

TECHNICAL BROCHURE · TOASTERS

DC toasters

Equipment for solvent removal, drying and cooling of meal — a "Schumacher"-type design with counter-current steam and meal flow.

**25–40%**

solvent and moisture in defatted meal at inlet

Counter-flow

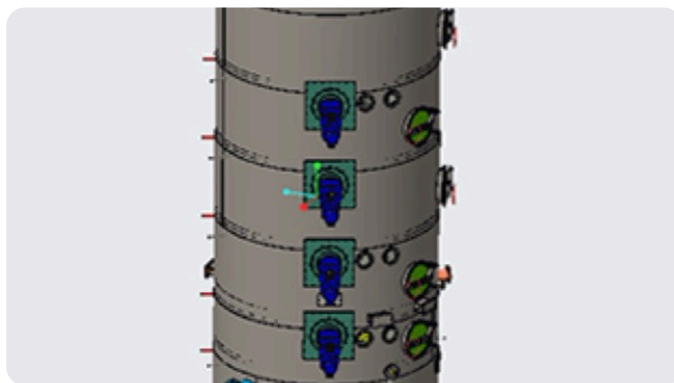
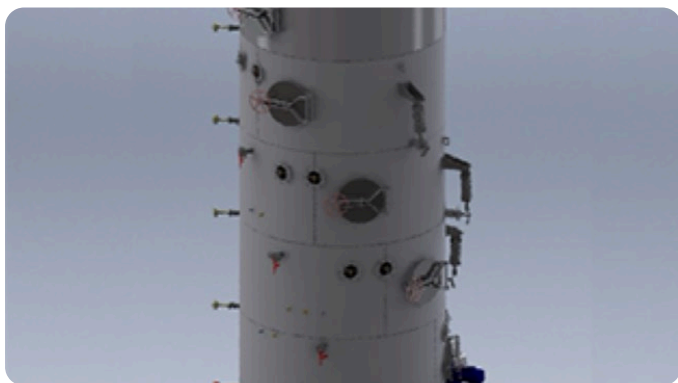
steam vs. meal — minimal solvent loss

VFD

frequency-controlled drive

The D.ENERGY toaster is high-quality equipment that meets modern manufacturing requirements. It is a must-have for extraction shops producing oil and is intended for solvent removal, drying and cooling of meal.

Meal defatted in the extractor may contain 25 to 40% solvent and water. The solvent is bound in the meal in the form of miscella and is removed by distillation. Solvent is stripped from the meal in vat evaporators (toasters), where the meal is treated with live steam under agitation.



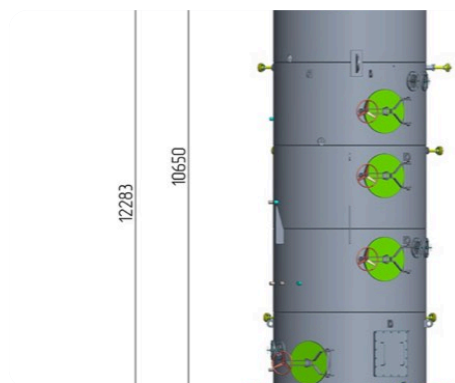
Design and operating principle

The toaster is a vertical column of several compartments (vats) whose walls are heated by steam. The vats are mounted one above another and made of low-carbon steel. They are fitted with inspection windows, inspection doors with sealing lining and connections for instruments. Each vat has a rectangular opening through which the meal passes from one compartment to the next.

Meal enters the top of the toaster and goes into the steam-heated pre-distillation vats, where agitators spread it evenly. It passes from vat to vat through dedicated openings. The upper vats are called pre-distillation vats

because the heat of the heated vat bottoms is used to strip hexane vapor from the meal without moistening it. The main (middle) vats heat with both indirect (jacket) steam and direct contact with live steam to remove most of the solvent and give the meal the moisture needed for toasting. A slight rise in moisture combined with temperature gives the meal the required nutritional characteristics.

Each vat has spacer tubes for vapor to pass from one vat to the next. The number and position of these openings are precisely calculated for optimal vapor-to-meal contact. Vapors move counter-current to the meal. Meal levels in these vats are controlled by gravity flow, which carries the meal down the unit. The live-steam vat has a special sluice gate with an adjustable-speed drive to maintain the required level.



Meal movement is regulated automatically (rotary valve, gate valve). The control valves allow the meal level in each vat to be changed during continuous operation without stopping the equipment. Each vat has one or more agitators turned by a common shaft that runs through the whole toaster. Product temperature can be adjusted manually or by an automatic control system.

The toaster motor is controlled by a frequency converter, which delivers the highest meal quality and reduces the load on the plant's power network. The shaft carries a speed sensor. The delivery set includes a sealed gate at the product inlet that, in an emergency, prevents hexane vapor from passing from the extractor to the toaster or live steam from the toaster to the extractor. A KROHNE rotameter monitors the hexane supply.

Automation

- Camozzi pneumatic equipment;
- YTC position transmitters;
- Pepperl+Fuchs level alarms in the vats;
- frequency control of the agitator drive;
- KROHNE rotameter for the hexane supply.

Features and benefits of the "Schumacher" toaster by D.ENERGY

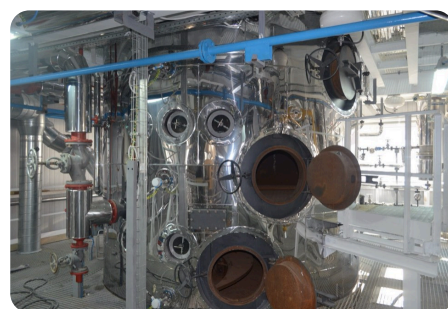
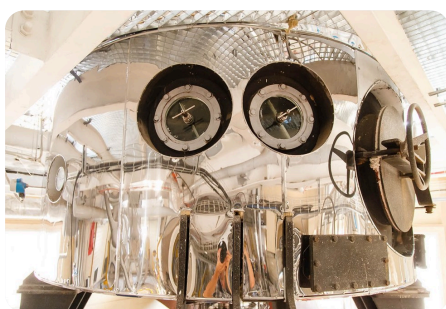
- Product level can be adjusted in every vat using level indicators.
- High tightness thanks to a rotary valve in the live-steam vat.
- A rotary valve in the meal-cooling vat provides product level control.
- The vat bottoms are designed for the passage of the vapor-gas mixture with high efficiency.
- Solvent losses are reduced by a unique counter-current flow and by innovations in the direction of steam and meal flows throughout the unit.
- A high degree of safety is achieved by stabilizing the meal temperature in the lower vats.

- Automatic level control and special transfer valves and sluice gates with frequency speed control ensure efficient operation.
- Low energy consumption per ton of product.
- Highly wear-resistant equipment that meets all modern manufacturing requirements.

DC toaster size range **18**

Model	Vats, pcs	Inner Ø, mm	Column height, mm	Internal volume, m ³
DC.155	5	1500	6800	12.0105
DC.156	6	1500	8000	14.13
DC.157	7	1500	9000	15.89625
DC.158	8	1500	10200	18.01575
DC.159	9	1500	11400	20.13525
DC.150	10	1500	12600	22.25475
DC.151	11	1500	13800	24.37425
DC.152	12	1500	15000	26.49375
DC.153	13	1500	16200	28.61325
DC.205	5	2000	6800	21.352
DC.206	6	2000	8000	25.12
DC.207	7	2000	9000	28.26
DC.208	8	2000	10200	32.028
DC.209	9	2000	11400	35.796
DC.200	10	2000	12600	39.564
DC.201	11	2000	13800	43.332
DC.202	12	2000	15000	47.1
DC.203	13	2000	16200	50.868

Working medium: steam-air mixture (hexane vapor, water vapor), fine. Toaster working pressure 0.098 MPa (0.98 kgf/cm²); steam-chamber working pressure 0.6...1.0 MPa (6...10 kgf/cm²). Column height is maximum.



Need a calculation or a quotation?

Send us your requirements — we will select the model for your raw material and capacity.

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