ASME "U" & "R" STAMP
AUTHORIZED MANUFACTURER

BEW Engineering Pvt. Ltd.

(A group company of **Bifriends Engineering Works**)

AGITATED PAN DRYER

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PAN DRYER is Robust & Heavy Version of Dryer.

The Pan dryer is based on the well established and proven Filter / Dryer technology. Here , however, the porous filter bottom is replaced with a heated flat bottom. The simple change in the design of the heated flat bottom increases the heat transfer area considerably. The agitator of the Pan Dryer is also normally heated and is equipped with speed control.

Types of PAN DRYER

A) Top Agitation type PAN DRYER
B) Bottom Agitation type PAN DRYER

A) PAN DRYER (TOP ENTRY AGITATOR TYPE)

The top driven Pan Dryer relies on rotational velocity. A particularly fast agitator with circumferential speed of up to 3 m/s ensures optimum mixing. The raising and lowering agitator also provides mixing on the vertical axis. At the same time, the minimal agitator to wall clearance keeps the wall free from product crust. The rotational high speed of the agitator combined with its vertical translation does not require the use of a chopper.

B) PAN DRYER (BOTTOM ENTRY AGITATOR TYPE)

The vessel is equipped with a bottom driven agitator turning at low and variable speed, depending on the nature of the product to be dried and its moisture content. The agitator ensures the constant renewal of the product in contact with the Heated vessel shell and ensures a good homogeneity and a constant temperature of mixing.

In Both type of Pan Dryer the heat required for drying is supplied by the circulation of hot fluid (water, steam or thermal fluid) in the insulated double jacket of the vessel (bottom, shell, cover, dust filter) and avoids areas of condensation. Loading is done at the top of the vessel in both type.

Agitator Sealing without Product Contact :-

The mechanical seal of the pan dryer is also advantageously located outside of the product area. Depending on the application, it can either be lubricated with gas or liquid. The axial motion of the agitator is sealed by metal bellows, as with the Filter / Dryer.

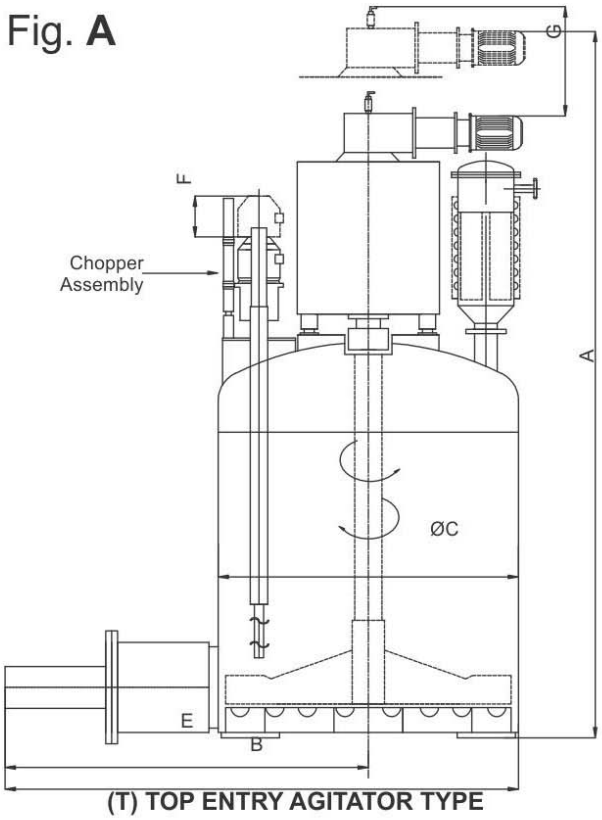
Easy internal inspection

Inspection is easily possible when the pan bottom is lowered. In the case of frequent cleaning and opening cycles, the pan dryer is also ideally equipped with a time-saving quick-locking bayonet flange instead of standard C-Clamps.

Important advantages at a glance

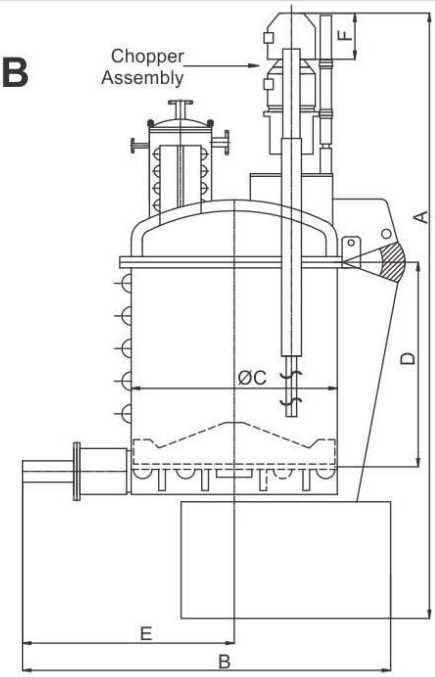
- Proven Filter / Dryer technology.
- Agitator speed- controlled and heated.
- Fast cleaning (CIP/WIP and SIP)
- Simple emptying.
- Short drying times.
- Heal removal Discharge Port.
- Solvent recovery is possible.
- Easy to inspect.

Fig. **A**



(T) TOP ENTRY AGITATOR TYPE

Fig. **B**



(B) BOTTOM ENTRY AGITATOR TYPE

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TECHNICAL DATA FOR APD (Ref. Fig A)											
Type	Working Vol. (Lits)	Gross Vol. (Lits)	Power (Kw/H.P.)	A (mm)	B (mm)	ØC (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Weight (Kgs)
«T»	850	1020	15 / 18.5	3800	2150	1100	-	1500	400	400	2900
	1600	2020	22 / 30	4200	2600	1400	-	1800	500	500	4500
	2500	2890	30 / 37	4450	2800	1600	-	1900	600	500	5600
	3500	3960	37 / 45	4800	3000	1800	-	2000	600	500	6700
	4500	5290	45 / 55	5150	3200	2000	-	2100	700	500	7700
	6000	7780	55 / 75	5550	3500	2300	-	2250	800	500	9300
NOTE : Design & Dimensions of above are subject to change without notice.											

TECHNICAL DATA FOR APD (Ref. Fig B)											
Type	Working Vol. (Lits)	Gross Vol. (Lits)	Power (Kw/H.P.)	A (mm)	B (mm)	ØC (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Weight (Kgs)
«B»	4.5	6.7	0.55	-	740	185	186	190	-	-	100
	12	18.5	1.1	-	850	280	250	260	-	-	175
	20	30	1.5	-	900	320	310	300	-	-	250
	45	57	3.0	1800	1000	420	355	350	200	-	400
	100	110	5.5 / 7.5	2200	1300	550	475	480	300	-	700
	175	190	7.5 / 11	2500	1700	650	575	580	300	-	950
	350	410	11 / 15	2800	2000	850	725	690	300	-	1100
	850	835	22 / 30	3200	2980	1100	900	1500	400	-	2900
	1600	1650	30 / 45	3900	3610	1400	1100	1800	500	-	4500
	2500	2360	45 / 55	4400	3870	1600	1200	1900	600	-	5600
	3500	3230	55 / 75	4800	3970	1800	1300	2000	600	-	6700
	4500	4310	75 / 90	5050	4170	2000	1400	2100	700	-	7700
	6000	6300	90 / 110	5050	4320	2300	1600	2250	800	-	9300
	8000	7950	110 / 132	5400	5170	2500	1700	2800	900	-	11000
	10000	10840	132 / 160	5700	5320	2800	1800	2950	1000	-	13500
	15000	15780	160 / 200	6150	5520	3200	2000	3150	1200	-	19000
NOTE : Design & Dimensions of above are subject to change without notice.											

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USE OF PAN DRYER

The operation under vacuum provides a vacuum drying at low temperature without product deterioration.

The dryer is generally equipped with a lump breaker which breaks up the agglomerates and thus increases

the surface diffusion of the particles.

The discharge is made by rotation of the agitator through side discharge valve located at the bottom of the vessel. (Heel removable type Discharge Valve.) This equipment has been specially designed for batch drying of solid forms (paste, crystal, granular etc.) and for the concentration of liquids.

- To permanently maintain the product in motion (dynamic drying)
- To control heat exchange by using a temperature probe.
- To maintain permanently the product in contact with hot parts.
- To obtain a perfect homogeneity of drying with the original design of the agitator and a moisture content after drying less than 0.1 %
- To operate with a load factor of 20 to 70 % of the total volume.
- To work in hazardous or corrosive areas, particularly with use of special alloys.
- Eventually to cool the product after drying by circulating coolant in the jacket.

Material of Construction

A range of equipment in stainless steel (304L, 316L) or Alloy (C22, C276, 904L, etc.) configurable to meet your most stringent requirements.

Our Certifications and Qualifications

- European Directive CE Module Certification.
- ASME Stamp "U" certification.
- Manufacturing according to ASME Section VIII Div. 1
- Equipment conform to 94-9 CE norm for working under ATEX area.
- TIG and MIG welders qualified according to EN287-1 Div. 1, ASME Section IX Div. I.

NOTE: LAB SCALE MODELS ALSO AVAILABLE

PILOT PLANT AVAILABLE FOR TRIAL

Variants

1. Isolater Compatible

APD's are available in variants compatible with barrier isolation systems at the discharge. This allows handling of Cytotoxic/ Potent products with operator safety. Additionally, these can be combined with automatic packing systems further downline. Also lab scale APD models are available for R&D purposes.

2. Sterile Construction

Sterile application APD models with completely automated SIP/CIP & operation cycles, metal to metal seating are also available.

3. Special Heel removal discharge value

A specially designed quick openable discharge valve which allows much closer access to interior of machine for heel removal is also available.

4. Special Quick detachable designs for bottom bed

a) Super 'C' Bayonet

This design is similar to a TC clamp design but hydraulic operated. This facilitates easy and fast bottom bed detachment for cleaning during product change over. This design is good for vacuum and very low pressure applications.

b) Teethed Bayonet

This design has teethed body flanges, which are hydraulic operated and this is a 'Positive Locking' design. It facilitates easy and fast bottom bed detachment for cleaning during product change over. This design is good for vacuum as well as high pressure applications.

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