FEED YOUR SYSTEM WITH GRUNDFOS KNOW-HOW
BUILDING UP STEAM WITH GRUNDFOS

Grundfos offers a wide range of feed pump solutions for steam boiler applications in virtually any type of industrial process. Which to choose depends on your specific requirements in terms of steam quality, operational stability and life cycle cost.

With Grundfos by your side you are in safe hands when it comes to steam boiler applications. Our boiler feed solutions are backed by decades of experience to offer you the best match for your requirements:

**On/off control**: Inexpensive solution suitable for less demanding applications.

**Feed valve**: Solid solution offering smooth operation and low risk of cavitation.

**Direct boiler feed**: State-of-the-art solution designed for unrivalled level control, high steam quality and reduction of life-cycle cost.

Whatever your choice, your feed pump will be based on Grundfos’ renowned quality. Designed to withstand high pressure, high media and ambient temperatures and a significant number of starts and stops, our pumps have been optimised in every aspect – and can even efficiently handle poor inlet conditions. We also offer controls for duty/standby or duty assist if the system features parallel pumps.

### Traditional solutions

- **On/off control utilising a level sensor**

### Level control through feed valve

- **Level sensor provides signal to control valve**
- **Continuous pump operation and bypass**

#### On/off control

On/off control uses a level sensor to switch the feed pump on and off. When the water level drops to a predefined start level, large quantities of relatively cold water are pumped into the boiler until the required water level is reached.

**Pros**

- Inexpensive
- Easy to install and features no bypass
- Efficient and offers high performance pump operation

**Cons**

- Poor steam quality
- Cavitation in feed pumps
- Water hammering
- Mechanical stress on the boiler structure

**Grundfos options**

- CR multi-stage high-efficiency pumps with MG motors (IE3)
- Pressure transmitters
- Motor protection (MP204) with monitoring function and BUS communication
- MPC controls for duty/standby function

#### Feed valve

In feed valve systems, the feed valve receives its signal directly from a level sensor. Water intake is reliably controlled by the feed valve and adjusted according to steam consumption. The feed pumps simply supply surplus flow and pressure.

**Pros**

- Boiler feed with feed valve:
  - Adjusts the boiler feeding according to the steam consumption
  - Ensures high steam quality

**Cons**

- Continuous pump operation increases energy consumption
- Expensive feed valve
- Bypass is required (unnecessary energy loss)
- Pressure loss across the feed valve

**Grundfos options**

- CR multi-stage high-efficiency pumps with MGE motors or CUE drive with MG motors (IE3)
- Pressure Transmitters
- Motor protection (MP204) with monitoring function and BUS communication
- MPC controls for duty/standby function
The Grundfos boiler feed product line is part of the wider Grundfos portfolio of pumps and pump systems. Our solutions are backed by decades of solid system knowledge and built on innovative products that push technological boundaries.

Boiler feed specialists will appreciate the full range of Grundfos products for steam boiler applications, including the Grundfos Alldos dosing pumps and our full water treatment portfolio for measurement and control.

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A boiler system equipped with a Grundfos E-solution guarantees smooth operation in any type of steam boiler – large or small. As the water level in the boiler is controlled directly by a variable-speed pump, the need for expensive feed valves is completely eliminated. A level sensor positioned on the boiler controls the pumps to ensure that the water intake is adjusted according to the steam consumption, maintaining a constant level. The result is an extraordinarily high steam quality and tangible energy savings on the pump operation.

The only downside of a direct boiler feed system is that it requires precise and qualified commissioning.

**Pros**
- No pressure loss across feed valve
- Unrivalled steam quality
- No need for low flow bypass
- Pump energy savings

**Cons**
- Requires precise and qualified commissioning

**Grundfos supplies**
- CRE pumps with MGE motor or CUE drive with MG motors (IE3)
- Control MPC and BUS communication
- Pressure transmitters
- MPC controls for duty/standby function

**GRUNDFOS CRE TAILOR-MADE BOILER FEED PUMPS**

With customised software, the variable speed Grundfos CRE pumps can operate outside their set pump curves for unrivalled performance in boiler feed systems.

Grundfos’ software can be tailor-made to achieve pump curves that fulfil even the most demanding needs. The secret lies in getting the pump to straighten out the pump curve and avoid the natural lable tendency created by high-efficiency hydraulic design. This optimisation of frequency converter software creates a steep pump curve with only one correct duty point to completely eliminate the risk of random excessive water intake.

**Standard versus customised software**
- The standard software in all modern variable-speed drives requires that the regulation loop is in normal regulation. They are not capable of handling the change from normal to inverse regulation and back again.
- Grundfos customised software for boiler feed applications provides constant pump curves and eliminates the risk of two duty points at the same pressure. At the same time, it eliminates the risk of excessive water intake since there is now only one duty point for any given flow.

**Graph showing variable-speed drive pump curves**
Feed your system with Grundfos know-how

Whatever the demands for steam quality, operational stability and energy efficiency in your boiler feed application, Grundfos has the solution.

As a full-range supplier of efficient boiler feed solutions, we offer customers access to decades of solid system experience and an extensive product portfolio renowned for its quality and reliability.

Visit grundfos.com for more information on our boiler feed solutions.