Water treatment
Water treatment

With increased population, expanding manufacturing and growing regulatory requirements the demand for industrial wastewater treatment services is projected to grow by around 5.3% a year for the next five years.

Wastewater is commonly used by many industry sectors including chemical, pharmaceutical, oil and gas, food, pulp and paper, metal, mining and power generation. And with each industry using different processes, the technologies used for treating wastewater are numerous.

However, the operation and control part of the process is generally considered to be the main focus as it includes operations such as separation, flotation, settling, filtration, neutralisation, absorption, ion exchange and chlorination.

At SMC we have local teams of specialists who understand these needs and can help you find the right solutions.

If you’re using reverse osmosis devices or have micro/ultra/nano filtration applications or ozone systems check out some of our latest cutting edge products that have been designed and developed to help you.
Water treatment process

**Preliminary treatment**
1. Bar screen
2. Sand/grease trap

**Primary treatment**
3. Coagulator-flocculator
4. Primary clarifier

**Secondary treatment**
5. Biological reactor
6. Secondary clarifier

**Tertiary treatment**
7. Pre-filtration
8. Micro/nano/ultrafiltration
9. Reverse osmosis
10. Ozonation
11. Chlorination

**Sludge treatment**
12. Sludge digester
13. Sludge dewatering
Secondary treatment
5 Biological reactor
6 Secondary clarifier

Tertiary treatment
7 Pre-filtration
8 Micro/nano/ultrafiltration
9 Reverse osmosis
10 Ozonation
11 Chlorination
SMC products for the water treatment industry

Industrial filters

Applications
- Pre-filtration
- Reverse osmosis device
- Highly purified water systems

Low maintenance filter
FN1/FN4 Series
- Nominal filtration rating: 5, 20 µm
- Flow rate: FN1: 40 and 80 l/min; FN4: 250 l/min.

Quick change filter for cleaning solvent
FQ1 Series
- Nominal filtration rating: 0.2 to 105 µm
- Flow rate: 5 to 30 l/min.

High precision filter
FGH Series
- Nominal filtration rating: 0.2 to 13 µm
- Flow rate: 5 to 70 l/min.

Bag filter
FGF Series
- Nominal filtration rating: 5 to 100 µm
- Flow rate: 400 to 2000 l/min.

High flow filter
FGG Series
- Nominal filtration rating: 0.5 to 120 µm
- Flow rate: 160 to 370 l/min.

Medium flow filter
FGE Series
- Nominal filtration rating: 0.5 to 120 µm
- Flow rate: 45 to 230 l/min.

Low flow filter
FGD Series
- Nominal filtration rating: 0.5 to 120 µm
- Flow rate: 11 to 63 l/min.

Our FN4 series combines an eco-friendly reusable stainless steel filtration element with a back-flush capability, which means that both filtering and back-flushing can be performed in parallel.
Applications

Reverse osmosis device
Ozone systems
Chlorine dioxide device
Micro/ultra/nano filtration
Vacuum distillation
Highly purified water systems
Bernoulli filter
Bilge water
Electrodeionisation

2-colour display digital pressure switch
ZSE20C/ISE20C Series
- Pressure range:
  - Vacuum: [-0.1, 0] MPa;
  - Compound: [-0.1, +0.1] MPa;
  - Positive: [-0.1, 1] and [-0.1, 2] MPa
- Stainless steel construction.

High-precision digital pressure switch with IO-Link
ISE7□□□□G Series
- Rated pressure:
  - 1 MPa (ISE70) and 1.6 MPa (ISE71) for air;
  - 1 MPa (ISE70G), 2 MPa (ISE79G), 5 MPa (ISE76G) and 10 MPa (ISE77G) for general fluids
- Output: IO-Link and NPN/PNP.

General purpose pressure switch
ISG Series
- Pressure range:
  - Positive: [0.02, 0.3], [0.05, 0.7] MPa, [0.1, 1] MPa;
  - Vacuum: [-10, -100] kPa
- Wetted material: stainless steel 316, brass/phosphor bronze.

Pressure sensor
PSE560 Series
- Pressure range:
  - Positive pressure: [0, 500] kPa and [0, 1] MPa;
  - Vacuum: [-101] kPa;
  - Compound pressure: [-100, 100] kPa
- Wetted material: SUS316L.

Pressure sensor
PSE570 Series
- Pressure range:
  - Vacuum: [-0.1, 0 MPa]; compound [-0.1, +0.1] MPa; positive [-0.1, 1 MPa] and [-0.1, 2 MPa]
- Stainless steel construction.

Multi-channel digital pressure sensor monitor
PSE200 Series
- Controller for 4 sensor inputs
- Automatic sensor recognition.

2-colour display digital pressure sensor monitor
PSE300 Series
- 2 colour display determined by switching status
- 2 switch outputs and analogue output.

3-screen display sensor monitor
PSE300AC Series
- Visualisation of settings
- Easy screen switching.

Our customers are particularly satisfied with our latest pressure switches; with their design functionality and ease of use. The information accuracy and its rapid availability assist them in their daily decision making. Furthermore, customers find the energy efficiency and cost effectiveness features advantageous.
Our LFE series can manage conductive fluids, such as water and water-soluble coolant, or fluids that have at least 5 µS/cm conductivity. This is due to the fact that the materials that come into contact with those fluids are PPS, FKM and brass.
### Process valves

#### Air operated

<table>
<thead>
<tr>
<th>Valve Type</th>
<th>Series</th>
<th>Port Size</th>
<th>Orifice Size</th>
<th>Body Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angle seat valve</td>
<td>VXB Series</td>
<td>3/8” to 3/4”; 11 to 18 mm</td>
<td>stainless steel and bronze.</td>
<td></td>
</tr>
<tr>
<td>2-port valve for steam</td>
<td>VND Series</td>
<td>1/8” to 2”; 7 to 50 mm</td>
<td>stainless steel (316L) and bronze.</td>
<td></td>
</tr>
<tr>
<td>Direct air operated 2-port valve</td>
<td>VXA Series</td>
<td>1/8” to 1/2”; 3 to 10 mm</td>
<td>brass and stainless steel.</td>
<td></td>
</tr>
<tr>
<td>2-port valve for flow control</td>
<td>VNB Series</td>
<td>1/8” to 2”; 7 to 50 mm</td>
<td>bronze, stainless steel and aluminium.</td>
<td></td>
</tr>
<tr>
<td>High purity chemical liquid valve</td>
<td>LVA/LVC/LVH Series</td>
<td>1/8” to 1”; 2 to 22 mm</td>
<td>new PFA, stainless steel and PPS.</td>
<td></td>
</tr>
</tbody>
</table>

#### Direct operated

<table>
<thead>
<tr>
<th>Valve Type</th>
<th>Series</th>
<th>Port Size</th>
<th>Orifice Size</th>
<th>Body Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-port solenoid valve</td>
<td>VX2 Series</td>
<td>1/8” to 1/2”; 6 to 12 mm</td>
<td>aluminium, resin, brass and stainless steel.</td>
<td></td>
</tr>
<tr>
<td>Compact 2-port solenoid valve</td>
<td>VDW Series</td>
<td>M5 to 1/8”</td>
<td>aluminium, resin, brass and stainless steel.</td>
<td></td>
</tr>
<tr>
<td>Compact/lightweight 2-port solenoid valve</td>
<td>VDW30/40-XF Series</td>
<td>Ø 4 to Ø 10; 1.5 to 4 mm</td>
<td>PPS.</td>
<td></td>
</tr>
<tr>
<td>Energy saving type 2-port solenoid valve</td>
<td>VXE Series</td>
<td>1/8” to 1”; 2 to 25 mm</td>
<td>brass and stainless steel.</td>
<td></td>
</tr>
<tr>
<td>2/3 port media separated valve</td>
<td>LVMK Series</td>
<td>Ø 4 to Ø 10; 1.5 to 4 mm</td>
<td>PPS.</td>
<td></td>
</tr>
<tr>
<td>2-Port Solenoid Valve with built-in Y-strainer</td>
<td>VKX Series</td>
<td>1/8” to 3/8”; 1.5 to 4 mm</td>
<td>brass.</td>
<td></td>
</tr>
<tr>
<td>3-port solenoid valve</td>
<td>VX3 Series</td>
<td>1/8” to 3/8”; 1.5 to 4 mm</td>
<td>brass and stainless steel.</td>
<td></td>
</tr>
<tr>
<td>2/3 port solenoid valve for chemicals</td>
<td>LVM Series</td>
<td>M5, M6 and 1/4-28 UNF</td>
<td>PFA and PEEK.</td>
<td></td>
</tr>
</tbody>
</table>
### Process valves

**Applications**
- Reverse osmosis device
- Ozone systems
- Chlorine dioxide device
- Micro/ultra/nano filtration
- Vacuum distillation
- Highly purified water systems
- Bilge water
- Sludge treatment
- Sand filtration
- Bernoulli filter
- Pre-filtration
- Electrodeionisation
- Flocculation

### Directional control valves & fieldbus system

**Applications**
- Reverse osmosis device
- Ozone systems
- Micro/ultra/nano filtration
- Vacuum distillation
- Highly purified water systems
- Sludge treatment
- Sand filtration
- Electrodeionisation
- Piloting of pneumatic process valves

#### Pilot operated

**2-port solenoid valve**
- **VXD Series**
  - Port size: 1/4” to 1”;
  - Port size: 1/8” to 1”;
  - Orifice diameter: 10 to 12 mm;
  - Orifice diameter: 2 to 50 mm;
  - Body materials: aluminium, resin, brass and stainless steel.

**Zero differential pressure type 2-port solenoid valve**
- **VXZ Series**
  - Port size: 1/4” to 1”;
  - Orifice diameter: 10 to 25 mm;
  - Body materials: aluminium, resin, brass and stainless steel.

**Energy saving type 2-port solenoid valve**
- **VXE Series**
  - Port size: 1/8” to 1”;
  - Orifice diameter: 2 to 50 mm
  - Body materials: brass and stainless steel

**Diaphragm type 2-port solenoid valve**
- **VXH Series**
  - Port size: 1/4” to 1/2”;
  - Orifice diameter: 10 mm
  - Body materials: brass.

#### Fieldbus system

**EX600 Series**
- Applicable protocol:
  - DeviceNet™,
  - PROFINET
- Applicable valve series: SY, VQC, S0700, SV.

**EX260 Series**
- Applicable protocol:
  - DeviceNet™,
  - PROFINET
- Applicable valve series: SY, VQC, S0700, SV.

**EX500 Series**
- Applicable protocol:
  - DeviceNet™,
  - PROFINET
- Applicable valve series: SY, VQC, S0700, SV.

**EX250 Series**
- Applicable protocol:
  - DeviceNet™,
  - PROFINET
- Applicable valve series: SY, VQC, S0700, SV.
Cylinders

Applications

- Sludge treatment
- Sand filtration
- Bernoulli filter

ISO 15552 cylinder
C96 Series
- Bore sizes up to 125 mm
- Standard stroke up to 2000 mm.

ISO 15552 cylinder
CP96 Series
- Bore sizes up to 125 mm
- Standard stroke up to 2000 mm.

ISO/VDMA cylinder
C95 Series
- Bore sizes up to 250 mm
- Standard stroke up to 2400 mm.

Stainless steel cylinder
CG5-S Series
- Bore sizes up to 100 mm
- Standard stroke up to 200 mm.

Air cylinder
CS1 Series
- Bore sizes up to 300 mm
- Standard stroke up to 2400 mm.

Electro-pneumatic positioner
IP8000/8100 Series
- Electropneumatic positioner lever type (IP8000) and rotary type (IP8100)
- ATEX compliant.

Smart positioner
IP8001/8101 Series
- Smart positioner lever type (IP8001) and rotary type (IP8101)
- ATEX compliant.

Pneumatic positioner
IP5000/5100 Series
- Pneumatic positioner – lever type (IP5000) and rotary type (IP5100)
- ATEX compliant.

Cylinder positioner
IP200 Series
- Servo-mechanism allows precise and stable position control of cylinders.
- Applicable stroke up to 300 mm.

Positioners

Applications

- Control valves

Process pump
PA3000/5000 Series
- Double acting pump, automatically operated type/air operated type
- Automatically operated (discharge flow rate: max. 45 l/min)/Air operated (discharge flow rate: max. 34 l/min).

Process pump
PAX1000 Series
- Double acting process pump with built-in pulsation attenuator
- Discharge flow rate: max. 10 l/min.

Process pump
PBF3000/5000 Series
- Automatically operated (discharge flow rate max. 45 l/min)/Air operated (discharge)
- Flow rate max. 38 l/min.

Process pump
PB1000A Series
- Single acting pump; built-in solenoid valve/air operated type
- Discharge flow rate: max. 2 l/min.

Pumps

Applications

- Chlorine dioxide device
- Micro/ultra/nano filtration
- Highly purified water systems
- Flocculation

SMC products
Water treatment industry
Our extensive range of fittings and tubing provide customers with a complete solution for their piping equipment needs. For example, KFG2 fittings can operate with ambient operating fluid temperatures of -65 to 260 °C.

Thanks to their stainless steel 316 construction and a unique non-rubber seal insert connection, this range of grease-free fittings offers very high levels of corrosion resistance.
SMC’s impressive product range can offer nearly any product for controlling various fluids in lines up to 2” like the following:
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1019 Morkels close
Midrand
Telephone: +27 11 100 5866

Technical: zatechnical@smcza.co.za
Sales: zasales@smcza.co.za
Orders: zaorders@smcza.co.za

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