

## Process Pumps for Steam and Energy Generation



Most of the cogeneration plants that are producing steam and energy operate using very similar principles.

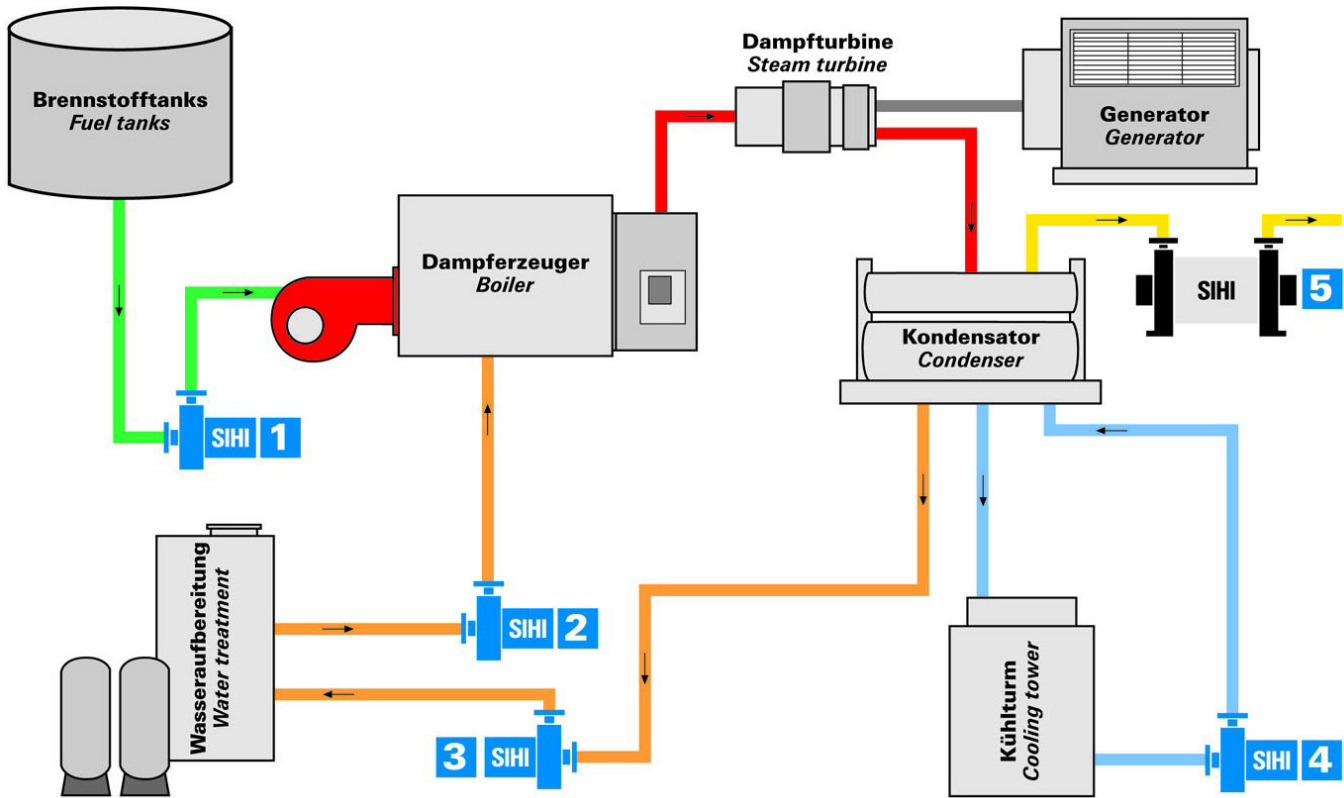
Steam is produced using feed water in a boiler system that is heated using coal, natural gas, domestic waste or fuel oil.

The steam that is generated drives the turbines and generators by converting the kinetic energy into electrical energy.

After this process is completed the steam is then condensed in the condenser and the condensate is transferred back into the water / steam circuit.

For power plants with “*energy-heat-coupling*” steam is transferred into the district heating network.

# Process Pumps for Steam and Energy Generation



## An overview of the various Process Pumps

- 1 Fuel pumps**

For the heating of oil and gas fired boilers, fuel pumps are used as feed pumps. The requirements of the fuel pumps depend on the fuel used and the burner rating.
- 2 Boiler feed pumps**


















The boiler feed pumps deliver the water that is evaporated in the boiler. Depending on the size of the power plant, the different flow rates and pressures have to be guaranteed. For this application, multi-stage centrifugal pumps are normally used.
- 3 Condensate pumps**

The steam from the turbines is condensed in the condenser and the accrued condensate is pumped to the water treatment system. These condensate pumps have to operate under very low NPSHA values due to the fact that the condenser is installed at the lowest point of the power plant and the primary pressure is very low. Vertical barrel pumps are therefore sometimes used.
- 4 Cooling water pumps**

For the condensation of the steam, the heat has to be removed. This is done by the cooling water which flows in a closed circuit and is pressurised by the cooling water pumps. Different pumps are considered for this application depending whether river water or cooling towers are used for the cooling process.
- 5 Vacuum pumps**

For the condenser evacuation, liquid ring vacuum pumps or steam ejectors are normally used.

# Innovative Solutions from Sterling SIHI

Process pumps	Pump types	Pump execution		
1 Fuel pumps	Chemical process pumps Types CBS, CBM, CBE, CBT		Capacity: max. 2200 m³/h Shaft sealing: mechanical seal, mag drive Material: nodular iron, stainless steel, special materials on request	
	Industrial pumps Type ZLN		Capacity: max. 1800 m³/h Shaft sealing: mechanical seal Material: grey cast iron, stainless steel	
	Side channel pumps Type CEH		Capacity: max. 35 m³/h Shaft sealing: mechanical seal, mag drive Material: nodular iron, stainless steel	
2 Boiler feed pumps	Multi-stage centrifugal pumps Type MSL, MSM, MSH		Capacity: max. 650 m³/h Shaft sealing: stuffing box, mechanical seal Material: grey cast iron, nodular iron, chrome steel, stainless steel	
3 Condensate pumps	Multi-stage centrifugal pumps Type MSL, MSM, MSH		Capacity: max. 650 m³/h Shaft sealing: stuffing box, mechanical seal Material: grey cast iron, nodular iron, chrome steel, stainless steel	
	Side channel pumps Type CEH		Capacity: max. 35 m³/h Shaft sealing: mechanical seal, mag drive Material: nodular iron, stainless steel	
4 Cooling water pumps	Industrial pumps Type ZLN		Capacity: max. 1800 m³/h Shaft sealing: mechanical seal Werkstoff: grey cast iron, stainless steel	
	Vertical centrifugal pumps Type RA, RK, RT		Capacity: max. 100000 m³/h Shaft sealing: stuffing box Material: grey cast iron, steel	
5 Vacuum pumps	Liquid ring vacuum pumps Type LPHX/LPH		Capacity: max. 10700 m³/h Shaft sealing: stuffing box, mechanical seal Material: grey cast iron, stainless 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: minsas@stnet.es
- SIHI Pumps (USA)**  
**Grand Island**  
Tel.: (1) 716 773 6450  
Fax: (1) 716 773 2330  
Email: mail@sihi.com
- SIHI (Peru)**  
**Lima**  
Tel.: +51 1 421 7411  
Fax: +51 1 421 7413  
Email: sihiperu@infonegocio.net.pe
- Sterling Fluid Systems (Singapore)**  
**Singapore**  
Tel.: (65) 656 283 00  
Fax: (65) 656 283 08  
Email: info.singapore@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 (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 (Canada)**  
**Guelph**  
Tel.: (1) 519 824 4600  
Fax: (1) 519 824 7250  
Email: mail@sihi.com
- SIHI (Chile)**  
**Santiago**  
Tel.: +56 2 756 5900  
Fax: +56 2 756 5990  
Email: ventas@sihichile.cl
- Asia**
- SIHI (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 (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

