

# ROTARY FILM EVAPORATOR JUMBO RANGE

100 TO 800 LITERS



**The Largest Size In the World !!**

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### INTRODUCTION

**A brief Introduction of evolution of CYLINDRICAL SHAPED Rotary Film Evaporator made of Borosilicate Glass!! - ALL NEW Innovation from GOEL, INDIA.**

Rotary Film Evaporator is regularly used product in the R & D of chemical & pharmaceutical industry. It is also being used nowadays for manufacturing purpose for high value pharmaceutical & specialty chemical products. The existing rotary film evaporators, which are used, with spherical evaporating flasks. When the requirement of volume for process increases it is practically very difficult to handle the sizes beyond 50 Liters.

Chemical reactors are cylindrical in shape with a particular L/D ratio in general, which are given for a particular reaction surface area. The cylindrical vessel has a higher surface area than spherical vessel. This prompted us to think in the direction, why only spherical vessel is used when we can exploit the advantage of cylindrical shape evaporation flask in a rotary film evaporator.

**Thus the innovation for a better rotary film evaporator with better efficiency in terms of rate of evaporation was done.** The results showed that the rate of evaporation was enhanced to 20 % as compared to conventional spherical shaped rotary film evaporator. Also the mechanical stability was far superior to spherical vessel, inclined drive rotary film evaporator.

Then we designed the largest Rotary Film Evaporator **Jumbo Rotary**, capacity 400 Ltrs made from Borosilicate Glass 3.3 Cylindrical

Evaporation flask. In spherical flask rotary film evaporator the drive is inclined and the flask is held from it's neck only. Thus a inclined cantilever type of loading happens on the rotating assembly. This is highly unstable mechanically as for the same neck size of flask, higher stresses develop in the flask neck compared to a horizontal drive simply supported flask as in the case of cylindrical rotary film evaporator. The cylindrical flask of the jumbo rotary evaporator is also held by the neck, but the drive centerline is not inclined, instead it is horizontal.

The rotating flask is also supported axially at two cross-sectional circumference over it's whole length, thus making the loading effectively a simply supported one and not a cantilever type. This reduces the stresses on the neck of the flask and is the only safer solution for making higher size rotary film evaporator. Another advantage of the cylindrical flask is it's lower diameter compared to a spherical flask for a particular volume, which is a very critical factor for glass MOC as the pressure rating goes down drastically with the increase in diameter. Also material removal & cleaning becomes easier from the cylindrical rotary film evaporator. It is simply opening the quick release coupling from one end. The material can be easily scooped out where as in spherical rotary film evaporator the whole flask is to be separated out & spherical flasks becomes too bulky and handling becomes very difficult for sizes above 100 Ltrs.

**This development has overcome the constraint of the size in Rotary Film Evaporators from laboratory scale applications to industrial applications for sizes above 100 Liters i.e.**

**Up to 800 Liters with a diameter of 800 mm !!**

### TECHNICAL SPECIFICATIONS

ITEM	MODEL : GRFE 100 J	MODEL : GRFE 200 J	MODEL : GRFE 400 J
Cylindrical Flask	100 Ltr.	200 Ltr.	400 Ltr.
Heating Bath	SS 304 5 Kw x 3 = 15 Kw Flameproof	SS 304 6 Kw x 3 = 18 Kw Flameproof	SS 304 9 Kw x 3 = 27 Kw Flameproof
Canopy	Polycarbonate Canopy	Polycarbonate Canopy	Polycarbonate Canopy
Drive Motor	2 HP (Flame proof), 50 Hz 415 V, 3 phase motor RPM : 2-50 RPM, Variable, VFD Based	3 HP (Flame proof), 50 Hz 415 V, 3 phase motor RPM : 2-50 RPM, Variable, VFD Based	5 HP (Flame proof), 50 Hz 415 V, 3 phase motor RPM : 2-50 RPM, Variable, VFD Based
Glass Specification	All contact Parts are made of Borosilicate - 3.3 glass / PTFE Heat Exchanger - 1.5 m2 x 1 Nos. Heat Transfer, 6" Small Diameter Receivers 20 Ltrs with Drain, Vacuum & Vacuum Release Valve Seals & Gasket PTFE & GFT Tubular Structure & Structure Parts SS 304	All contact Parts are made of Borosilicate - 3.3 glass / PTFE Heat Exchanger - 1.5 m2 x 2 Nos. Heat Transfer, 6" Small Diameter Receivers 20 Ltrs with Drain, Vacuum & Vacuum Release Valve Seals & Gasket PTFE & GFT Tubular Structure & Structure Parts SS 304	All contact Parts are made of Borosilicate - 3.3 glass / PTFE Heat Exchanger - 2.5 m2 x 2 Nos. Heat Transfer, 6" Small Diameter Receivers 20 Ltrs with Drain, Vacuum & Vacuum Release Valve Seals & Gasket PTFE & GFT Tubular Structure & Structure Parts SS 304
Dimension (Approx)	2000(L) x 1000(W) x 2000(H) mm	2500(L) x 1200(W) x 2200(H) mm	3600(L) x 1500(W) x 2500(H) mm