

Develop a taste for speed-controlled pumps

High performance, speed-controlled pump solutions significantly benefit both process and utility applications in the food and beverage industry. The unique product features manifest themselves in highly product-friendly processes, reduced maintenance, reduced number of components and increased energy efficiency.

The advantages of choosing a pump solution with integrated speed control in the food and beverage industry are many. At first glance a separate pump and valve may be a less expensive way of regulating flow and pressure. However, comparing the total life cycle costs changes the picture. Being able to regulate the pump directly where relevant improves process reliability significantly – and makes for substantial cuts in the energy consumption, particularly in the utility applications. Grundfos' comprehensive range of intelligent pumps with integrated or attached speed control is called E-solutions and offers a variety of benefits to modern production lines.

Improve processing with reliable product-handling

When it comes to the handling of delicate or sensitive products in the food and beverage industry a sanitary E-solution can make a remarkable difference. E-solutions automatically adjust the pump's speed and performance in response to changes in the product's properties. This maintains a smooth flow operation during processing to ensure gentle handling and efficiently prevent the product from being physically damaged. Which in turn makes for less waste and higher yield.



Another significant advantage of process automation by means of speed control is the fact that regulation is precise and temperature increase due to handling can be kept at a minimum. This is particularly important in maintaining the physiological properties of the product. By choosing an E-solution it is possible to guarantee that the temperature never increases even the slightest above what is necessary, thereby ensuring optimum processing conditions.

In CIP-systems, speed-controlled pumps allow the system to be flushed more quickly, efficiently reducing the downtime between batches.

Case (process)

BMI Windsbach, Germany

Standard pumps are entirely unsuitable for conveying a delicate medium, such as cheese curd. Even the tiniest irregularities in the pump's hydraulic system can damage the product and reduce cheese yield. Consequently, BMI Windsbach turned to Grundfos for a customised solution when the old curd pump had to be replaced. Integrated frequency converters now automatically adjust the pump's rotational speed to ensure gentle product-handling at all times. In addition to optimum processing, the Grundfos E-solution has cut back on energy consumption as the motor speed has been adjusted to the actual requirements.

Upgrade utility applications with an E

E-solutions are ideal in utility applications in the food industry for a number of reasons. First and foremost, process automation efficiently meets the fluctuating production capacities through continuous adjustment of flow and pressure. In boiler feed applications, E-solutions effortlessly ensure a constant level, securing a high quality of steam that perfectly matches the requirements of the specific process.

Equally important, the efficiency of E-solutions can lead to significant energy savings. Often, the energy consumption, which stems from the utilities, can be cut by replacing a traditional pump system with an E-solution.

Case (utility)

Arla Food, Denmark

Northern Europe's largest manufacturer of dairy products, Arla Foods, has cut the energy consumption related to cooling by as much as 110,000 kW per year. This was achieved by replacing the existing pumps with Grundfos' Hydro 2000 booster set, including three E-solution pumps. Previously, the pumps always ran at full speed. Now the pump speed responds automatically and immediately to maintain constant pressure. Even though the new system has been dimensioned 50% larger than the old one, the significant cut in energy consumption makes the payback time as short as three years.

Cut back on maintenance

Whether E-solutions are used in process or utility applications an additional advantage is the integrated software that allows operation to be supervised around the clock. If the flow increases or the pump restarts during the night these facts are available on a surveillance system. This essentially means that any deviances can be dealt with before turning into real problems. Which in turn means that expensive downtime can efficiently be avoided – and that the need for frequent and often unnecessary inspection of the pumps becomes redundant.

Overall, the need for maintenance in E-solutions is reduced. Since the speed-controlled pumps only ever operate at the minimum required load, the wear on components is significantly reduced. Finally, E-solutions comprise fewer components, which facilitate maintenance.

Save time with E-solutions

All set and ready to connect when supplied to the operator, Grundfos' E-solutions are designed to save time. Since all components – pump, motor, frequency converter, sensor, application software and controller – are built into one, E-solutions are easy to specify, easy to order, easy to install and easy to service. All programming is carried out and tested in advance by Grundfos, which greatly facilitates commissioning anywhere in the food and beverage industry.



Naturally, Grundfos also provides external frequency converter solutions if an E-solution is not ideal, e.g. in washdown applications where a wall-mounted frequency converter is preferable.

Made entirely by Grundfos

Every component in the E-solution programme is developed and manufactured by Grundfos. This guarantees reliable interaction of the various parts as they have all been carefully designed to work together. Speed-controlled pumps are easily connected to fieldbus systems, such as Profibus-DP, Modbus-RTU or LONWorks via the Grundfos gateways: the CIM/CIU interface modules. The result is optimum performance and control day in and day out.

The speed-controlled pump programme

Grundfos E-solutions cover all sanitary and non-sanitary pump requirements:

- Circulator
- End-suction
- Booster
- Submersible
- Multistage
- Single-stage
- Rotary lobe
- Self-priming