

# Pre-expansion plants EVD/EDVD

## Pre-expansion plants EDVD-PP



### **EVD/EDVD**

Discontinuously operating pressure pre-expansion plant for the EPS-manufacturing.

### **EDVD-PP**

Discontinuously operating pressure pre-expansion plant for the EPP-manufacturing.

# Pre-expansion plant type EVD/EDVD

## Service description of the pre expansion plant type EVD/EDVD

Batch-type pre-expansion-unit EVD and EDVD, discontinuous operation, max. operational pressure 0,5 bar / 2.5 bar, developed for all conventional, as well as for special materials, s. a. Noryl®, Dytherm®, Arcel®, Neopor®, etc.



### Advantages of the discontinuous pre-expansion-plant type EVD/EDVD

- short adjustment-periods when changing the type of material/the density by recipe-administration and choice of raw-material source via display
- precise density (approx. +/- 0.2 g/l at a density of 20 g/l) guarantee a fast amortisation-period of the unit.
- Optimum revolutions of the stirring-gear for each material due to a frequency governed electric motor.
- SPS-controlled steam-pressure-regulation cares for an optimum degree of expansion.
- extraction in the outlet-box cares for steam-exit and enables a central pentane suction.
- Economical utilisation of steam-condensate for heating of the steam-register, means saving of steam.

### Areas of application type EVD 150

- pre-expansion-plant for mouldings having high densities up to 200 g/l
- special materials for special applications, such as:
  - shock-absorbent elements for the automotive industry
  - bicycle-helmets with a heat-resistance of up to 120° C
  - coloured products /mouldings
  - models for full mould casting

### Mode of operation

A vacuum-suction-conveyor or a conveying screw doses a certain amount of raw-material (1 to 100 kg) into the stainless-steel expansion-vessel. Steam, entering through the base-plate, results in an expansion of the raw-material. Under a constant stirring motion the expanding material reaches a certain level, governed by an electric-adjustable photo-electric proximity-switch. The method of steaming may be determined by either timer or proximity-switch. After a short pressure-release-period, the expanded material is given automatically into a fluidised-bed-dryer. Adjusting the density is effected by dosing the amount of raw-material or the level of expansion by proximity-switch.



### Control

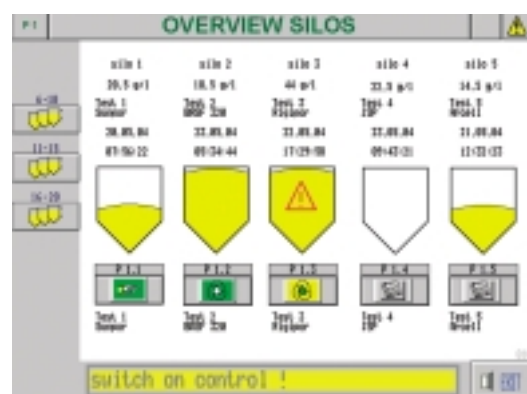
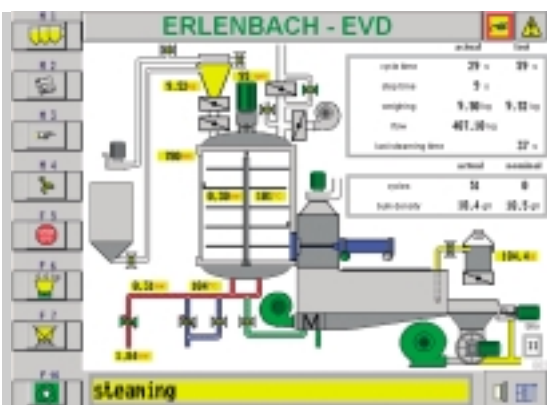
- simple operation and supervision of the machine by a touch-screen-display
- indication of all process-relevant data by a graphic operational-surface
- capture of production-data and recipes
- connection-possibility to a system of overriding importance to capture of data for example EM-CAM, EM-Cube
- connection-possibility to silo-control via BUS-system
- communication to other machines and production-units

### foaming process

- water vapour as energy source
- equally steam distribution at the bottom via screen sections and multiple steam inlets
- quick steam build-up due to an optimal design of the steam valves and pipes
- constant hold of the pressure in the area of 0,05 up to 0,5 (2,5) bar
- avoiding of overheating
- homogeneous foaming of the EPS-Particles

### Option

- The density-measuring and regulating-system type ESN 10 guarantees an automatic regulation and adjustment of various specific densities
- Heavy density device for densities above approx. 30 g/l
- Controller to supply material into intermediate-ageing-silos

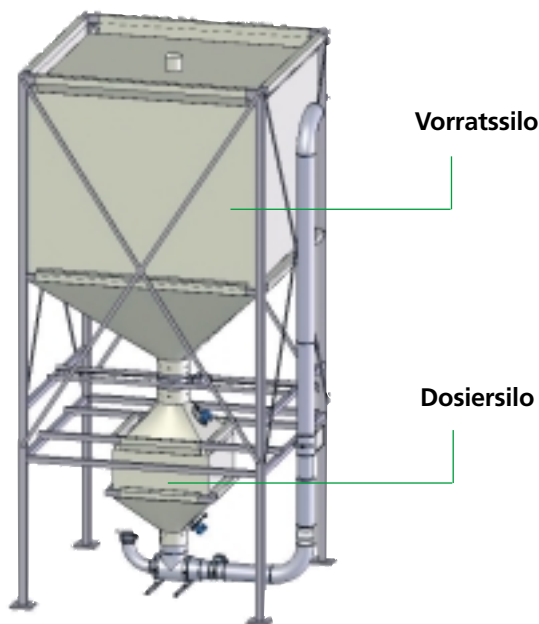


# Pre-expansion plant type EVD with secondary expansion



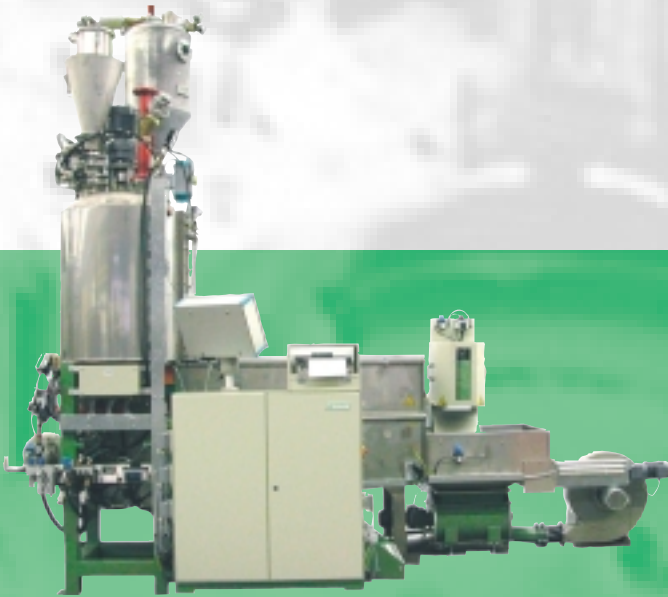
## Advantages Erlenbach secondary expansion plant

- Dosing silo which is individually adjusted on the pre-expander size
- Failure-free volume dosing without pre-weighing
- Emptying of the dosing silo by a vacuum blower
- Detection, readjustment and recording of the bulk density via standard control ESN 10 possible
- No need of investment in a continuous pre-expander for secondary expansion plant



Technical data secondary expansion plant			
Data secondary expansion plant		Volume dosing silo	
kg/h (m <sup>3</sup> /h) by	8 -9 g/l		Litre
EVD 1000	360 (40)	EVD 1000	400
EVD 1600	500 (55)	EVD 1600	600
EVD 2500	650 (75)	EVD 2500	1000
EVD 4000	1000 (110)	EVD 4000	1700
EVD 6500	1500 (170)	EVD 6500	2800

# Pre-expansion plant type EVD-PP



## Pre-expansion plant Type EDVD / EDVD-PP

EDVD-PP 150/500/1000 batch pre-expanders, available in expansion chamber sizes of 150/500/1000 L, operate at process pressures up to max. 2.5 bar. All units are acceptance-tested to strict German regulations by third-party inspection authorities prior to shipment. The pre-expanders are designed for use with all conventional EPS raw materials – including specialty formulations with low blowing-agent contents – as well as conventional EPP raw materials with bulk densities from 40 g/l to 100 g/l.

### Advantages of EDVD-PP Batch Pre-Expanders

- When changing materials or bulk densities, change over is fast and simple due to easy selection of stored formulations and raw material source via display
- High precision of bulk density (approx. +/- 0.02 g/l at target of 20 g/l) ensures quick payback on purchase investment.
- Stirrer RPM regulated by frequency-controlled drive motor
- PLC-controlled steam pressure ensures consistent product density

- Vapour collector draws off pentane for centralized condensation and removal

- Modern, advanced system controls

### Option for EPS:

- ESN 10 bulk density monitoring/control unit provides closed-loop control of bulk density to desired setpoint
- High-density version for bulk densities above approx. 30 g/l

### Option for EPP:

- Pressure filling system for attainment of required bulk density in EPP products. Available capacities: 33/140/280 L. Expansion ratios of 2.5 - 3 and bulk density precision of approx. +/- 3-5 % are achieved. Further benefits: high flexibility in selection of expanded product density, maximum utilization of silo capacity

### Option for EPS/EPP:

- Silo control system for automatic filling and discharge of silos

<b>Pre-expansion plant type EVD 0,5 bar</b>		<b>150</b>	<b>500</b>	<b>1000</b>	<b>1600</b>	<b>2500</b>	<b>4000</b>	<b>6500</b>
capacity at density 15 g/l, 20 g/l, 25 g/l		approx. kg/h 70/140/160	approx. kg/h 230/400/500	approx. kg/h 450/750/900	approx. kg/h 700/1150/1400	approx. kg/h 1200/1600/1800	approx. kg/h 2000/3000/3500	approx. kg/h 3000/3800/4200
steam consumption (depending on density)		approx. kg/h 45 - 50	approx. kg/h 80 - 120	approx. kg/h 150 - 200	approx. kg/h 250 - 300	approx. kg/h 350 - 500	approx. kg/h 600 - 800	approx. kg/h 800 - 1000
steam connection 1 - 3 bar		DN 25 (G1")	DN 32	DN 50	DN 65	DN 80	DN 100	DN 125
condensate exit (pressure-less)		R 3/4"	R 3/4"	R 3/4"	R 3/4"	R 3/4"	R 1"	R 1"
connection of compressed air 6 - 8 bar		R 1"	R 1"	R 1"	R 1"	R 1 1/2"	R 1 1/2"	R 1 1/2"
compressed air consumption approx. Nm <sup>3</sup> /h		13 - 18	15 - 20	25 - 30	25 - 30	30 - 35	35 - 40	40 - 45
electr. connection value complete		approx. 8 KW	approx. 12 KW	approx. 14 KW	approx. 16 KW	approx. 24 KW	approx. 50 KW	approx. 55 KW
electr. connection value of pre-expander		approx. 3 KW	approx. 3,5 KW	approx. 4 KW	approx. 9 KW	approx. 11 KW	approx. 18 KW	approx. 22 KW
electrical supply 50 Hz		230/400V	230/400V	230/400V	230/400V	230/400V	230/400V	230/400V
shipping weight (gross)		1200 kg	2550 kg	3000 kg	4200 kg	4800 kg	5800 kg	6500 kg
space requirement in shipping		approx. 4 lfm.	approx. 6 lfm.	approx. 8 lfm.	approx. 15 lfm.	approx. 18 lfm.	approx. 20 lfm.	approx. 22 lfm.

<b>Pre-expansion plant type EDVD-PP 2,5 bar</b>		<b>150</b>	<b>500</b>	<b>1000</b>
capacity at EPP 90 g/l expanded to 30 g/l		ca. m <sup>3</sup> /h 6	ca. m <sup>3</sup> /h 23	ca. m <sup>3</sup> /h 40
60 g/l expanded to 25 g/l		5	18	36
40 g/l expanded to 18 g/l		4,5	18	34
steam consumption (depending on throughput)		ca. kg/h 80 - 100	ca. kg/h 200 - 250	ca. kg/h 350 - 450
compressed air consump. appr. Nm <sup>3</sup> /h		20 - 25	40 - 50	50 - 60
pressure filler/litre		33	140	280

<b>Pre-expansion plant type EDVD 2,5 bar</b>		<b>150</b>	<b>500</b>	<b>1000</b>
capacity at density 15 g/l, 20 g/l, 25 g/l		approx. kg/h 70/140/160	approx. kg/h 230/400/500	approx. kg/h 450/750/900
steam consumption (depending on density)		approx. kg/h 40 - 50	approx. kg/h 90 - 120	approx. kg/h 150 - 200
steam connection 1 - 3 bar		DN 25	DN 32	DN 50
condensate exit (pressure-less)		R 3/4"	R 3/4"	R 3/4"
connection of compressed air 6 - 8 bar		R 1"	R 1"	R 1"
compressed air consumption approx. Nm <sup>3</sup> /h		13 - 18	15 - 20	25 - 30
electr. connection value complete		approx. 8 KW	approx. 12 KW	approx. 14 KW
electr. connection value of pre-expander		approx. 3,5 KW	approx. 6 KW	approx. 4 KW
electrical supply 50 Hz		230/400V	230/400V	230/400V
shipping weight (gross)		1200 kg	2500 kg	3000 kg
space requirement in shipping		approx. 4 lfm.	approx. 6 lfm.	approx. 8 lfm.