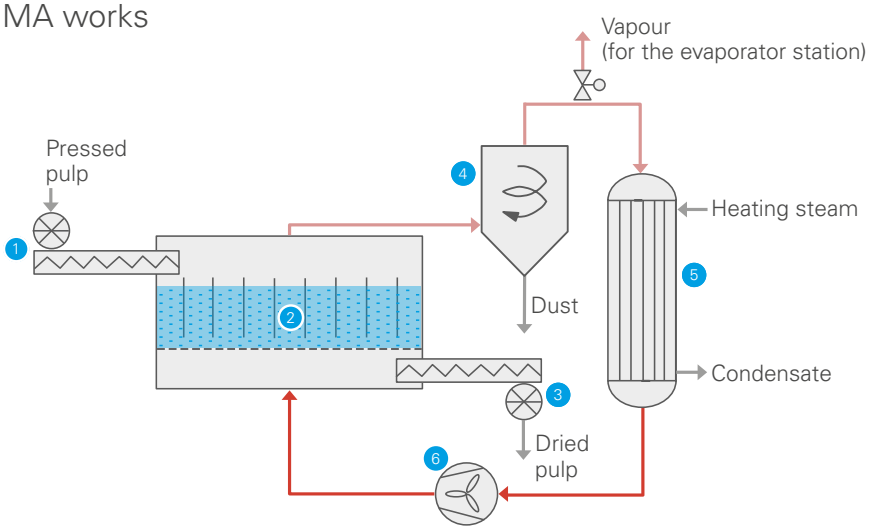


Fluidised bed

Fluidised-bed steam dryers (WVT) from BMA dry the pressed pulp produced in beet sugar factories to obtain a dry substance content of about 90 %. Use of a WVT can also make ecological sense with other types of biomass.

The elements needed for the technological process in a WVT are neatly arranged in the compactly designed dryer. A fluidised bed of pulp forms around the heat exchanger 5, which is positioned centrally in the circular space and supplies the heat required for evaporation. A fan 6 below the heat exchanger generates the necessary circulation flow of the steam, which then flows upwards through a distribution plate into the fluidised bed. This is divided into several connected cells 2. The pressed pulp is fed into the first cells by the product feed system 1. It then passes through the remaining cells right up to the penultimate cell in a fluidised state. The last cell serves to receive the dried pressed pulp and dust from the rotary separator 4. From there, they are discharged directly into the expansion cyclone via a discharge screw and lock. The dust contained in the circulation steam is separated in the top section of the WVT in the centrifugal force field of a rotary separator 4, with the flow coming from below. The circulation steam, now almost dust-free, then flows into the heat exchanger, where it is heated with high-pressure steam. Next, the fan 6 aspirates this superheated circulation steam, passing it once more through the distribution plate into the fluidised bed. Here, its thermal energy is transferred to the pressed pulp, evaporating the water it contains. Additional heating surfaces feed more energy into the fluidised bed. The evaporated water is continuously discharged 3 from the WVT in the form of vapour and reused as a heating medium in the evaporator station.

Highly effective: how a WVT from BMA works



1 Input
2 Cells and fluidised bed
3 Discharge
4 Dust separator[1)]
5 Heat exchanger
6 Fan
Media
Steam/vapour circulation

1) Dust separator with inlet openings exclusively in the lower part.

Bringing out the best.
The benefits at a glance.

With a fluidised-bed steam dryer (WVT), pressed pulp drying can form part of the combined heating system of a sugar factory. A major difference to conventional high or low-temperature drying is that all of the thermal energy used as heating steam can be reused after drying in the evaporator station, in the form of drying vapour.

Process engineering benefits

- High fluidisation rates already in the first cell thanks to product conditioning (heating and segregation) before pulp enters the fluidised bed.
- Large input area results in a stable fluidised bed.
- Minimum steam losses during product feeding and discharge thanks to lock technology from BMA.
- Optimum filling level and excellent performance of the WVT thanks to the controlled rotary weir.
- Integrated, highly effective dust separator for circulation vapour, with inlet openings exclusively in the lower part.
- Improved, highly efficient fan.
- Drying in an inert steam atmosphere minimises oxidation and combustion of pressed pulp.
- Thanks to the gentle drying process, the nutrients in the pressed pulp are largely preserved.

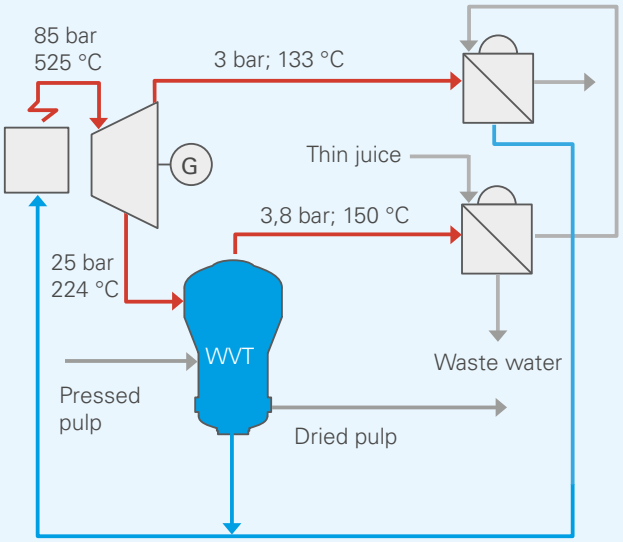
High availability and small footprint

- Plug protection sensory system and combined automation system to prevent blockages of the distribution plate.
- Improved distribution plate permits quick restarting of the WVT and fluidisation of pressed pulp even after prolonged downtimes (power cuts). This prevents manual discharging and even longer downtimes.
- Vertical design of the WVT gives it a smaller footprint than conventional dryers.

Minimised CO_2 emissions

- Energy recovery through vapour use reduces the need for primary energy compared to conventional drying methods.

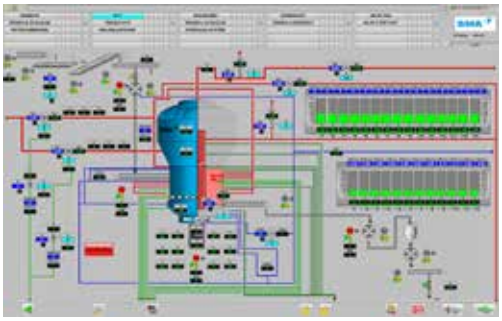
Example of a WVT integration into a sugar factory



Feed lock

Plants and automation technology: everything you need from BMA Group

Even the best plants cannot be exploited to their full potential without perfectly tuned control systems and process automation technology. This is where BMA Automation steps in, with a combination of engineering know-how that stands out in the industry. How you benefit: the package we offer comprises process steps and finely tuned solutions for measuring and control systems.



BMA Group: from the first consultation to the finishing touches.

Whether you require assistance with plant design, traditional mechanical engineering, automation technology or post-installation service – with BMA, your project could not be in better hands. Right from the start. Together we develop the perfect solution for your requirements, assisting you from the first concept until the final bolt is in place and pulp drying is running at full speed. And throughout the life cycle of your plant.

1 CONSULTING

2 PLANNING

3 MANUFACTURE

4 COMMISSINING

5 MAINTENANCE

6 OPTIMISATION

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BMA – Passion for Progress

For over 160 years, BMA has been developing and manufacturing machinery and equipment for industrial-scale sugar production. BMA system solutions for sugar factories and refineries are in demand wherever minimum energy consumption and consistently high product quality are top priorities. With a more than 800-strong workforce around the globe and in-depth knowledge of process engineering, BMA has an exceptional service profile in the sugar industry.

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Subject to technical modifications 0/2020 00