Pneumatic Components for the Mining Industry
SMC Corporation – the world leaders in pneumatics and experts in automation.

With a 34% global market share, SMC leads the way in developing high quality components for industrial automation needs.

With industry experts based at our 51 subsidiaries around the world, we work closely with our customers to help them find the best solutions.

With around 12,000 standard products, which are available in over 700,000 variant forms, plus the ability to make specials and assemblies in all our factories, we can be your one-stop-shop for hydraulics, pneumatics, drives and controls, instrumentation and temperature control.

Tried and tested SMC mining-related components for use in control panels – including design and assembly capabilities in our factory in Johannesburg.

Use of pneumatic cylinders in loading skips and hatch loading devices.

Pneumatic cylinders with piston diameter up to 500mm.

**CS1 series**
- Actuators for feeding hopper loading units
- Loading skips main damper actuator
- Shuttle gate actuator
- Scraper actuator

Use of pneumatic cylinders in other mining systems

- Mine shaft guarding actuators
- Mine railway stopper actuators
- Cage locking devices actuators
- Vent doors actuators
- Mine wagon pusher actuator
- Mine wagon damping machine actuators

Pneumatic cylinder

**CS1 series**
- Piston diameter 125 ~ 500 mm
- Steel and aluminum tube
- Reinforced rod

Options
- Rod boot
- Stainless steel rod, tie-rods and nuts
- Special scraper in a front cover to remove dust from rod surface
- Protecting epoxy coating
Control cabinets of mining systems pneumatic actuators

- Control cabinets of loading skip cylinders
- Control cabinets of railway stoppers and cage locking cylinders
- Control cabinets of vent doors cylinders
- Control cabinets of wagon damping cylinders

Functions
- Air preparation and air lubrication
- Remote and local control of pneumatic actuators
- Air supply on pneumatic vibrators, pneumatic tools and other pneumatic equipment
- Inlet compressed air pressure control
- Filter elements clogging indication and oil level control
- If necessary, the operating pressure may be increased by using a pressure booster

Control cabinets main components

**Large flow filter**
*AF800-900 series*

*Intended to remove mechanical impurities and water separation from compressed air*
- Large flow
- Auto drain
- Easy element replacement

**Large flow lubricator**
*AL800-900 series*

*Intended for oil supply in a pneumatic system*
- Refilling with oil during the operation
- Special version with increased oil tank up to 1 liter
- Special version with oil level switch

**Pressure booster**
*VBA series*

*Increase factory air pressure up to 4 times*
- Increases pressure in 2 ~ 4 times
- Built-in pressure regulator
- Space saving design
- Needs no electric supply
- Extended life, low noise level

**5/2 Solenoid valve**
*VP series*

- Flow capacity is up to 16400 L/min (ANR)
- High speed response
- High reliability, low leakage
- High vibration resistance

**Hand valve**
*VH 200/300/ 400/600 series*

- Convenient operating handle
- Panel mounting
- Easy mounting and use
- Reliable and durable design
SMC components are used in all industries.

SMC components are used in numerous industry sectors – including mining applications around the world.

From semi-conductor manufacturing to the motor vehicle industry, from pharmaceutical companies to oil & gas refinery’s and food processing and packing plants – we design and manufacture products to meet all our customer’s needs.

In particular, we are recognised as a leading manufacturer of high quality products that offer excellent reliability and outstanding performance for use in tough applications and harsh environments.

 USE FOR ORE DRESSING AND METALLURGY APPLICATIONS

Air preparation

Use of main line filters and air dryers in compressor shops, pressure boosters, filters and water separators allows to cut down energy consumption, to reduce accident rate and to cut down unscheduled repair costs.

Statistics show that insufficient air preparation leads to 80% of equipment failure.

Main line filter
AFF series

Provides integrated preparation of compressed air, removing 99% of condensed water (at 100% humidity), 90% of oil vapor and solid particles more than 3 μm (on request 0.3 μm). Filter element service life — 2 years. Flow rate is 300 ~ 72 000 L/min (ANR).

- Easy filter element replacement
- Minimum pressure drop
- Auto drain
- Increased tank for separated water

Water separator
AMG series

Removes 99% of condensed moisture.

Mist separator
AM series

Removes 99.9% of oil mist and solid particles more than 0.3 μm.

Refrigerated air dryer
IDFA series

- High efficiency
- Easy to operate and maintain
- Heat exchanger is made of stainless steel
- Auto drain
- Built-in evaporator temperature sensor

The dew-point temperature is 3°C. Refrigerant complies with international environmental standards.

Compressed air adsorption dryer
ID series

- Innovative efficient adsorber design
- Adsorbent service life — up to 7 years
- Built-in filter on the dryer inlet and outlet
- Low power consumption, heatless type
- Dew point regular monitoring on dryer outlet with a remote control

Is intended for air drying for classes 4-6 ISO 8573-1

Is intended for compressed air drying for classes 1-3 ISO 8573-1
Cylinder positioner (CYPO) applications
- Sump and flotation cells dart valves actuation
- Proportional valve control:
  - Knife gate valve, Pinch valve
  - Hopper shutters actuation

Use of pneumatic cylinders with pneumatic positioners doesn't need additional conversion devices in control circuit - pressure / current signal- at those factories, where pneumatic control signal is traditionally used.

**Pneumatic cylinders with pneumatic positioner IP200**
- Control signal 0.2 ~ 1 bar
- Stroke up to 300 mm
- Simple design
- Low cost solution
- Low temperature option down to -30°C

**Pneumatic cylinders with pneumatic positioner IP5100 and lever feedback**
- Control signal 0.2 ~ 1 bar
- Stroke up to 700 mm, piston diameter 32 ~ 700 mm
- Simple and reliable feedback construction
- Low temperature option down to -40°C

**Pneumatic cylinders with I/P positioner IP8100/ smart positioner IP8101 and lever feedback**
- Control signal 4 ~ 20 mA
- Piston diameter 32 ~ 500 mm
- Stroke up to 700 mm
- Simple and reliable feedback structure
- Positioner with HART-protocol (option)
- Pneumatic cylinder with a position sensor feedback of rod position 4 ~ 20 mA
- Low temperature option down to -40°C

**Proportional actuator with built-in position sensor**
- Control signal 4 ~ 20 mA
- Piston diameter 80 ~ 500 mm, stroke up to 500 mm
- Built-in magnetoresistive position sensor
- Could be controlled by Smart positioner IP8101 (remote type, option - X419)
- The control unit can be mounted on an actuator or in a control cabinet
- An additional advantage: Pneumatic cylinder with steel tube

**Proportional actuator with external position sensor**
- Control signal 4 ~ 20 mA
- Piston diameter 32 ~ 250 mm, stroke up to 800 mm
- External magnetoresistive position sensor
- Could be controlled by Smart positioner IP8101 (remote type, option - X419)
- The control unit can be mounted on an actuator or in a control cabinet
- Only aluminum tube type applicable

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**Butterfly valve with rotary air actuator and positioner**

Air

**Dart valve actuator**

**Flotation cell**

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**Pneumatic cylinders with pneumatic positioner IP200**

**Pneumatic cylinders with pneumatic positioner IP5100 and lever feedback**

**Pneumatic cylinders with I/P positioner IP8100/ smart positioner IP8101 and lever feedback**

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**Proportional actuator with built-in position sensor**

This solution protects from external influences, both mechanical and harsh environment (high corrosion resistance)

There is no mechanical linkage between control device and pneumatic cylinder

**Proportional actuator with external position sensor**

Simpler construction and cheaper solution compared to the proportional actuator with built-in position sensor

There is no mechanical linkage between control device and pneumatic cylinder

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**Use of pneumatic cylinders with pneumatic positioners doesn’t need additional conversion devices in control circuit - pressure / current signal- at those factories, where pneumatic control signal is traditionally used.**
SMC Company was founded in Tokyo (Japan) in 1959.

When SMC started trading in 1959 it initially made specialist metal filter but within a couple of years, it soon started to develop pneumatics cylinders.

Today, the product range is vast.

In Japan SMC dominates the pneumatics/automation market with over 60% market share.

SMC’s position in capitalization rating of Financial Times shows its stability and perspectives — SMC Corporation is one of Japan’s largest 100 companies and in the list of 500 largest Companies in the world.

SMC marketing network covering Japan, consists of 55 local branches and about 100 distributors.

17 plants with total area more than 243000m² are located in six Japanese industrial areas.

At our Research & Development (R&D) Centre in Tsukuba we employ around 1,500 design engineers — helping our customers have tomorrow’s high performance components today.

With a focus on innovation and product development around 5% of our global workforce of over 20,000 employees is working in an R&D role.

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PNEUMATIC ACTUATORS

Air servo cylinder
IN777 series

Innovative modular construction in one case provides compactability and absence of external mechanical feedback linkage.

- A minimum number of external connections
- Proportional control 4~20 mA
- Modular construction makes possible to replace control units and servo valves

Energy Performance: low power consumption, no air flowrate for own needs

- Self-diagnostic function
- High accuracy and positioning repeatability
- Possibility to choose an action in an emergency case: extension, retraction or locking
- Remote monitoring
- Possibility to control in a discrete mode
- IP67 protection

Air actuator with lock-up valve

Application: sump on/off dart valve control, slurry divider actuators

Lock up valve provides cylinder lock in operating position when pressure drops below the setting point.

That allows to prevent emergency cell’s overflow, if a sump dart valve is open at the moment of pressure drop.
SMC, supporting the global mining industry for more than 50 years - providing solutions that deliver a competitive advantage.

SMC - working with the mining industry.
SMC has 51 subsidiaries around the globe and sales offices in 83 countries.

SMC products are readily available in all the major markets.

To help meet the needs of our global customers SMC facilities – offices, factories, R&D centres, warehouses, training and technical centres – are located at key locations around the world.

Major manufacturing plants are located in the USA, Europe (Germany, Italy, Czech Republic and the UK), Japan and China.

In 2016 a South African SMC plant started in Midrand.

Production facilities takes 3402 m².

Production is focused on the most popular series of the South African market.

**EQUIPMENT FOR PROCESS VALVES AUTOMATION**

**Valve actuation units**

To support double or single action quarter turn rotary actuators

- with positioner
- with solenoid valve
- with limit switch assembly
- with lock-up valve

**Linear air actuators (cylinders) for knife gate valves and pinch valves**

**Equipment**

- Positioner or solenoid valve
- Lock-up valve
- Mounting brackets

**Components for harsh environments**

**Stainless steel filter-regulator**

- Body material SUS316
- Ambient temperature -40~80°C
- Maximum operation pressure 20 bar
- 3 sizes with connectors ¼” ~ 1”

**Pneumatic cylinder**

**CS1 series for harsh environment**

- Piston rod, tube and tie-rods are made of stainless steel
- Rod boot for extra rod protection
- Magnetic ring on piston

**5/2 solenoid valve**

**VFN2120N series with NAMUR mounting interface**

Designed for direct installation onto NAMUR mounting surface (quarter-turn rotary actuator)

- IP67 protection
- The body is made of PPS that can withstand high temperatures, steam and a harsh environments
- Check valves made of EPDM prevent water from entering the body
- Captive screws, threads and connectors are made of stainless steel
- To change function from 5/2 to 3/2 just turn the interface plate
- Low power consumption (0.5 W) provides compatibility with AS-I Bus
- Pilot exhaust is combined with main exhaust
- Manual override
**Pneumatic and I/P positioners**
*IP5000/IP5100, IP8000/8100 series*

- Designed for process valve actuators proportional control
  - Linear (IP5000/8000) and rotary (IP5100/8100) types
  - IP65, anti-corrosive body coating
  - CU TR certification
  - Vibration resistant within the range 2 - 200 Hz
  - Current mode control 4 - 20 mA DC, pneumatic 0.2 - 1 bar
  - Explosion-proof version Ex d, Ex ia,ib (IP8000/IP8100)
  - High positioning accuracy
  - Operating temperature -40 to +80 °C
  - Output feedback signal (option)
  - Mounting on all types of actuators
  - Stable operation even with low volume actuators (IP8000/IP8100)

**I/P positioner**
*IP8001/8101 Smart series*

- Designed for air actuators control using PID method
  - Simple control. High positioning accuracy
  - Setting parameters are shown on LCD display, that can be seen through a case window (option)
  - It is possible to use two adjustable digital outputs
  - It is possible to use the analog output (4 - 20 mA DC) for actuator position feedback
  - Explosion-proof version, HART interface version

**Smart positioner version for remote mounting option**
*IP8100-X419*

- It uses feedback electrical signal 4 - 20 mA DC from remote actuator position sensor
- Can be mounted remotely from an actuator, resistant of harsh environment
- No need to use mechanical feedback linkage with moving parts

**Electro-pneumatic transducer**
*ITV 1000/2000/3000 series*

- Data communication Profibus DP (option), CC link, DeviceNet, RS232
- Operating pressure range (bar): 0.05 - 1; 0.05 - 5; 0.05 - 9
- Output pressure digital display
- Operating range adjustment
- Linearity 1%, hysteresis 0.5%
- Signal input options
- IP65 protection

**Lock up valve**
*EIL200 series*

- Adjustable setting pressure range
- Connection thread G1/4
- Types of models: for one line cut off, two lines cut off, to switch to the backup pressure supply
- Operating temperature -40°C to 60°C
CHEMICAL LIQUID DOSING SYSTEMS
Permanent flow control and pulse types

- Design according to an original customer request
- Wall mounted/stand-alone type or floor type construction
- Double-sided design saves mounting space
- Manual and automatic flushing

Dosing systems advantages comparing to dosing pumps
- No wearing wetted parts (diaphragms or tubes, check valves, actuators and so on)
- Possibility to dose reagents supplying by gravity flow
- Less sensitive to the reagent quality
- Flush or mechanical cleaning of main piping available
- High flow dosing available

2/2 Process valve for fluid control VNB series

Application:
- Pulse type dosing
- Water supply for sampler units flushing, chemicals dosing systems backflush
- Compressed air supply for samples delivery
- DN 7 – DN 50 mm
- Reliable construction
- Various applicable fluids
- Body material: brass/brass/stainless steel
- Seal material: NBR/FPM/FEP
- Thread and flange connection
- Control with external pilot air

2/2 Air operated angle seat valve Space saving design VAX series

- Low hydraulic resistance due to angle design
- An advanced design of actuating shaft seal provides up to 5 min cycles lifetime
- Special PTFE sealing
- Maximum fluid temperature: +180°C (saturated steam)

Electromagnetic digital flow meter LFE series

- The smooth inner surface without any protuberance avoids clogging, and also low hydraulic resistance
- Operating fluids: water and other conducting fluids, that do not cause corrosion of sensor material
- Materials in contact with fluid: brass or stainless steel, FKM, PTFE
- The flow direction may be changed by adjusting without disassembling

INDUSTRIAL FILTERS

Chemical liquid process pumps PA series

- Chemical liquid pumping and dosing
- Operating fluid temperature up to +100°C
- Various operating fluids with different characteristics and viscosity
- High wear resistance
- Built-in automatic control system, totally pneumatic (a pump operates when compressed air is applied)
- Body and seal material (stainless steel, diaphragm - PTFE) provides pump corrosion resistance

2/2 air and manual operated chemical liquid valves LVA / LVC / LVH series

- A diaphragm construction: DN16 – DN50
- A variety of chemical liquids
- Actuation N.C./N.O., double acting
- Throttle type
- Body material: stainless steel/PFA teflon
- Diaphragm material: NBR/PFA
- Wide range of options (adjustable flow, bypass and operation indicator available)

Flow switch for various fluids PF2D series

- Material contacts with fluid: PFA
- Karman vortex type
- Analog and digital outputs
- IP65 protection

General purpose industrial filters FGA, FGC, FGD, FGE, FGG series

- A wide range of liquid and gaseous fluids
- Cartridge, bag and regenerating filter elements
- Filtration accuracy 0.5 – 120 μm

Liquid filtration systems with automatic element regeneration FN1/FN4 series

- Stainless steel regenerating filter elements
- Filtration accuracy 5, 0.5 μm
- Parallel connection of more than 10 filters for flow capacity increases
CHEMICAL LIQUID EQUIPMENT

2/2 air and manual operated chemical liquid valves
LVA / LVC / LVH series

Chemical liquid process pump
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Chemical liquid pumping and dosing

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Flow switch for various fluids
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- Analog and digital outputs
- IP65 protection

INDUSTRIAL FILTERS

General purpose industrial filters
FGA, FGC, FGD, FGE, FGG series

- A wide range of liquid and gaseous fluids
- Cartridge, bag and regenerating filter elements
- Filtration accuracy 0.5 ~ 120 μm

Liquid Filtration Systems with automatic element regeneration
FN1/FN4 series

- Stainless steel regenerating filter elements
- Filtration accuracy 5, 20 μm
- Parallel connection of more than 10 filters for flow capacity increase

Water cleaning station with FN4 filter and automation system

1 filter flow:
FN1 - up to 80 l/min
FN4 - up to 250 l/min
SMC’s South Africa is located on a purpose build site in Midrand, Johannesburg.

The facility has a state-of-the-art showroom with numerous dynamic product displays plus a fully functional training suite which includes some of our impressive training equipment designed and built by our colleagues at SMC International Training. SMC South Africa has a fully operational factory which can design and build special products and assemblies. This runs alongside a fully stocked warehouse offering South African customers fast delivery options.

A team of highly-skilled engineers from the Technical department work on various technical projects, including the challenging issues on industrial automation.

Experts working with hi-tech automation equipment graduated from the South African SMC Training centre.

APPLICATIONS FOR ORE DRESSING MILLS

SMC components and solutions for sampling and sample transferring systems

Stainless steel Pneumatic cylinder CG5 series

Application
- Sampler knife actuator
- Sampler reducer actuator
- Piston diameter 20 - 100 mm
- Stroke up to 1500 mm
- Special rod scraper
- FKM sealing

Mechanically jointed rodless cylinder with protective cover MY1MW/MY1CW series

Application
- Sampler knife actuator
- Piston diameter 16 - 63 mm
- Stroke up to 3000 mm
- Protective cover and side seals are designed to prevent dust and moisture intrusion
- Installation of stroke adjusting units with or without shock absorber available

Linear actuators LE series

Application
- Samples transferring in a stream analyzer
- Stroke up to 2000 mm
- Adjustable speed up to 3000 mm/s
- Positional accuracy ±0,2 mm
- Load weight up to 85 kg
Temperature control equipment
HRS, HRW series

Application
- X-ray tube cooling in X-ray diffraction analyzers
- Set temperature range 5 ~ 40°C
- Set temperature accuracy ±0.3°C and more
- Cooling capacity 1.1 kW ~ 30 kW
- Circulating fluids: distilled water or ethylene glycol aqueous solution
- Air or water cooling

Stainless steel Vacuum Ejector
ZH-X267 and INO-4336 series

Application
- Vacuumize in samplers, sample transferring system and stream analyzers
- Vacuumize in various circuits under aggressive corrosion and at harsh environment
- Airflow suction up to 75 L/min (ANR)
- Vacuum level up to -88 kPa

Fittings and tubing

FEP/PTFE teflon tubing
TH/TD series
- Widespread application up to +260°C / 4 colours
- Chemically resistant

Fluoroplastic tubing (PFA)
TLM/TLIM series
- Outside diameter up to 25 mm
- Operating pressure up to 1 MPa
- Operating temperature up to +260°C

Chemically resistant screwed fitting
LQ series
- No dead zones that are dirt pockets
- Compatibility with clean room conditions
- Four-stage seals guarantees no leaks

Stainless steel speed controller with check valve
ASG series
- All parts are made of SUS
- Body rotation angle 360°

Stainless steel one-touch fittings
KQG2 series
- Made of stainless steel (SUS316)
- Seals FKM
- Operating pressure range: -100kPa ~ 1MPa
- Operating temperature up to +100°C

Stainless steel self-locking couplers
KKA series
- Check valves are built-in in both connected parts, so fittings may be used for water
- Metal parts are made of SUS304, seals- FKM

Materials: nylon, polyurethane, PFA (fluoroplastic), PTFE (teflon), POB (polybutane) PAO (polyolefin), nickel-plated brass, copper, stainless steel
Control cabinets and automation control systems

Design according to customer’s requirements specification
Complete service from the initial objective to design, manufacturing and commissioning.
Typical solutions based on proven technologies to meet customer’s needs

Applications
- Air preparation systems
- Control cabinets for air actuators proportional control
- Control cabinets for process valves control and monitoring
- Control units and systems for various technological process automation

Filter-regulator

AW series

The combination of the two devices in one unit — air filter and pressure regulator

- Case: stainless steel, aluminum, plastic
- Ambient temperature from -40°C to 80°C
- Auto drain
- High flow rate and filtration rating (5 μm)

ISO 9001 regulates enterprise management system and control of any industrial activity in the field of environmental protection.

Dual filtering unit with filter element hot replacement option
Direct operated precision regulator
ARP20-40 series

Designed to keep air pressure on set level at high accuracy
- High precision : ±1% of range
- Low internal air consumption
- Modular mounting available

Valves
SY series

Wide range of mounting options for different applications
- Connecting via ProfiBus, DeviceNet, CC Link, EtherNet/IP or with a multipin connector
- Standard valve series, may be combined with all interface types EX250 ~ 600
- Plug-in manifolds with multi-connectors allow to add/remove stations easily, no need to provide standby stations in advance
- Bottom mounting type of connection for installation inside cabinets
- Air flow 170  L/min (ANR)
- Power consumption 0.1 ~ 0.35 W
- Service life 70 million cycles (rubber seal) and 200 million cycles (metal seal)
- IP20 ~ IP67 protection

Valves
VF series

- Capacity up to 2850 L/min (ANR), space-saving design
- Individual mounting and mounting on manifold base
- Decreased power consumption
- Built-in pilot valve filter
- IP65 protection
- High impact and vibration resistance

Air operated valves
VFA3000/5000 series

- High capacity — up to 2450 L/min
- Compact and lightweight
- Mounting on multi manifold available

3/2 Mechanical valves
VM130 series

- Used for manual control in circuits with double automation mode
- "local-remote"
- Compact body
- A variety of control elements: roller lever, toggle lever, push button, twist selector etc.
SMC South Africa

The most recent addition to the growing list of SMC’s overseas subsidiaries, SMC South Africa was opened in April 2016 to help support customers in South Africa and neighbouring African countries.

With the objective to build strong working relationships with both customers and prospects we already employ around 60 highly trained people and have formed partnerships with several appointed South African distributors.

This investment in premises, stock and people will continue to grow and we will strive to become a valued company in South Africa with a committed and highly trained workforce and a growing number of local suppliers of both services and goods.

To help promote our products and services we will be attending and exhibiting at major exhibitions and events in South Africa.

SMC Pneumatic

permanently expands Technical department and Training capabilities and services.

Technical department and Training centre activity is directed to growth of scientific and technological potential and automation of SA industrial companies.

SMC components for non-ferrous metallurgy

Feedstock inlet diverter gates for melting furnace automation

System specification:
- High-temperature cylinders CS1/CS2 series with special inductive switches
- Cabinet or panel with air preparation equipment
- Main control cabinet for process automation and monitoring includes remote control systems based on valve manifolds with parallel wiring or serial Interface modules (option) as well as local controls for onsite manual operation mode

Control cabinets for anode copper casting machines and anode removal systems

To be installed at a melting shop of nickel/copper metallurgical plant.

This cabinet controls the air actuators of anode removal machine.

Equipped with metal seal direct operated solenoid valves with individual compressed air shut-off function.

Control cabinet for candle filter actuators automation

To be installed at copper/nickel hydrometallurgy shop

This cabinet provides actuation of on-off valves, which the candle filter is equipped with.

Function:
- compressed air preparation and distribution,
- pneumatic actuators control by pneumatic valves,
- process valves position monitoring (ON/OFF limit switches) and data gathering/transferring for Process Automation System.

The cabinet provides remote control or local control operation modes

Sump dart valves actuation, slurry diverter automation

- Replacement of manual wheel-operators by air actuators based on CS1 series cylinders.
- Man hours saving.
- Sump dart valve remote control with the position monitoring available
- In case of using cylinder positioner a proportional dart valve control may be provided for slurry flow control or slurry dividing function.
Solenoid Valves

2/2 Solenoid valve
Dust collector / High flow rate
VXF series

Application:
- Air shocking of hoppers with bulk materials
- Dewatered filter cake removal in disc vacuum filters
- Shocking of dust collector bag filters in a foundry/metallurgy aspiration or scrubbing systems

- DN 20 ~ DN 100
- Electrical and pneumatic control
- Fast response, high flow rate

Disc vacuum filter pipeline-system

Butterfly valve
The butterfly valve controls the vacuum level in the filter cake formation area in order to adjust the filter cake thickness and to increase the filtering efficiency.

2/2 Impulse solenoid valve:
Fast response and high flow rate create an effective compressed air impulse valve for quick and qualitative cake discharge.

2/2 solenoid valves for various fluids
VX, VXD, VXZ, VXH, VXS, VCH series

Application: Fluid flow control (shut-off) without using of compressed air

- DN 2 ~ DN 50
- Operating fluid pressure up to 50 bar
- Operating fluid temperature up to +100°C (for steam up to +183°C)
- Case material: brass/stainless steel/resin
- Seal material: NBR/FPM/EPR/PTFE
Industry Project Teams

In all of our subsidiaries we have created teams of specialists that work in dedicated industry sectors. These include: Food Processing and Packaging, Aerospace, Life Science, Electronics, Automotive, Water and Mining.

These specialists are in contact with their industry colleagues and share information and experiences. By adopting this information exchange, our customers can reap the benefits of literally having decades of experience at their disposal.

In the mining industry we have been working for over 50 years with some of the leading mine owners, mine operators and mining suppliers in North and South America, Australia, China, Russia and South Africa.

Working in the mining industry can be both dangerous and challenging.

With harsh working conditions combined with high potential risks means that mining equipment must be strong enough to meet these challenges, whilst still ensuring maximum safety.

We have tried and tested products that can meet these challenges.

Equipment for melting shops

ISO air cylinder
C96, CP96 series
- Dimensions according to ISO 6431
- Piston diameter 32 ~ 250 mm

Heavy-duty cylinders
CS1 series
- Rod with coil scraper
- Stainless steel rod
- High temperature up to +150°C
- Rod boot, up to +110°C
- Piston diameter 125 ~ 500 mm
- Cylinder tube made of steel or aluminum
- Reinforced piston rod

Direct operated solenoid valves
VS series
- Are used in hard operating conditions
- Direct operated type (no pilot section)
- Metal seal spool valve, longer life and high reliability
- Flow capacity up to 6000 L/min (ANR)
- Special adapter plates (made to order) for other manufacturers’ valve manifolds compatibility
- Operating temperature: −40 ~ +60°C (option)
- Voltage DC 24V, AC 220V and others
- Manual override, locking type
- IP65 protection

ISO valves with electro-pneumatic control
EVS7 / VQ7 series
- Reliable performance under tough operating conditions and harsh environments
- Long service life and high operating frequency
- Individual base or manifold mounted type
- High flow capacity

Spool and sleeve made of stainless steel

<table>
<thead>
<tr>
<th>Flow rate</th>
<th>Model</th>
<th>Flow capacity, L/min (ANR)</th>
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<tbody>
<tr>
<td>ISO I</td>
<td>EVS7-6</td>
<td>1470</td>
</tr>
<tr>
<td>ISO II</td>
<td>EVS7-8</td>
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</tr>
<tr>
<td>ISO III</td>
<td>EVS7-10</td>
<td>4905</td>
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</tbody>
</table>

Service life more than 100 million cycles
ISO Hydraulic cylinders  
**CHS series**
- Diameter: 32 ~ 100 mm
- Pressure: 10 / 16 MPa
- Stroke: up to 1000 mm
- Compliant with standards ISO 10762, ISO 6020-2
- Adjustable end-stroke cushion
- Compact size, lightweight

General purpose pressure switch  
**ISG series**
- Stainless steel construction SUS316
- Max current 10A (AC), 3A (DC)
- Different pressure range
- Adjustable hysteresis

Used for gas and liquid pressure control

A wide range of working fluids: compressed air, vacuum (-7 ~ -100 kPa), water, steam up to +150°C, mineral oil

**Equipment for hydraulic fluid filtering and cooling**

- suction filters
- main line filters
- return filters
- magnetic separators
- oil coolers with heat exchanger made of sintered carbon steel or sintered bronze

**Energy saving pneumatic systems**

**Energy loss** consists of 3 components:
- 10% — air consumption for blowing applications
- 30% — air leakage
- 60% — air actuators functioning

On modern enterprises energy that is used for air compression reaches 20% of total energy consumption

- Compressed air consumption monitoring on different equipment
- Leakage minimization
- Filter clogging monitoring
- Air blow efficiency
- Standby air equipment shut-off

**Reduction of energy consumption for compressed air production**
- Maintenance costs reduction
- Enterprise optimizing resource usage

EES: SMC Technology for energy saving systems

**Energy Saving** program allows to estimate energy loss, pressure loss, leakage, model selection, calculate the efficiency of energy-saving measures