



# COMBER

Drying and Filtration Technology

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# Termomix®

## Paddle Dryer Reactor





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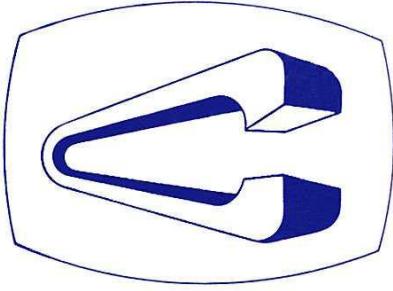
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## Termomix® Paddle Dryer / Reactor



### Termomix® Vacuum Paddle Dryer / Pressure Reactor

- Economic, robust multipurpose machine for heavy industrial applications.
- Suitable for use as mixer, reactor, precipitator and dryer, for vacuum and/or for pressure applications as per the requirements.
- Calculation, design and manufacture in accordance with **ASME** pressure vessel code, Section VIII, **with U-Stamp** and/or **Pressure Equipment Directive (PED) 97/23/EC**.
- Large heating area resulting in an outstanding heat transfer rate by heating the vessel walls, the vessel covers as well as the agitator shaft and arms.
- Shaft sealing with stuffing boxes, externally interchangeable liquid lubricated double mechanical seals optional.
- Good discharge characteristics due to narrow agitator to wall clearances and a special agitator blade design.



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## Termomix® Paddle Dryer / Reactor

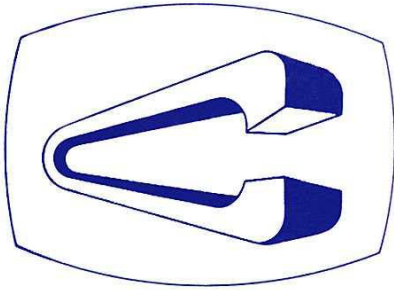


Termomix® TM 6000 paddle dryer / reactor with flat ends, 160 kW agitator drive, liquid lubricated double mechanical seals, dust filter with 12 m<sup>2</sup> filter area.



Termomix® TM 12000 paddle dryer / reactor with dished ends, product wetted components mirror polished, liquid lubricated double mechanical seals.

TI 0195 E - 09/06



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## Termomix® Paddle Dryer / Reactor

### Standard Features:

- Calculation, design and manufacture in accordance with PED 97/23/EC or/and ASME pressure vessel code, Section VIII with U-Stamp.
- EC type examination certificate 05ATEX0088X per the 94/9/EC directive or with electrical components UL approved for operation in a Class 1, Division 1 or 2, Groups C & D environment.
- Shaft seals with stuffing box, externally accessible.
- Sample valve.
- Pre-wiring to Stainless Steel terminal boxes.

### Options:

- Liquid lubricated double mechanical seal, externally accessible.
- Mirror polished interior finish.
- Choppers or blind nozzles for the future installation of choppers.
- CIP System
- PLC controls, autonomous or slaved to DCS, MCC

Technical Data:	TM 2000	TM 3000	TM 4000	TM 5000	TM 6000	
Vessel internal diameter:	1125	1270	1370	1450	1500	mm
Vessel depth:	2000	2500	2800	3100	3500	mm
Total internal volume:	2000	3150	4120	5120	6200	l
Usable volume:	1400	2200	2900	3600	4350	l
Heated area, wetted:	10.1	13.8	16.7	19.3	22.5	m <sup>2</sup>
Discharge valve ID:	200	200	200	250	250	mm
Agitator RPM:	1 - 11	1 - 9.5	1 - 9	1 - 8.5	1 - 7.5	RPM
Agitator drive:	18.5	22	30	37	37	kW
Dust filter elements:	3	5	6	7	8	pcs.
Filter surface:	1.2	2.0	2.4	2.8	3.2	m <sup>2</sup>
Nitrogen vessel volume:	12	24	24	24	24	l
Design pressure vessel:	Full vacuum / 0.45 barg					
Design pressure jacket:	Full vacuum / 4 barg					
Design temperature:	- 10 / + 151° C					
Interior finish:	smoothly ground welds, passivated					
Exterior finish:	smoothly ground welds, passivated					

Note: The technical data listed above are for the standard machine version. Machines with other pressure and temperature ratings and other specifications are available and can be quoted on request.

Larger dryers as well as Lab/Pilot units are listed on separate data sheets.



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## Termomix® Paddle Dryer / Reactor

### Standard Features:

- Calculation, design and manufacture in accordance with PED 97/23/EC or/and ASME pressure vessel code, Section VIII with U-Stamp.
- EC type examination certificate 05ATEX0088X per the 94/9/EC directive or with electrical components UL approved for operation in a Class 1, Division 1 or 2, Groups C & D environment.
- Shaft seals with stuffing box, externally accessible.
- Sample valve.
- Pre-wiring to Stainless Steel terminal boxes.

### Options:

- Liquid lubricated double mechanical seal, externally accessible.
- Mirror polished interior finish.
- Choppers or blind nozzles for the future installation of choppers.
- CIP System
- PLC controls, autonomous or slaved to DCS, MCC

### Technical Data:

	TM 6000	TM 8000	TM 10000	TM 12000	TM 15000	
Vessel internal diameter:	1500	1600	1700	1800	1915	mm
Vessel depth:	3500	4000	4500	4800	5300	mm
Total internal volume:	6200	8000	10200	12200	15250	l
Usable volume:	4350	5600	7200	8600	10700	l
Heated area, wetted:	22.5	27.4	32.5	37.0	44.0	m <sup>2</sup>
Discharge valve ID:	250	250	300	300	300	mm
Agitator RPM:	1 - 7.5	1 - 7	1 - 7	1 - 6.5	1 - 6	RPM
Agitator drive:	37	45	55	75	75	kW
Dust filter elements:	8	9	10	11	12	pcs
Filter surface:	3.2	3.6	4.0	4.4	4.8	m <sup>2</sup>
Nitrogen vessel volume:	24	24	24	24	24	l

Design pressure vessel:

Full vacuum / 0.45 barg

Design pressure jacket:

Full vacuum / 4 barg

Design temperature:

- 10 / + 151° C

Interior finish:

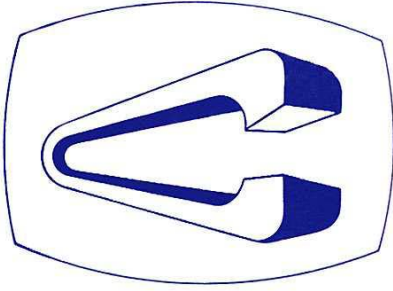
smoothly ground welds, passivated

Exterior finish:

smoothly ground welds, passivated

Note: The technical data listed above are for the standard machine version. Machines with other pressure and temperature ratings and other specifications are available and can be quoted on request.

Smaller dryers as well as Lab/Pilot units are listed on separate data sheets.



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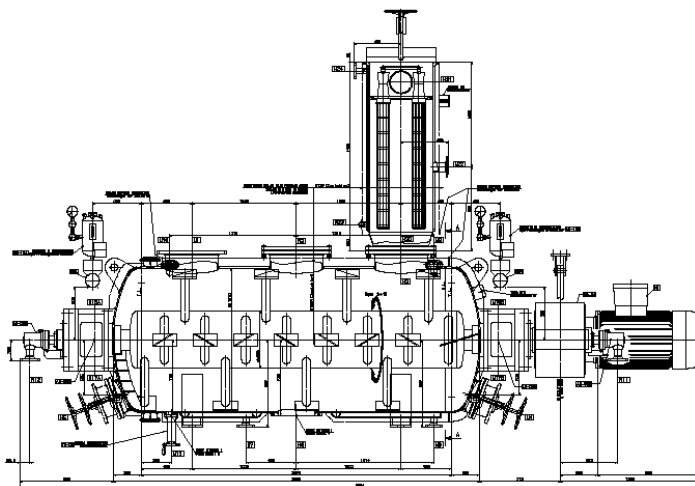
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## Termomix® TM 4000 Paddle Dryer / Reactor

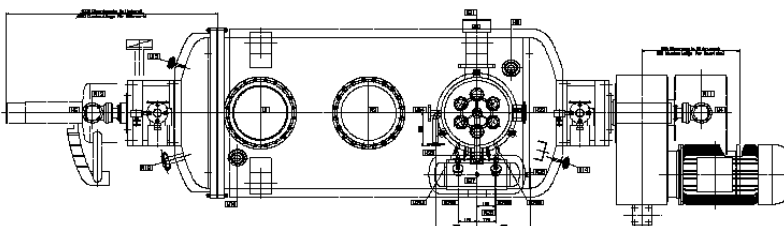


Termomix® TM 4000 paddle dryer / reactor with dished ends, with ball valve for dry product discharge.

With customer specified agitator shaft and agitator arms, both enlarged to increase the heating surface available.

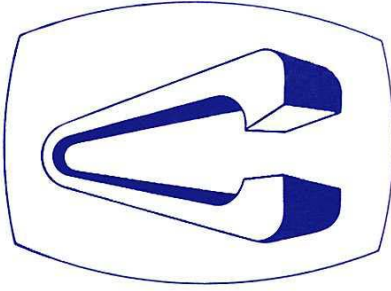
Shaft sealing with liquid lubricated double mechanical seals.

Product wetted components mirror polished.



TI 0267 E - 09/08





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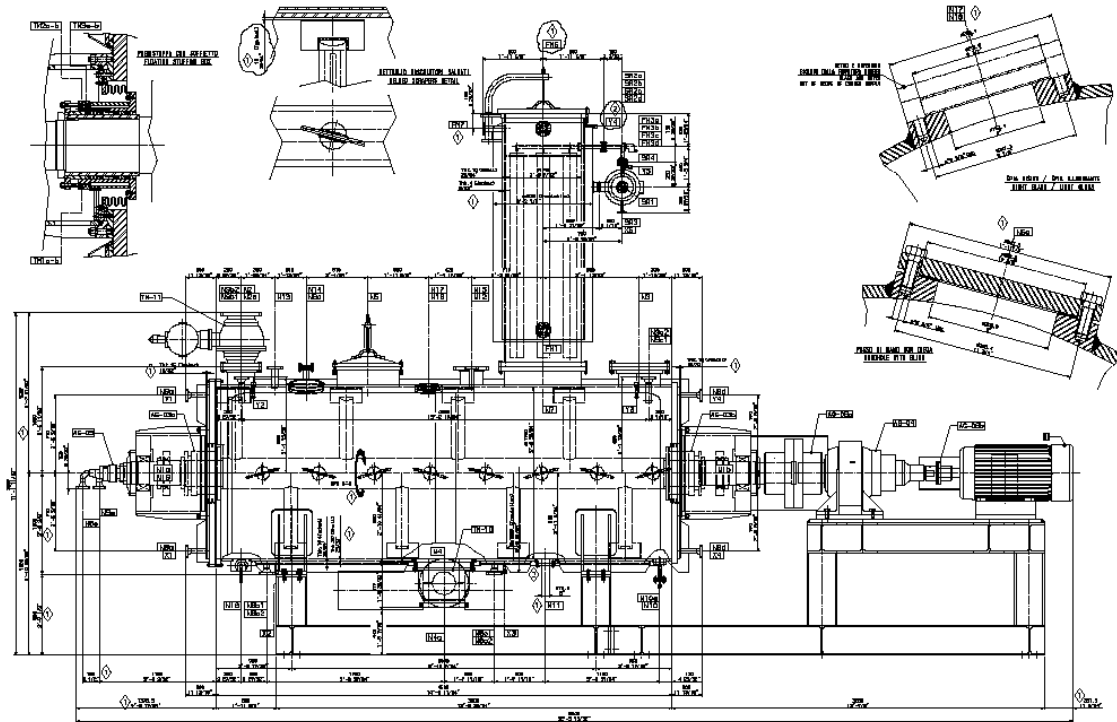
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## Termomix® TM 10000 Paddle Dryer / Reactor



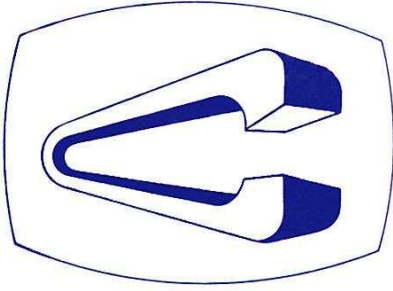
Termomix® TM 10000 paddle dryer / reactor with flat ends, welded insulation, with ball valves for wet product feed and dry product discharge.

Shaft sealing with stuffing boxes. The stuffing boxes are mounted floating with bellows to compensate the agitator shaft extension when heating with saturated steam, refer to detail on upper left on drawing.

The customer specified handhole, sight glass and light glass installation are detailed on the upper right on the drawing

TI 0193 E - 03/06





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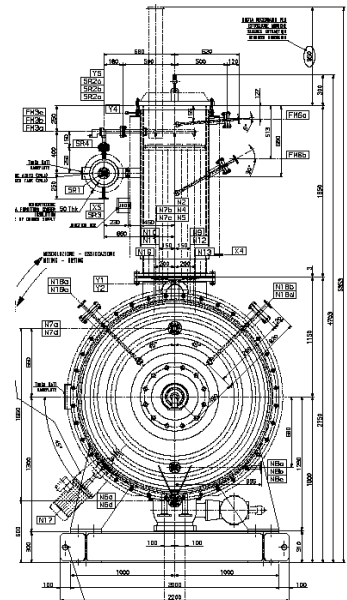
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## Termomix® TM 12000 paddle dryer / reactor



Termomix® TM 12000 paddle dryer / reactor with dished ends, liquid lubricated double mechanical seals, with CIP nozzles and spray balls for the cleaning of the vessel and dust filter interior in between individual batches, with ball valves for dry product discharge. External not product wetted components in painted carbon steel.

TI 0266 E - 09/08