Grundfos offers one of the most extensive product ranges in the market and is a natural partner of choice for products and solutions within the municipal, industrial and building services industries. The product range for dosing and disinfection covers everything from disinfection of drinking water to water treatment in highly sensitive industrial processes. Our products are perfectly matched to both, the applications and the market.

The Grundfos product portfolio can also provide you with innovative solutions in the following business areas: water supply and waste water disposal, chemical and process engineering, food and beverage industry as well as heating and cooling technology.

You can always rely on Grundfos as a competent partner for all your applications.

**Dosing pumps** Grundfos offers a wide range of dosing pumps. Our innovative drive concepts with stepper motor technology (Digital Dosing™) cover a large-scale performance range with only a few models. In addition, there are many advantages such as low pulsation, smooth continuous dosing, simple to use and universal connections to existing process control systems.

To achieve accurate dosing and high process reliability, Grundfos offers integrated solutions. Digital Dosing combined with optimal dosing head design and 100% stroke length enables you to smoothly dose degassing liquids, such as sodium hypochlorite and hydrogen peroxide. With an optionally integrated FlowControl or FlowMonitor system, malfunctions in your dosing process will be detected and displayed. Furthermore, AutoFlowAdapt or AutoCal ensure automatic compensation and recalibration during the dosing process, even in case of environmental changes.

**Disinfection** Grundfos offers a variety of disinfection systems to ensure appropriate disinfection for your applications. For sustainable disinfection, our Selcoperm system generates hypochlorite (8 g/l) on-site from salt, water and electricity only and our Oxporm system offers a wide range of possibilities for production and dosing of chlorine dioxide. For chlorine gas dosing we can offer our Vaccuperm systems.

**Measurement & Control** Control of dosing pumps often requires process control equipment to automatically adjust dosing pump flows to set points. Grundfos also offers measurement & control equipment for chlorine, chlorine dioxide, pH, ORP either as loose equipment or as preassembled compact backboard mounted systems. And to complete the measurement & control product range, the Grundfos portfolio also includes hand photometers for calibrating the measurement & control devices.
Digital Dosing™: Diaphragm dosing pumps – Innovation in its purest form

With its diaphragm dosing pumps, Grundfos has redefined dosing. By using stepper motors, the discharge stroke speed can be adjusted continuously over a wide range.

Which advantages do digital dosing pumps offer for your application?

Low pulsation and smooth dosing

Traditional dosing pumps regulate the dosed quantity by adjusting stroke length and/or stroke frequency. But reducing the stroke length does create disadvantages regarding dosing accuracy. In cases where the dosing pump cannot operate at 100% stroke length, both the suction and discharge valves will suffer from reduced performance leading to inefficient dosing. Variations in stroke frequency also lead to non-continuous dosing.

By using a stepper motor, the volume dosed is altered by the discharge stroke speed while continuously utilizing 100% of the stroke length, which leads to optimum dosing accuracy and better handling of degassing liquids.

Digital Dosing™ offers obvious advantages against solenoid pumps, particularly when dosing minute volumes such as antisalts in reverse osmosis.

High turn-down ratio – less models needed

By using a stepper motor, the digital dosing pumps can reach a turn-down ratio of 1:3000 which is approximately 30 times higher than the turn-down ratio of a conventional dosing pump. Therefore, one model only can cover a range of 2.5 ml/h to 7.5 l/h, for example. This means, you need less storage facilities and less spare parts and you have more flexibility regarding possible fields of application.

Continuous dosing even down to ml/h

Simplicity

The included click-stop mounting plate makes SMART Digital more flexible. Three different positions are possible without using any additional accessories such as wall brackets. Service and pump exchange can now be done easily and fast just by clicking the pump in and out of the mounting plate. The control cube on the DDA and DDC pump can be lifted and turned easily into three different positions: front, left or right. DEM and DDI pumps are available with front or side mounted control interfaces.

Modularity

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Flow Measurement

Digital Dosing pumps offer versatile control options, signal inputs and outputs; flow proportional dosing via pulse input or 0/4-20mA analog control, batch dosing via timer (weekly/periodically) or pulse. Via the 0/4-20mA analog output and additional relay outputs, the status of the pump can also be perfectly integrated in your process control system. Digital Dosing pumps can also be easily integrated in fieldbus networks (Profinet DP or GENIBUS).
Digital diaphragm dosing pumps up to 30 l/h

SMART Digital: Designed to save costs

The SMART Digital generation (DDA, DDC and DDE) features a powerful variable-speed stepper motor and brings state-of-the-art technology to perfection. Combined expert knowledge and new patented solutions set future standards. A wide field of customers’ requirements, ranging from enhanced process reliability to economic solutions, can now be satisfied by only one family.

All our SMART models feature the following: Turn-down ratio of 1:3000 for DDA 7.5-16 and 1:1000 for all other models; smooth continuous dosing; always full stroke length and improved dosing head; valve design for excellent dosing of degassing liquids; click-stop mounting plate for flexible installation; full-PTFE diaphragm ensuring high reliability; wide range power supply 100-240V, 50/60Hz

DDA: High end solution for complex and demanding applications
- Advanced capacity and pressure rates up to 30 l/h and 16 bars
- Flow Control system with selective fault diagnosis, and pressure monitoring
- Integrated flow measurement and AutoFlowAdapt (intelligent flow regulation)
- Control options: Manual, pulse, analog 0/4-20mA (incl. scaling), batch, timer cycle, timer week
- Analog 0/4-20 mA output, external stop, dual-level tank control, 2 relay outputs
- Auto deaeration during pump standby
- Accessory: E-Box with Profibus or Power Relays

DDC: Offers an optimum price-performance ratio
- Control options: Manual in l/h or gph, pulse in ml/pulse, analog 0/4-20mA
- Two SlowMode steps (25 % and 50 %), calibration mode, service display
- External stop, dual-level tank control, 2 relay outputs

DDE: Digital Dosing even for the low budget segment
- Only 2 models from 0.006 to 15 l/h
- Control options: Manual control 0.1-100 %, pulse in % of stroke volume
- External stop, empty tank control

Areas of Application
- Chemical treatment and conditioning of water
- Disinfection and pH adjustment
- Drinking, process and wastewater
- Food and beverage, Clean-In-Place
- Ultrafiltration and reverse osmosis
- Pulp and paper, boiler feed water
- Swimming pool water, cooling tower
- Coagulation, flocculation, precipitation
- Chemical industry, car wash, irrigation

Digital diaphragm dosing pumps up to 940 l/h

DME 60-10, DME 150-4, DME 375-10 and DME 940-4:
- Universal high performance pump (up to 940 l/h) with brushless direct current motor for industrial processes, waste water treatment (flocculation tools)
- Turn-down ratio up to 1:800
- Integrated overpressure valve
- Continuous dosing throughout the whole range
- User-friendly, 14 user-languages
- Profibus optional

DDI 60-10 and DDI 150-4:
- Universal high performance pump with brushless direct current motor for industrial processes, waste water treatment (flocculation tools)
- Turn-down ratio up to 1:800
- 0/4-20 mA analog output proportional to dosing quantity
- Full-PTFE diaphragm for universal chemical resistance
- Comprehensive monitoring system (Flow Monitor, AutoCal)

Areas of Application
- Chemical treatment and conditioning of water
- Disinfection
- Coagulation, flocculation, precipitation
- Food and beverage, Clean-In-Place
- Pulp and Paper
- Cooling tower
- Chemical industry
**Mechanical diaphragm dosing pumps up to 2 x 4,000 l/h**

**DMX**
- The DMX series of high-quality motor-driven diaphragm pumps is suitable for various applications. The pumps are very economic and robust - for medium up to high performance.
- Optionally available as duplex pump: the two dosing heads offer a cost-efficient way of dosing two different chemicals or of gaining higher flow rates for a single chemical.
- DMX pumps can be configured with servomotors or Atex-class motors to meet specific requirements.

**Hydraulically actuated piston diaphragm dosing pumps**

**DMH 25x, DMH 28x**
- Both series are extremely robust, high-performance dosing pumps for process engineering applications. Long lifetime due to piston diaphragm technology. The DMH 28x has been designed especially for high pressure applications.
- High dosing accuracy and exact reproducibility. The dosing flow constancy and linearity deviation are below 2% (DMH 28x: 1%).
- High functional safety due to a serially integrated diaphragm protection system, integrated pressure relief valve and degassing valve of the hydraulic system (DMH 28x).
- Universal fields of application for this pump series due to a full PTFE dosing diaphragm.
- Available in various options for manifold application requirements, such as ATEX, API, VIK, etc.

**Areas of Application**
- Chemical treatment and conditioning of water
- Disinfection
- Coagulation, flocculation, precipitation
- Mining
- Power plants
- Oil and gas
- Filling and batch dosing
- High liquid temperatures

**Dosing stations**

**DTS > Configurable dosing tank station**
- DTS dosing stations are intended for storing and dosing liquid chemicals. They can be configured by means of a type key and can be flexibly applied to fulfill various dosing tasks. Due to the use of high-quality materials, DTS dosing stations can be employed universally for diverse dosing liquids. The selection of materials can be adapted via the configuration.

**Areas of Application DTS**
- Dosing of biocides and inhibitors in cooling water, dosing of alkalis and acids for pH control, dosing of coagulants (such as ferric (II/III) chloride) for waste water treatment, dosing of hypochlorite, dosing of cleaning and disinfectants (CIP, cleaning machines).

**Mobile DOS**
- This dosing station is ideally suited for a short-term, temporary operation such as an emergency disinfection with chlorine bleaching, for example. It is pre-assembled and ready for connection to 30 litre containers. The portable dosing station is equipped with a rigid suction line which features an empty signal and pre-alert (to warn in case of lack of dosing liquid), a dosing pump (to be selected), integrated pressure retention and pressure relief valves and a 10-meter pressure line with fitted injection unit. The Mobile DOS with its Plus3 dosing head system is ideally suited for degassing media such as chlorine bleaching.

**Areas of Application Mobile DOS**
- Dosing of chlorine bleaching for drinking water disinfection, dosing of alkalis and acids for pH control, dosing of coagulants for waste water treatment, dosing of cleaning and disinfection agents (CIP, cleaning machines), dosing of biocides and inhibitors in cooling water.
**Measuring amplifiers**

**Conex®** – extremely easy to operate

**Aquacell®** and more – for every occasion

**Ultra-easy operation – fast and reliable**

-Plain text output & high-quality graphics
-Data and measurements directly on the display

**How you benefit**

-Process reliability and water analysis in top form

**Sensors**

-**Conex® DIA-1/-2Q**
  -Oxide and peracetic acid.

**Plug’n’Play systems**

-**Conex® DIA-2**
  -Oxide and peracetic acid.

**Compact systems**

**Plug’n’Play – there is no easier way**

**Equipment**

**Water analysis, safety**

**Measurement and control**

**Measurement units**

**Conex® DIA / DIS and DIP measuring amplifiers and controllers**

**Areas of Application**

-**Disinfection in filling tanks and CIP applications.**

**Groundfos Water Treatment sensors**

-**Conex®** – extremely easy to operate

**Conex® DIA / DIS and DIP measuring amplifiers and controllers**

**Groundfos Water Treatment measurement and control – you won’t find an easier, more comprehensive system!**

-**Plug’n’Play** options offer even higher reliability, and saved time and high pressure.

**Plug’n’Play**

-**Plug’n’Play** systems offer impressive, all-round reliability,

**Our measuring amplifiers make life easy**

-Get optimum control over key water chemistry and process parameters using Grundfos sensors, including pH, conductivity, redox (ORP) and disinfection value.

**Plug’n’Play**

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**Plug’n’Play**

-**Plug’n’Play** systems offer impressive, all-round reliability,
With our user-friendly measurement and control devices …

… you’ll always get your process under control!

<table>
<thead>
<tr>
<th>Task</th>
<th>What Grundfos does</th>
<th>How you benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measurement</strong></td>
<td>Ultra easy, one-button operating,</td>
<td>You master even complex settings without effort, and can take measurements even in remote locations.</td>
</tr>
<tr>
<td><strong>Fast calibration</strong></td>
<td>Separate menu-driven calibration with integrated plausibility checks, accurate displayed recognition and % value.</td>
<td>You avoid operating errors and automatic measurement process quality.</td>
</tr>
<tr>
<td><strong>Multiple Languages</strong></td>
<td>Multi-lingual operation using plain-text display in up to ten languages.</td>
<td>You can use the measurement and control devices in your own language, even in multi-language environments.</td>
</tr>
<tr>
<td><strong>Temperature and pH fluctuations</strong></td>
<td>Automatic compensation with a fluctuating pH value and/or temperature.</td>
<td>You avoid measurement errors due to fluctuating values and automatically adjust your process.</td>
</tr>
<tr>
<td><strong>Access protection</strong></td>
<td>Individual operating codes and key locking prevent against accidental adjustment or unauthorised access.</td>
<td>You ensure secure access control and protect against unauthorized access.</td>
</tr>
<tr>
<td><strong>Optimum self-monitoring</strong></td>
<td>Wire break monitoring of current loops, automatic regulator optimisation using adaptive regulation.</td>
<td>You have a complete view of the process and ensure maximum process availability.</td>
</tr>
<tr>
<td><strong>Optimum monitoring</strong></td>
<td>Measurement and control of current loops, automatic regulator optimisation using adaptive regulation, and monitoring via the auto-tuning process.</td>
<td>You can monitor your process continuously and adjust it automatically.</td>
</tr>
</tbody>
</table>

**Vision for water technology**

In line with our mission statement, we at Grundfos Water Treatment rely on our many years’ experience and comprehensive range of products and systems to provide continually comprehensive solutions. This enables us to be up to all important tasks in water treatment.

**Chlorine gas**

- **Vaccuperm chlorine gas systems**
  - Sustained release action
  - High safety standards
  - No AOX/THM formation
  - Highly effective disinfectant that avoids reinfection with germs
  - Low level of chemical consumption, long-lasting disinfecting effect
  - Process and operation cost savings
  - Reliable and safe disinfection process
  - No effect on odour or taste

**Chlorine**

- **Selcoperm onsite generation**
  - Sufficient quantities of disinfectant can be handled effectively, because the disinfectant generated is very easily stored in buffer tanks for long periods of time.
  - Process and operation cost savings
  - Low-cost chemicals
  - No AOX/THM formation
  - Highly effective disinfectant that avoids reinfection with germs
  - Process and operation cost savings

**Chlorine gas systems**

The disinfectant is dosed from the buffer tank directly into the piping system with a dosing pump.

**Selcoperm standard systems** are available for capacities of 25, 50, 100 and 200 kg Cl2/h. Higher capacities are possible on demand.

For more information, please visit our website or contact your local Grundfos Water Treatment representative.
Chlorine dioxide – effective even against biofilms

In the past few years, the demand for Grundfos Water Treatment Oxiperm® chlorine dioxide generators has increased dramatically. On the one hand, this is because chlorine dioxide is an extremely long-lasting and effective disinfectant:

- Even relatively small quantities of chlorine dioxide display high disinfecting properties against all critical and chlorine-resistant germs, almost regardless of the pH value.
- Chlorine dioxide can be used to successfully reduce the formation of biofilms in water pipes. This removes the life source for harmful germs such as legionella, which has a significant impact on the durability of the disinfection.

On the other hand, our Oxiperm® chlorine dioxide generators are outstandingly easy to use. Other important factors include:

- The effective interplay of precise dosing technology, an ideal mixture of components, quick chemical reactions with maximum conversion rates.
- Outstandingly reliable and effective disinfection, which saves time and operating costs.

The compact Oxiperm® Pro OCD-162 has been developed for applications in building services. This disinfection system is specifically designed for fighting Legionella in drinking water installations.

### Chlorine dioxide

**Oxiperm®**

**Chlorine dioxide systems**

**Chlorine dioxide – effective even against biofilms**

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### Concentration of disinfectant (mg/l) vs. residual germs (%)

<table>
<thead>
<tr>
<th>Concentration of disinfectant (mg/l)</th>
<th>Residual germs with HOCI</th>
<th>Residual germs with ClO2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01</td>
<td>100</td>
<td>80</td>
</tr>
<tr>
<td>0.02</td>
<td>80</td>
<td>60</td>
</tr>
<tr>
<td>0.03</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>0.04</td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td>0.05</td>
<td>20</td>
<td>0</td>
</tr>
</tbody>
</table>

**Oxiperm®**

**Chlorine dioxide systems**

**Complete range of disinfectants from a single source**

### The disinfectant

- Chlorine gas
  - Vaccuperm VGA-111/113/117 VGB 100
    - up to 10 kg/h
  - Fully automatic vacuum chlorine gas dosing
- Vacuum chlorine gas dosing
- Drinking water:
  - Independent water supply
  - Waste water: Industrial waste water
  - Public swimming pools

### Our product

- Oxiperm OCD-164
  - up to 10 kg/h
  - Chlorine / hydrochloric acid (diluted or concentrated) or chlorite/chlorine
- Electrolytic chlorine production
  - Drinking water:
    - Independent water supply
    - Waste water: Industrial waste water
    - Public swimming pools
    - Marine - application specific

### The process

- Selcoperm SES
  - up to 2 kg/h
  - Higher capacities on request
- Onsite generation of sodium hypochlorite
  - Chlorine dioxide
    - Oxiperm OCD-162
      - up to 60 g/h
      - Chlorite / hydrochloric acid (diluted)

### The preferred application

- Drinking water:
  - Municipal waterworks
  - Food and drinks industry: Brewing water, bottle washing, CIP systems, etc.
  - Cooling circuit water
- Drinking water: Municipal waterworks
  - Food and drinks industry: Brewing water, bottle washing, CIP systems, etc.
  - Cooling circuit water
- Drinking water: Hotels, hospitals, retirement homes, protection against legionella
- Shower facilities in swimming pools
- Commercial buildings