

Process Pumps for Vacuum Drying



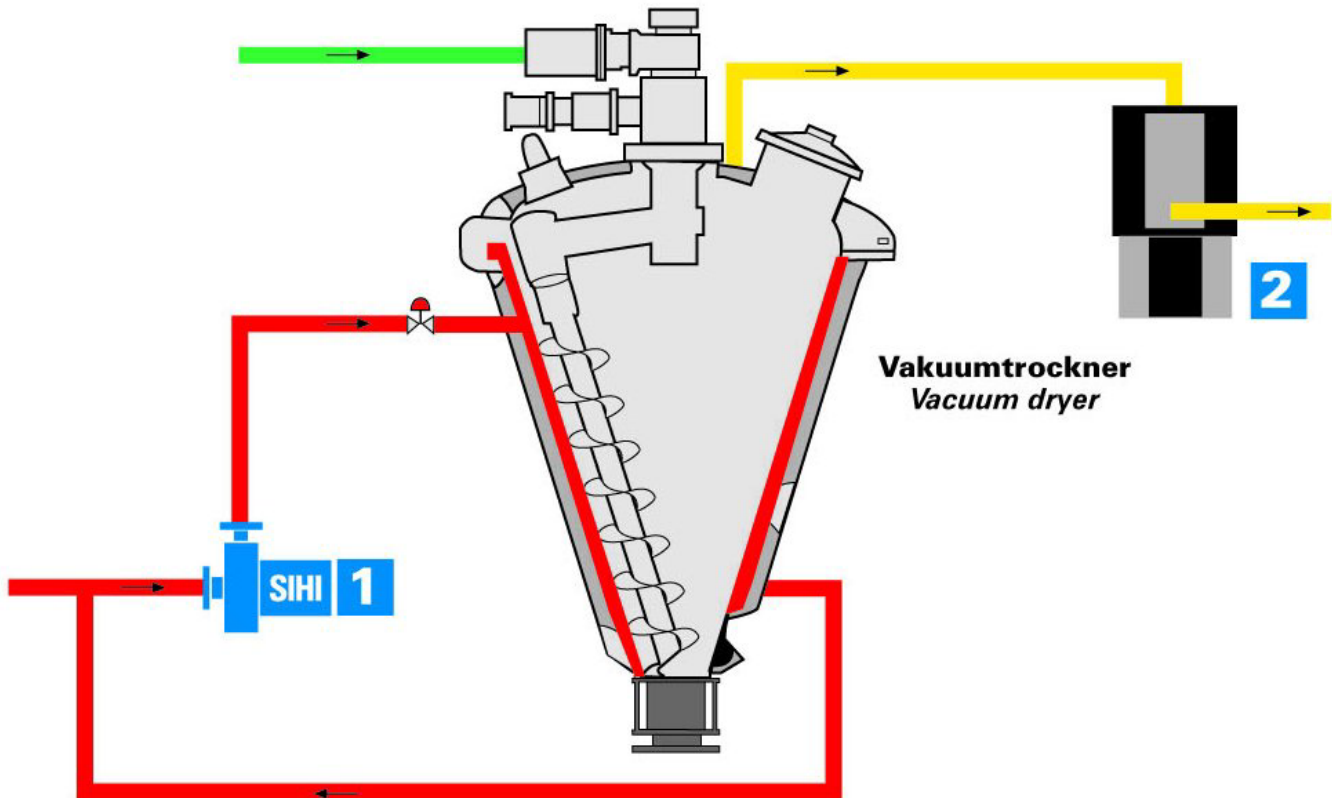
Vacuum drying uses a thermal process to dry products that have retained moisture. Heat is therefore used to bring the liquid in the product up to its boiling point so the liquid vaporises.

Often the substances that have to be dried are thermally sensitive and if they are heated up too much they will decompose or degrade. Ideally the drying process should take place under vacuum with the effect of a careful evaporation at a reduced temperature. At the beginning of the drying process the surface moisture is detracted.

In this stage of the drying phase the process pressure is equivalent to the saturation vapour pressure of the liquid at the temperature of the product. The final drying phase starts once the surface moisture has been removed and the remaining moisture that is held in the products pores must be removed. The movement through the narrow capillaries and the need to overcome the binding forces is associated with a pressure loss means that with ongoing drying process the pressure decreases constantly.

The resulting degree of drying will be as better as lower the attained vacuum pressure is. Vacuum drying is used in multi-purpose manufacturing facilities that means solvents involved are varying. Furthermore a possible presence of dust has to be considered.







Process Pumps for Vacuum Drying



An overview of the various Process Pumps

- 1 Heat transfer pumps**
Drying processes usually are operated under higher temperatures than ambient temperature. To supply the heat around the process, circulation pumps are installed in the main pipework. As heat transfer media mostly hot oil is used.
- 2 Vacuum pumps**
For vacuum drying, in particular when handling temperature sensitive media, a vacuum generator is needed. Therefore dry running vacuum pumps or liquid ring vacuum pumps are often used. The liquid ring vacuum pumps are mostly running with a closed service liquid circuit.

Innovative Solutions from Sterling SIHI

Process pumps	Pump types	Pump execution		
1 Heat transfer pumps	Hot oil pumps Type ZTK, ZTN		Capacity: max. 1000 m ³ /h Shaft sealing: mechanical seal, mag drive Werkstoffe: nodular iron, stainless steel	
	Liquid ring vacuum pumps Type LPHX/LPH		Capacity: max. 10700 m ³ /h Shaft sealing: stuffing box, mechanical seal Materials: grey cast iron, stainless steel	
2 Vacuum pumps	Dry running vacuum pumps Type SIHI ^{dry}		Capacity: max. 1000 m ³ /h Suction pressure: > 0.001 mbar abs Materials: nodular iron / steel	



... Liquid pumps, vacuum pumps and complete vacuum systems ... from one source

Addresses

Europe

- Sterling Fluid Systems (Austria)**
Wien
Tel.: +43 (0)1 680 050
Fax: +43 (0)1 680 0521
Email: sales_austria@sterlingsihi.de
- Sterling Fluid Systems (France)**
Trappes
Tel.: +33 (0)1 34 823 900
Fax: +33 (0)1 34 823 961
Email: sterlingsihi@easynet.fr
- Sterling Fluid Systems (Hungary)**
Veszprem
Tel.: +36 (0)88 406 633
Fax: +36 (0)88 406 635
Email: sales_hungary@sterlingsihi.de
- Sterling Fluid Systems (Polaska)**
Warszawa
Tel.: +48 (0)22 335 2480/81
Fax: +48 (0)22 335 2482
Email: sterling@sterling.pl
- Sterling Fluid Systems (Spain)**
Madrid
Tel.: +34 91 709 1310
Fax: +34 91 715 9700
Email: minsa@stnet.es
- Sterling Fluid Systems (Belgium)**
Groot-Bijgaarden
Tel.: +32 (0)2 481 7711
Fax: +32 (0)2 481 7737
Email: sales@sterlingfluidsystems.be
- Sterling SIHI (Germany)**
Itzehoe
Tel.: +49 (0)4821 771 01
Fax: +49 (0)4821 771 274
Email: sales@sterlingsihi.de
- Sterling Fluid Systems (Italy)**
Monza, Milan
Tel.: +39 (0)39 282 41
Fax: +39 (0)39 282 4220
Email: sterlingitaly@sidro.it
- Sterling Fluid Systems (Romania)**
Bucuresti
Tel.: +40 (0)21 610 7188
Fax: +40 (0)21 210 8287
Email: sales_romania@sterlingsihi.de
- Sterling Fluid Systems (UK)**
Altrincham/Cheshire
Tel.: +44 (0)161 928 6371
Fax: +44 (0)161 925 2129
Email: uksales@sterlingfluid.com
- Sterling Fluid Systems (Czech Rep.)**
Olomouc
Tel.: +420 587 433 651
Fax: +420 587 433 653
Email: sterling@sterling.cz
- Sterling Fluid Systems (Greece)**
Athens
Tel.: +30 (0)210 957 0783
Fax: +30 (0)210 956 8121
Email: sales_greece@sterlingsihi.de
- Sterling Fluid Systems (Netherlands)**
Beverwijk
Tel.: +31 (0)251 263 232
Fax: +31 (0)251 226 309
Email: info@sihi.nl
- Sterling Fluid Systems (Schweiz)**
Schaffhausen
Tel.: +41 (0)52 644 0606
Fax: +41 (0)52 644 0616
Email: info@sterling.ch

Americas

- SIHI Pumps (USA)**
Grand Island
Tel.: (1) 716 773 6450
Fax: (1) 716 773 2330
Email: mail@sihi.com
- SIHI Pumps (Canada)**
Guelph
Tel.: (1) 519 824 4600
Fax: (1) 519 824 7250
Email: mail@sihi.com
- SIHI (Peru)**
Lima
Tel.: +51 1 421 7411
Fax: +51 1 421 7413
Email: sihiperu@infonegocio.net.pe
- SIHI (Chile)**
Santiago
Tel.: +56 2 756 5900
Fax: +56 2 756 5990
Email: ventas@sihichile.cl
- Sterling Fluid Systems (Colombia)**
Bogota, D.C.
Tel.: +57 1 364 9264
Fax: +57 1 364 9262
Email: info@sihi.com.co

Asia

- Sterling Fluid Systems (Singapore)**
Singapore
Tel.: (65) 656 283 00
Fax: (65) 656 283 08
Email: info.singapore@sterlingasia.com
- Sterling Fluid Systems (Australia)**
Bayswater
Tel.: (61) 397 201 500
Fax: (61) 397 204 076
Email: info@sihipumps.com.au
- Sterling Fluid Systems (China)**
Shanghai
Tel.: (8621) 621 880 68
Fax: (8621) 621 780 86
Email: info.china@sterlingasia.com
- Sterling Fluid Systems (Malaysia)**
Selangor Darul Ehsan
Tel.: (60) 358 850 331
Fax: (60) 358 850 337
Email: info.malaysia@sterlingasia.com
- Sterling Fluid Systems (Thailand)**
Bangkok
Tel.: (66-2) 319 2567
Fax: (66-2) 319 2573/4
Email: sfsthai@sterlingthai.co.th
- Sterling Fluid Systems (Taiwan)**
Taipei
Tel.: (886) 286 312 138
Fax: (886) 286 312 184
Email: info.taiwan@sterlingasia.com

