

**EVEREST**

An Ingersoll Rand Business



# DRY SCREW VACUUM SYSTEMS



VACUUM



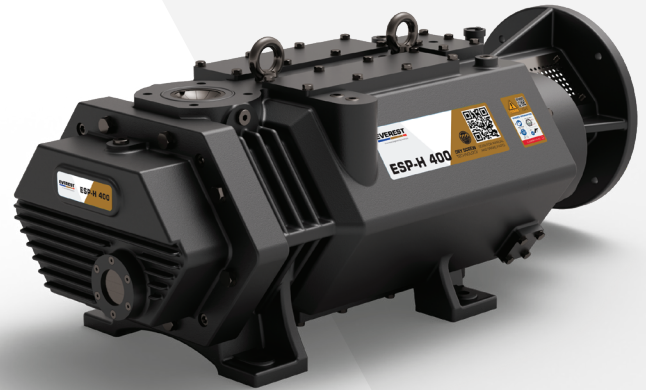
# SUPERSCREW DRY SCREW VACUUM PUMPS

Everest brings to its customers, hybrid combined variable pitch Dry Screw Vacuum Pumps | SuperScrew.

These are widely used in chemical, pharmaceutical, petrochemical, food processing, plastics, CD-DVD manufacturing, thin-film & wiped film evaporation and many other applications which require a clean and stable vacuum in general and central vacuum industry.

SuperScrew is the newest development in the vacuum pump industry. They offer a number of advantages over traditional vacuum pump design. There is No Oil / No Water in contact with the process vapours, therefore they are considered extremely environment-friendly.

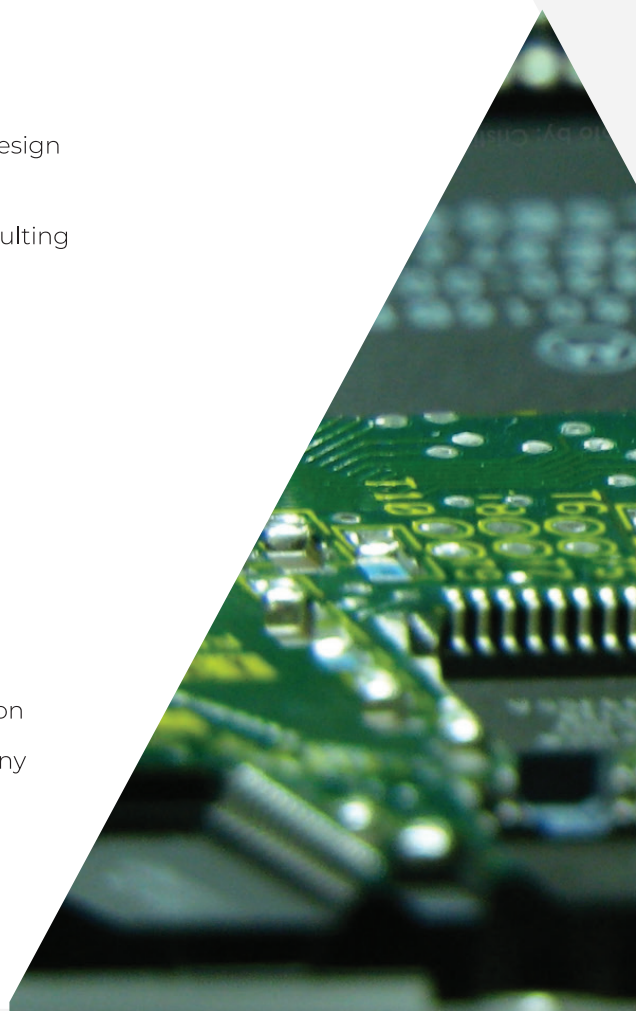
As these pumps are completely dry, the process vapour can pass through the pump without any contamination and be collected at the discharge of the system by a vent condenser. This offers the customer a very efficient vapour recovery management system and an environment friendly vacuum ecosystem.



**A pump designed for  
harsh tropical conditions**

## KEY FEATURES

- ▶ Hybrid Combined Variable Pitch Screw
- ▶ Reduced power consumption as opposed to the standard screw design pump by upto 30%.
- ▶ Low discharge gas temperature and high volumetric efficiency resulting in lower pump downtime with higher ultimate process vacuum.
- ▶ 100% Oil Free Dry Pumping
- ▶ Low Noise and Vibration
- ▶ Special Plating for Harsh Applications
- ▶ SS316/Hast-C Bellow M/Seal with Kalrez O-Ring
- ▶ Synthetic Lubrication Oil
- ▶ N<sub>2</sub> Inlet and N<sub>2</sub> Seal Purge
- ▶ PLC Controlled Logic of all instrumentation
- ▶ Thermostatic Control Valve (TCV): To maintain optimum operating temperature of the pump thereby limiting any vapour condensation
- ▶ Top Suction/Bottom Discharge: To ensure the free gravity flow of any condensate / solvent getting condensed within the pump

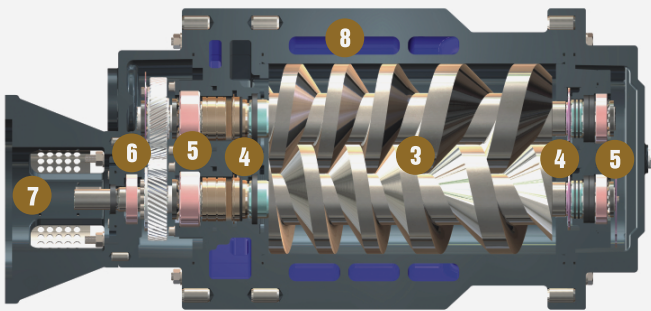


# OPERATING PRINCIPLE



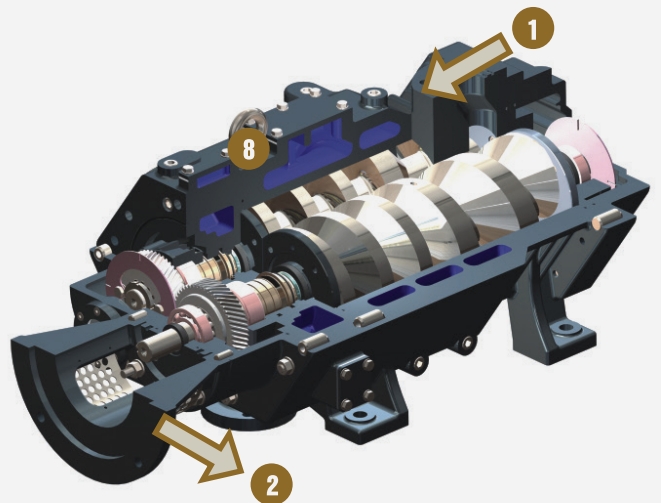
The Everest Dry Screw Vacuum Pump is a hybrid variable pitch screw, dry running, non-contact type vacuum pump with two parallel screws, rotating in the opposite directions, having a highly sophisticated surface profile consisting of an Archimedean Quimby and an Arc curve. The driveshaft rotation is clockwise (CW) when viewed from the motor end (Drive End) of the pump. Helical timing gears position these screws relative to each other. The pumped gas is compressed into the discharge port by the rotation of the screws. The advanced screw design results in lower energy consumption compared to standard screw design. This also results in lower heat generation because of the high compression of the gas/vapours.

## SECTIONAL VIEW



**Advanced Screw design for lower energy consumption**

- 1 SUCTION
- 2 DISCHARGE
- 3 SCREWS
- 4 SEALS
- 5 BEARINGS
- 6 TIMING GEARS
- 7 SHAFT/COUPLING
- 8 COOLING JACKET



# EVEREST

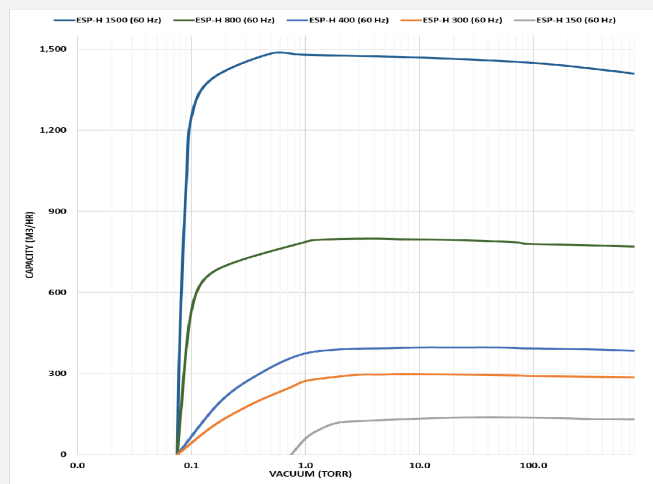
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SPECIFICATIONS								
MODEL			ESPH60*	ESPH150	ESPH300	ESPH400	ESPH800	ESPH1500
Nominal Capacity	m3/h	50Hz	60	120	250	330	660	1250
		60Hz	72	150	300	400	800	1500
End Vacuum	mbar	60Hz	1	1	0.1	0.1	0.1	0.1
Motor Version	3~		415 V $\pm$ 10%, 50 Hz $\pm$ 5%					
Motor Rating	kW		2.2	3.7	7.5	11	15	37
Speed	min-1	50Hz	2900	2900	2900	2900	2900	1470
		60Hz	3480	3480	3480	3480	3480	1750
Average Noise Level	dB(A)		<85	<85	<85	<85	<85	<85
Oil Intake (Gear)	L		0.8	1.2	1.8	2.2	3	7.5
Cooling water flow	LPH		180~300	300~600	600~900	600~900	900~1200	1800~2400
Suction	NB		35	40	50	65	100	125
Discharge	NB		25	40	50	50	65	80

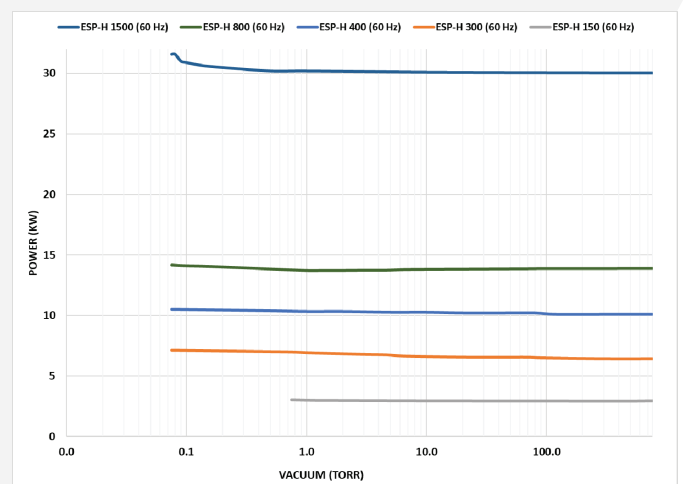
\*Only suitable for clean applications

SPECIFICATIONS			
		Standard Application	CL Clean Application
SEAL TYPE	HVS	HV (Suction) Double Lip (PTFE + PTFE) Seal on Alloy Steel Sleeve (H&G)	HV (Suction) Double Lip (PTFE + PTFE)
	LVS	LV (Discharge) Double Lip (PTFE + PTFE) and Mechanical Bellow Seal (AM350 + Viton), N2 Purged	LV (Discharge) Double Lip (PTFE + PTFE) Seal
MOC	BODY	Alloy Cast Iron with ENP	C.I FG 260 with ENP
	SCREW	Alloy Ductile Iron with ENP	Ductile Iron with ENP
	CP PLATE	Alloy Cast Iron with ENP	C.I FG 260
	GP PLATE	Alloy Cast Iron with ENP	C.I FG 260

## CAPACITY CURVE



## POWER CURVE





# SUPERVAC DRY SCREW VACUUM PUMPING SYSTEMS

Everest brings to its customers, high efficiency and high displacement Dry Screw Vacuum Pumping Systems | SuperVac. These are completely engineered vacuum packages consisting of Mechanical Vacuum Booster and Dry Screw Vacuum Pump along with a combination of allied accessories, specific to industry and application.

As these systems are completely dry, i.e there is no sealing fluid in the pump casing, these systems are becoming very popular in various applications where customers' requirements are for clean, oil-free vacuum. Due to the dry technology, the process vapour can pass through the pumps without any contamination and be collected at the discharge of the system by a vent condenser, thereby offering the customer a very efficient vapour recovery management to build an environment-friendly vacuum ecosystem.



SuperVac typically consists of a Dry Screw Pump as backup in combination with Mechanical Vacuum Booster (single/multiple) stages. The Pump and Booster are both the latest technology available in the market, offering our customers high volumetric efficiency coupled with lower per m<sup>3</sup> consumed kW, resulting in lower overall cost of ownership.

Everest, the leaders in Vacuum Technology, offer these SuperVac vacuum pumping systems developed using diverse designs and cross-links to suit the most complex and demanding process requirements.

Everest supplies a diverse range of vacuum systems from standard compact units to complex engineered built systems with integrated instrumentation and control panels for local or remote operation. These systems are supplied as skid-mounted ready to connect units.

Everest SuperVac systems are renowned for their innovative design and reliability in operation, offering unmatched quality, value and performance. while being easy to operate and maintain.

Everest has been closely associated with various scientific and research organizations for research and development projects related to medium and high vacuum requirements, some of them being the first time in the world.

Our mission has always been to continually offer new and superior industrial vacuum solutions to the global market, for all industries and applications with an objective to ensure the lowest total cost of ownership for our customers.

## APPLICATIONS Highly recommended for

- ▶ Vacuum drying
- ▶ Solvent recovery
- ▶ Vacuum distillation
- ▶ Vacuum degassing
- ▶ Vacuum impregnation
- ▶ Space research
- ▶ Development applications
- ▶ Solvent recovery
- ▶ Vacuum drying
- ▶ Low pressure low temperature distillation
- ▶ Freeze drying



# SUPERVAC DRY SCREW VACUUM PUMPS



Typical Supervac standard vacuum system for chemical and pharma industries



Engineered Supervac for oil and gas industry



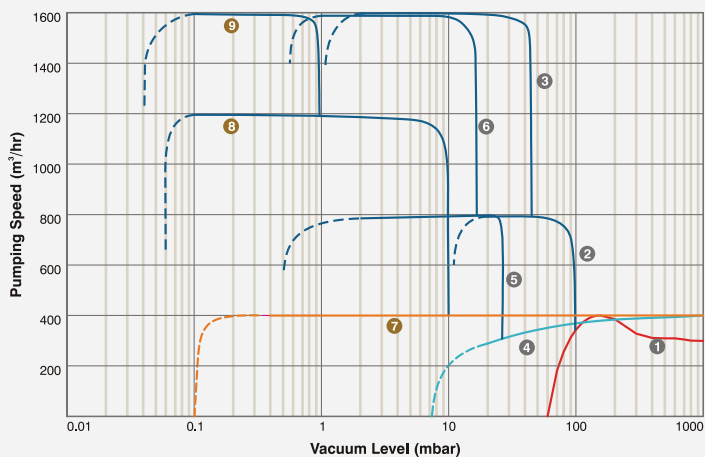
Typical Supervac engineered vacuum system

Thionyl Chloride  $\text{SOCl}_2$ , Phosphoryl Chloride  $\text{POCl}_3$  and HCL shall haunt you no more

**EVEREST HAS THE SOLUTION**

## PUMPING CAPACITY

### IMPROVED PUMPING CAPACITY BY MULTISTAGING



Liquid ring Pump	Piston Pump	Dry Screw Pump	Vacuum Booster
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- 1 Liquid Ring Pump (400 m³/hr)
- 2 Liquid Ring Pump + Mechanical Vacuum Booster
- 3 Liquid Ring Pump + 2 No. Mechanical Vacuum Boosters
- 4 Piston Pump (400 m³/hr)
- 5 Piston Pump + Mechanical Vacuum Booster
- 6 Piston Pump + 2 No. Mechanical Vacuum Boosters
- 7 Dry Screw Pump (400 m³/hr - Vacuum of 0.1 Torr)
- 8 Dry Screw Pump + Mechanical Vacuum Booster
- 9 Dry Screw Pump + 2 No. Mechanical Vacuum Boosters

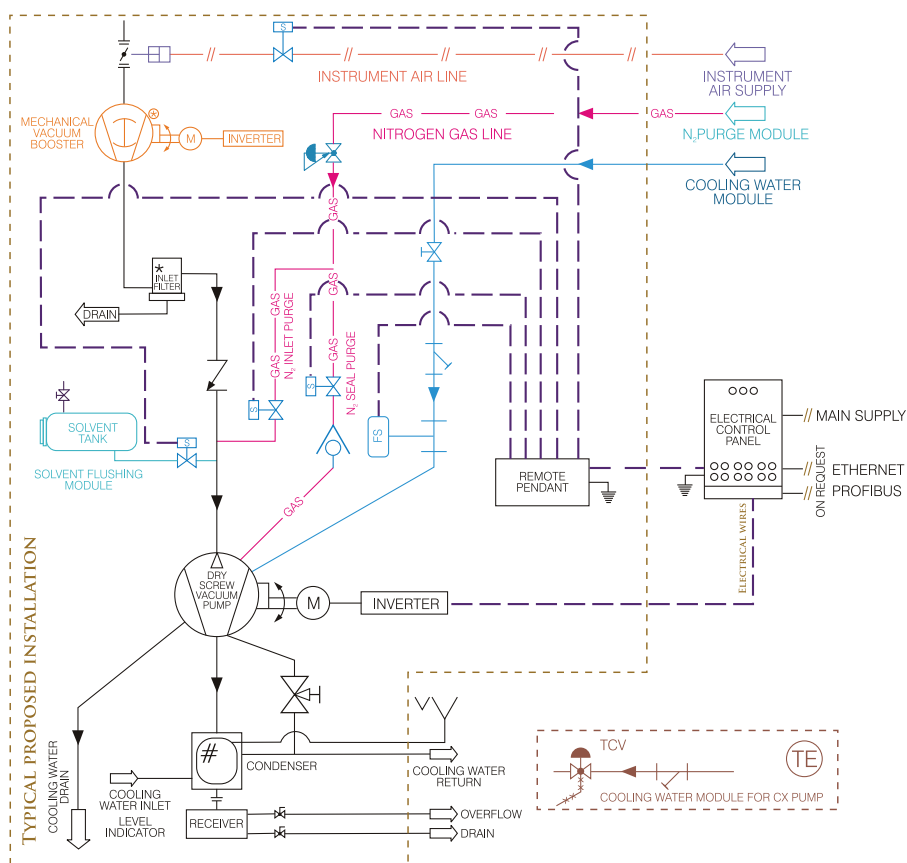
# SUPERVAC SPECIFICATIONS

SPECIFICATIONS					
SUPERVAC		800	1600	2000	3000
Nominal Capacity	m <sup>3</sup> /h	800	1600	1920	3340
End Vacuum	mbar	0.1	0.05	0.05	0.05
Motor Version	3~	415 V ± 10%, 50 Hz ± 5%			
Connected Power	HP	10	17.5	22.5	25
Average Noise Level	dB(A)	<85	<85	<85	<85
Suction	NB	65	100	125	150
Discharge	NB	40	50	50	50

\*Capacity can go upto 30,000 m<sup>3</sup>/hr as a single skid mounted system

The following shall be a part of the Standard Package

1. Isolation Valve : Electro-pneumatic + NRV (SS).
2. Skid Structure: ISMC, IS:808 1989,
3. Accessories: N<sub>2</sub> Seal Purge, N<sub>2</sub> Inlet Purge, CW Circuit, Vacuum Transmitter at the inlet



STANDARD SUPPLY | Screw Pump, Motor, VFD, Seal-Purge, Cooling Water Module (Standard), Non-Return Valve, Main Isolation Valve

★ Contact Everest for more details

# Can be placed Upstream/Downstream as per requirement

⊗ Can be added in multiple stages to enhance pumping capacities

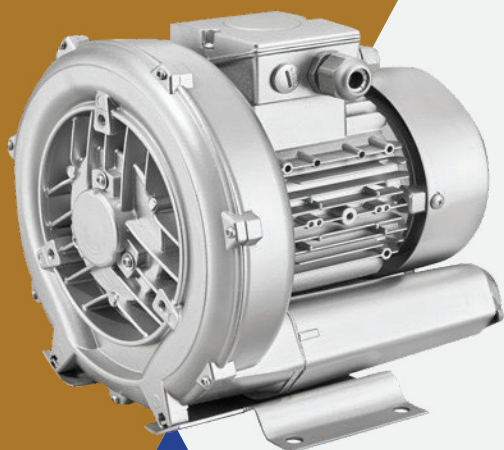
## Note

- Power consumption\* may vary as per individual system design/customization. Specifications are subject to change without prior notice.

Our experts can help you in process optimization thru customization resulting in a vacuum package that is optimally designed for your requirement and applications. Using varied combinations of Dry Screw Vacuum Pumps, Mechanical Vacuum Boosters, Filters, Condensers, Traps and Electronic Interlocking safeties results in the lowest overall cost of total ownership.

## P & I DIAGRAM





# EVEREST PRODUCT LINEUP



## VACUUM

- ▶ MECHANICAL VACUUM BOOSTERS
- ▶ DRY SCREW VACUUM PUMPS & SYSTEMS
- ▶ DRY CLAW VACUUM PUMPS
- ▶ ROTARY VANE VACUUM PUMPS
- ▶ LIQUID RING VACUUM SYSTEMS
- ▶ ENGINEERED VACUUM SYSTEMS
- ▶ MECHANICAL VAPOUR RECOMPRESSOR (MVR)



## BLOWERS

- ▶ TWIN/TRI LOBE ROOTS BLOWERS
- ▶ GAS BLOWERS
- ▶ SIDE CHANNEL / CENTRIFUGAL BLOWERS

## CONTACT US

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