

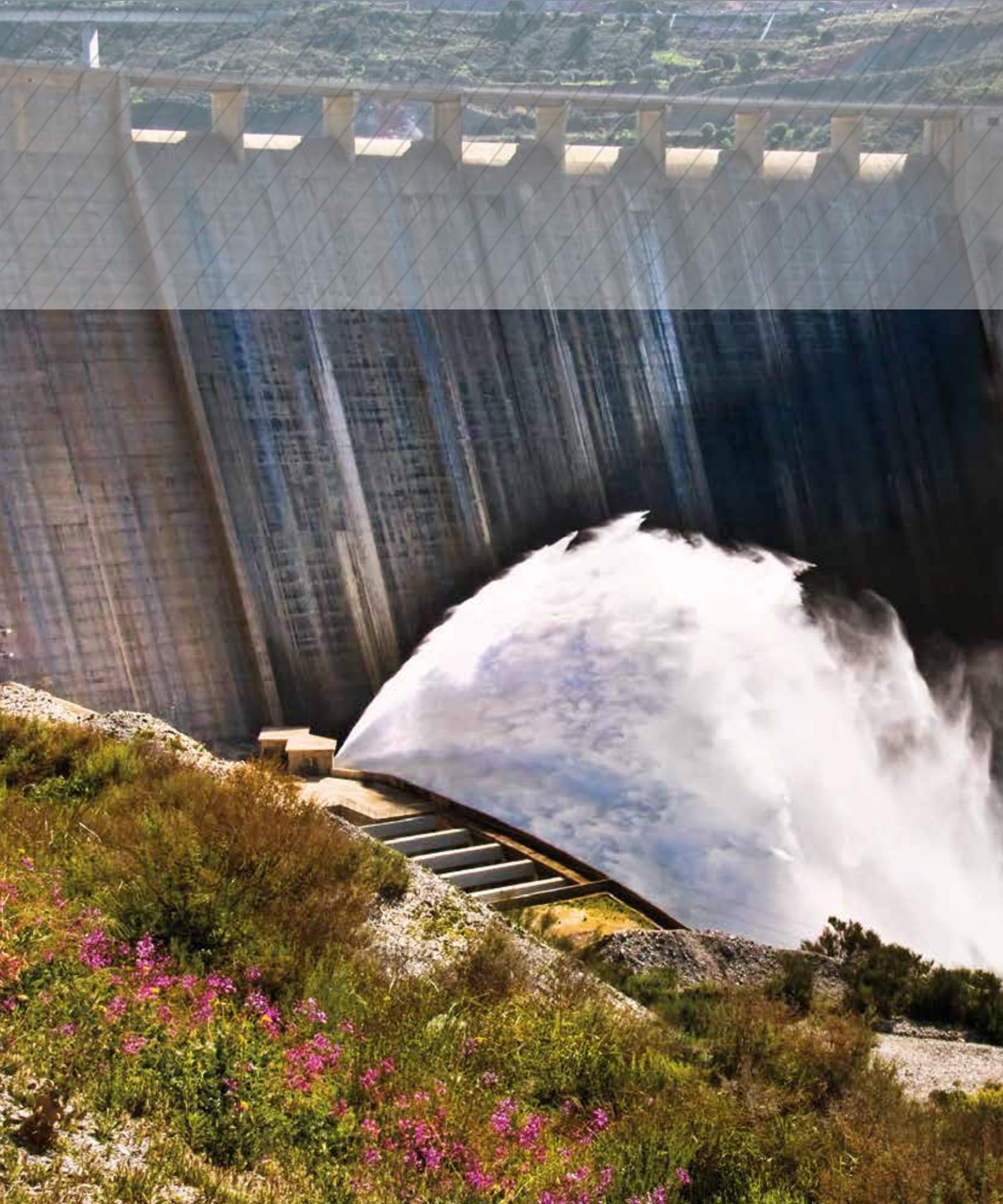
**GLENFIELD DAMS, RESERVOIRS AND HYDROPOWER**



# DAMS, RESERVOIRS AND HYDROPOWER VALVE SOLUTIONS

**Glenfield**  
Dams, Reservoirs & Hydro Solutions







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# EXPECT GLOBAL LEADERSHIP & LOCAL COMMITMENT

## WHATEVER YOU MAY NEED, WE CAN PROVIDE

**GLENFIELD** is a leading supplier of large diameter valves for dams, reservoirs and hydropower installations around the world.

### Glenfield's product portfolio includes an extensive range of:

- Metal seated gate valves
- Submerged discharge valves
- Free discharge valves
- Parallel seated gate valves for dams and reservoir applications
- Butterfly valves
- High performance recoil check valves
- Double orifice air valves
- Automatic pressure and level control valves
- Penstocks and sluice gates

Within our vast range of capabilities Glenfield can provide a comprehensive range of engineering and site solution packages. Our specialist teams come to you to identify the perfect solution - from feasibility and site audit to network leakage management and repair.

### Engineering and Site Solutions:

- Valve, penstock and actuator: site surveys and health checks
- Valve supply, installation, refurbishment and replacement
- Design and manufacture of ancillary equipment
- All associated enabling, electrical and civil engineering services
- Equipment commissioning
- Scheduled maintenance and servicing Contracts
- Extended warranties
- Post contract training
- UK coverage

## WHEREVER YOU ARE, SO ARE WE

Our geographical presence and product range may be global, but our focus is local. We stay close to our customers throughout the entire process. The proximity allows us to better understand our customers' needs and tailor our solutions to fit them.

Being a global player, we are able to provide highly engineered products and service solutions approved to international standards whilst always understanding and adapting to local specifications and project requirements.



**WE BUILD ON AND INVEST IN LONG-TERM PARTNERSHIPS, BECAUSE OUR CUSTOMERS ARE MUCH MORE VALUABLE THAN A SINGLE TRANSACTION**

# EXPECT QUALITY & A LONG-TERM PARTNERSHIP

QUALITY IS ESSENTIAL! WHEN IT COMES TO VALVES, HYDRANTS, FITTINGS AND ACCESSORIES, OUR CUSTOMERS EXPECT LONG LASTING SOLUTIONS

**WE COMBINE THE PRODUCT PORTFOLIO AND ENGINEERING SERVICES OF A GLOBAL LEADER WITH THE SUPPORT OF OUR LOCAL TEAMS.**

Dams, Reservoirs and Hydropower is one of the key growth market segments within the group. With over 160 years experience in this field, Glenfield, Orbinox and Premier valves have installed population in hundreds of dams, reservoirs and hydropower plants worldwide.

- **WORLD CLASS ENGINEERING**
- **SALES SUPPORT AND SERVICE**
- **PIONEERING INNOVATION**



WHERE DO YOU GO FOR...

## ...TECHNICAL INFORMATION



ONLINE PRODUCT SELECTION

PDF BROCHURES



WEBSITES



VIDEO TUTORIALS



INTERACTIVE ANIMATIONS



WEB SHOPS

2D DRAWINGS

3D DRAWINGS

TECHNICAL DOCUMENTS



## ...ENGINEERING



NETWORK MODELLING

CFD ANALYSIS



FE ANALYSIS

HYDRAULIC SYSTEM  
CALCULATIONS

FLUID TEST LABORATORY



## ...SUPPORT



ENGINEERING AND SITE  
SOLUTIONS



SUSTAINABLE SMART WATER  
MANAGEMENT SOLUTIONS

# ...GLENFIELD

# EXPECT SOLUTIONS, NOT ONLY PRODUCTS

**ENGINEERING AND SITE SOLUTIONS:**  
INSPECTION / MAINTENANCE / REPAIR OR REPLACE

**WITH OVER 160 YEARS' EXPERIENCE WE CAN CONFIDENTLY CLAIM "THERE'S A GLENFIELD VALVE IN EVERY CONTINENT IN THE WORLD"**

Our team of highly qualified engineers and project managers are available to support in the design, procurement, installation and planned maintenance of the complete range of AVK Group products.

From our comprehensive database and archive library we can provide drawings, design calculations, bills of material and operating and maintenance instructions for valves supplied by Glenfield dating back to circa 1907...110 years of documented supply records so far!



## DAMS, RESERVOIRS AND HYDROPOWER

With increasing pressure on the supply and demand of water both in the UK and globally, it has become increasingly necessary to capture and store more water, and also, to harness the power of water to produce green electricity.

Our skilled and experienced engineers can advise on valve specification and design working closely with clients to ensure that the optimal valve type, size and operation is chosen for each application. We can also supply site solution teams to install and commission products and also to repair, refurbish and maintain valves previously installed.





## PROJECT MANAGEMENT AND ENGINEERING SUPPORT

Glenfield has the capability to offer a wide variety of valves for all types of dams, reservoir and hydropower projects. The extensive range includes:

- Free discharge and submerged discharge valves
- Large diameter gate and butterfly valves
- Non-slam recoil and conventional check valves
- Pressure/flow control valves (automatic and non-automatic design)
- Penstocks and stoplogs
- Radial gates
- Crest gates
- Roller gates
- Air valves

A complete supply and installation service offer for AVK group products.

This provides our customers with a single source solution that offers many benefits such as:

- Considerable cost savings
- Minimal plant shutdowns
- Reductions in site programmes
- Long term solutions
- Extended warranties

The valve supply and installation service offer includes;

- Project engineering and management
- Valve application selection
- Site audit, identification of valve type, size, quantity and condition
- CFD analysis
- Hydraulic calculations
- 3D design
- Supply and fit under-pressure connections/hot tapping
- Supply and fit repair fittings
- Surge analysis





## VALVE REPAIR, REFURBISHMENT AND REPLACEMENT

Glenfield Valves has successfully repaired and refurbished valves on numerous projects in the past 160 years and our reputation is such that we are considered ‘specialists’ by our customers and their delivery partners.

We are frequently called upon to inspect and recommend a resolution for a whole range of valve related issues including:

- Defective installation
- Operational failure
- Frost damage
- Leakage

We often find that repair and refurbishment solutions are more cost effective for our clients than replacement and we can provide these either in-house or on-site depending upon the prevailing circumstances.

**The valve repair, refurbishment and replacement service also offers:**

- **Valve replacement and refurbishment**
- **Valve/pump chamber refurbishment**
- **Supply, install, replace and refurbishment of penstocks**
- **Feasibility studies**
- **Design input**
- **Bespoke pipework and actuation**
- **Ancillaries**
- **In-house or on-site servicing**

## VALVE SUPPLY AND INSTALLATION

Glenfield has established a reputation within the Dams, Reservoir and Hydropower industries of being a solution provider for valve supply and installation.

We can offer supply and installation on a wide range of valves including:

- Free discharge valves
- Submerged discharge valves
- Gate valves
- Needle valves
- Butterfly valves
- Check valves
- Knife gate valves
- Plug valves
- Control valves
- Air valves
- Pentsocks





## EXPECT... QUALITY IN EVERY STEP

### ACCREDITATIONS

The AVK UK Group holds the following Accreditations:

- **Achilles UVDB Verify**
- **International Accreditation Forum (IAF)**
- **National Accreditation Board (ANAB)**
- **ISO 9001:2008**
- **ISO 14001:2004**
- **OHSAS 18001:2007**

### PROJECT DOCUMENTATION

For all projects we prepare:

- Risk Assessments and Method Statements (RAMS)
- Lift plans
- Inspection Test Plans (ITP) / quality plans and inspection checklists
- Project plan
- COSHH assessments
- Employee training records
- Calibration certificate for lifting equipment
- Portable Appliance Test certificate
- Commissioning procedure and site acceptance test certificate

### QUALITY, HEALTH AND SAFETY AND ENVIRONMENT

Our quality ethos from project inception to completion is not limited to the service or product itself, we embrace the entire process, from the early specification to the implementation and after-sales. Quality is not the result of a single link in the chain – it is the sum of all steps. One of our customer promises is to expect quality in every step.

**The group has ISO 9001:2008 accreditation**

The business is committed to providing environmentally sustainable solutions. We endeavour to reduce our impact on the environment at all times, by conducting risk assessments and monitoring our performance.

**The group has ISO 14001:2004 accreditation.**

The health and safety of our people, visitors to our projects and all stakeholders are paramount to us. We have established robust procedures and processes that minimize risk and ensure that everyone recognizes their responsibility for safe working practices at all times.

**The group has OHSAS 18001:2007 accreditation.**

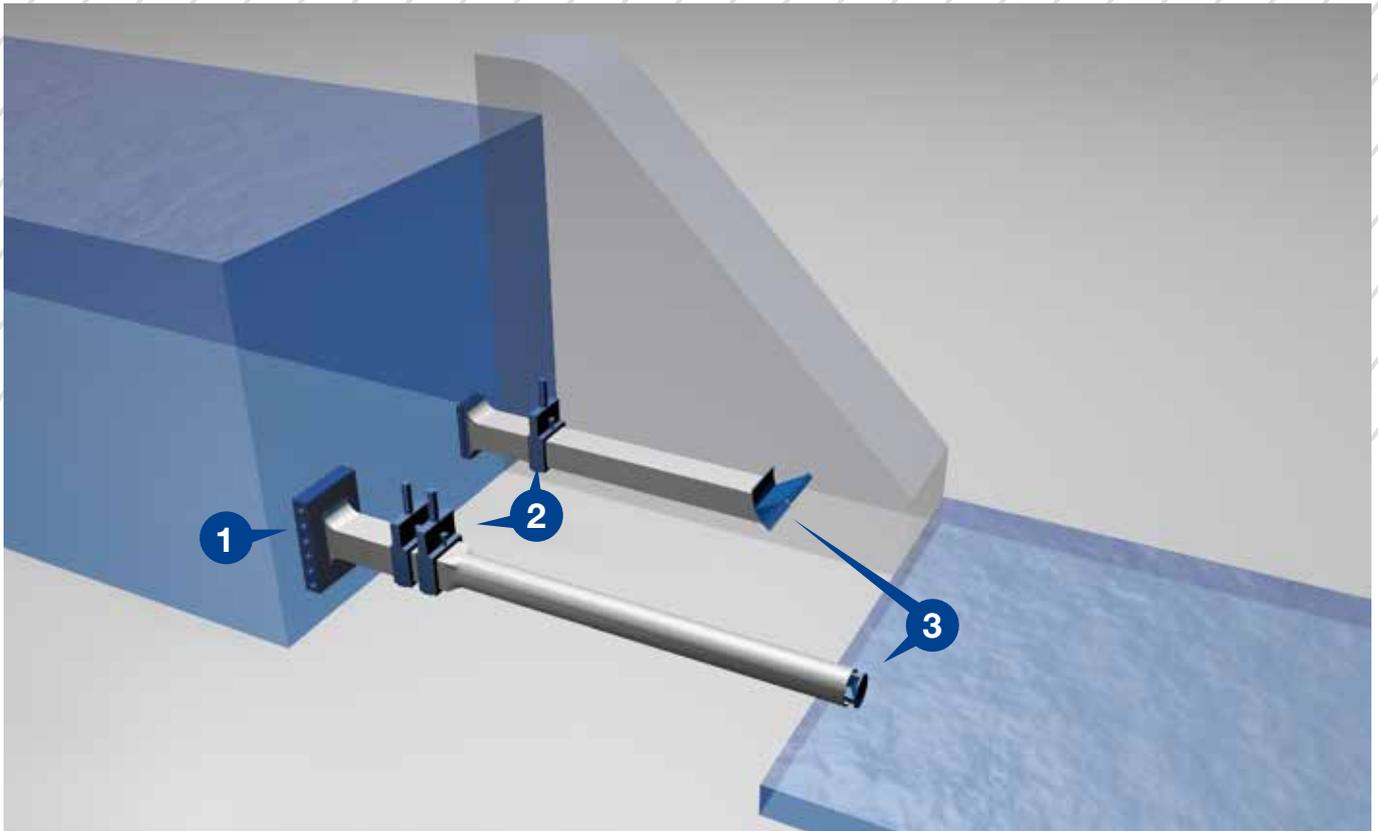
The valve supply and installation service offer includes:

- **Design input**
- **Site audit**
- **Product selection**
- **Associated ancillaries**
- **Installation and actuation**
- **Commissioning**
- **Testing**
- **Maintenance**
- **Extended warranties**

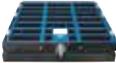


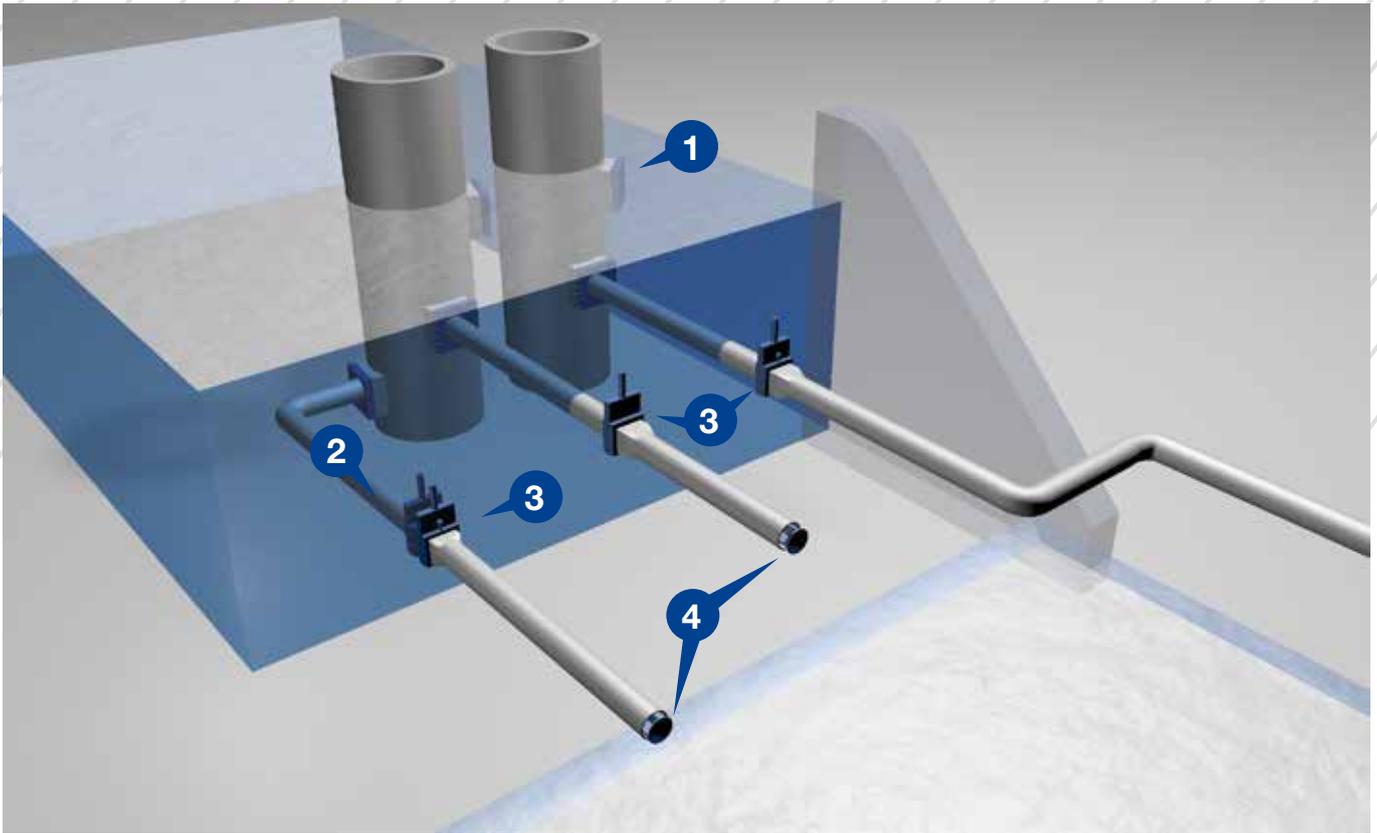


Fabricated Butterfly	Butterfly	High-Performance Butterfly	Knife Gate	Wedge Gate	High Performance Gate	Tilting Disc / Butterfly Check	Recoil Check	Slanted Seat Check	Needle Control	Automatic Control	Air	Spherical
		•	•	•					•	•		
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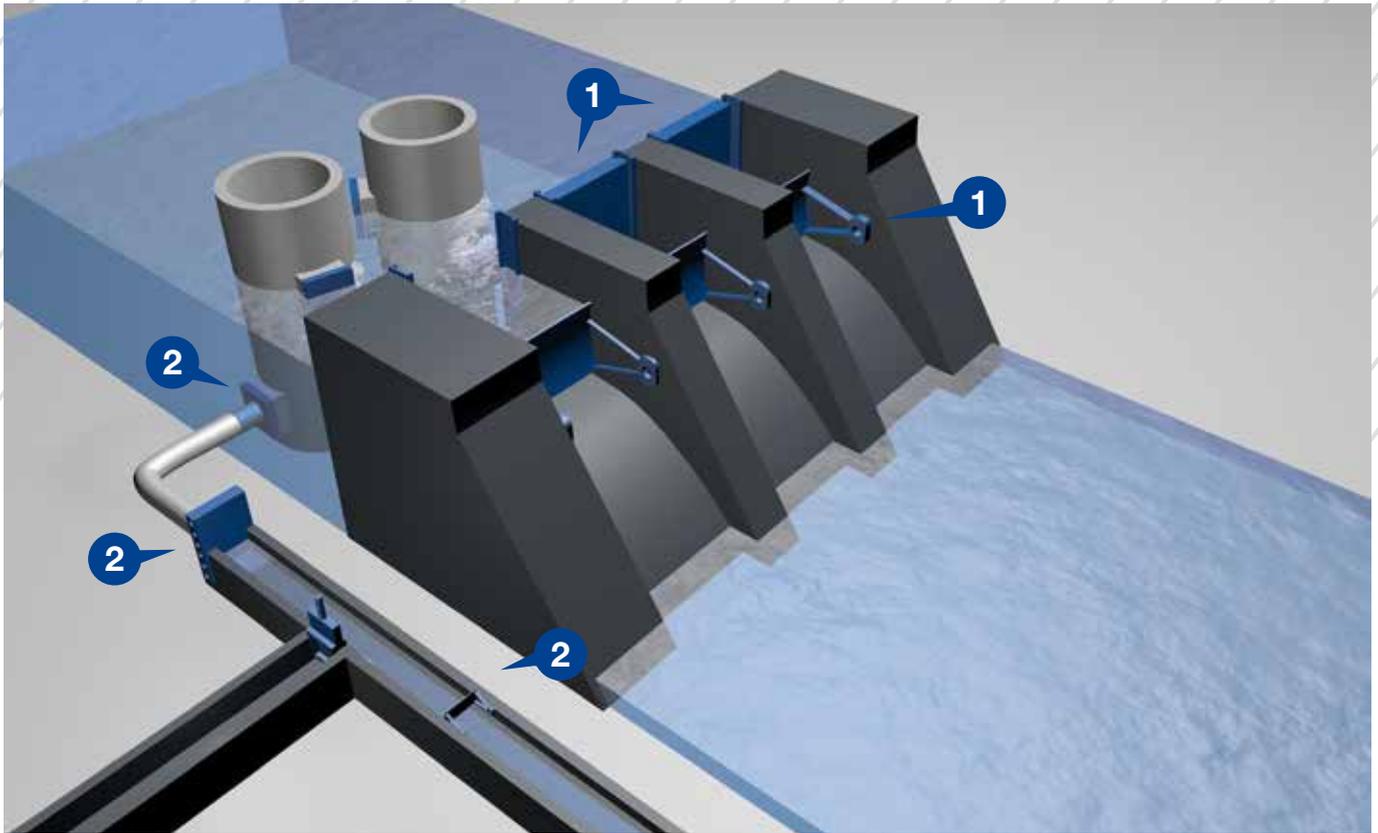
# BOTTOM OUTLETS

	Bonneted Gate	Radial Gate	Roller Gate	Free Discharge	Submerged Discharge	High Performance Butterfly	Knife Gate	Wedge Gate	Needle Control	Automatic Control	Air
<b>1 Intake Gate</b>											
<b>2 Guard Valve</b>											
<b>3 Discharge Valve</b>											



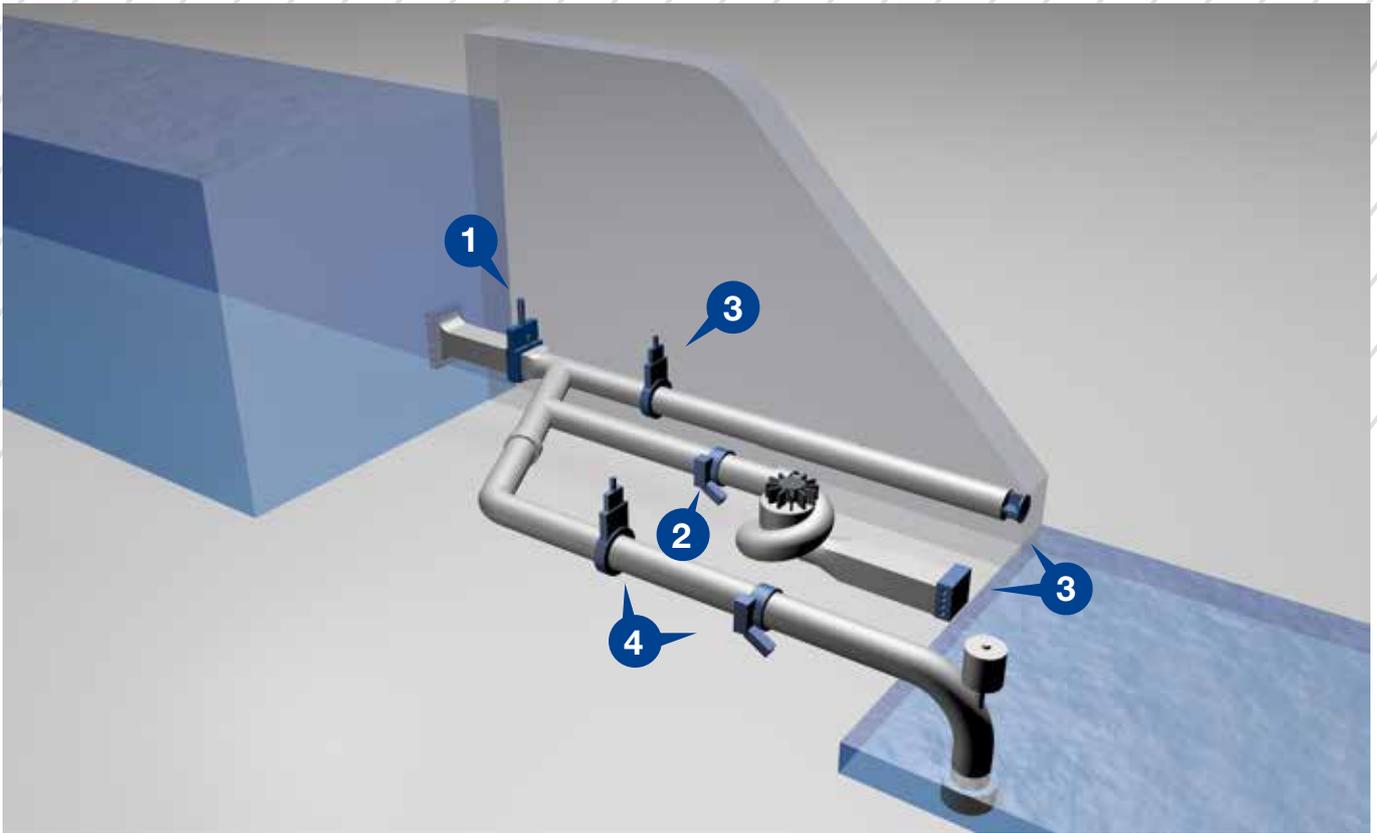
# INTERMEDIATE OUTLETS

	Bonneted Gate	Radial Gate	Roller Gate	Free Discharge	Submerged Discharge	Butterfly	High Performance Butterfly	Knife Gate	Wedge Gate	High Performance Gate Valve	Needle Control	Automatic Control	Air Valve
<b>Intake Tower</b>													
<b>1 Intake Gate</b>													
<b>Intermediate Outlet</b>													
<b>2 Intake Gate</b>													
<b>3 Guard Valve</b>													
<b>4 Control / Discharge Valve</b>													



# SPILLWAYS & CANALS

	Racial Gate	Roller Gate	Stop Gate	Penstock / Sluice Gate
<b>Spillways &amp; Canals</b>				
<b>1, 2 Gate</b>				



# HYDROPOWER STATIONS AND REVERSE PUMPED STORAGE

	Bonneted Gate	Radial Gate	Roller Gate	Penstock / Sluice Gate	Free Discharge	Submerged Discharge	Fabricated Butterfly	Butterfly	High Performance Butterfly	Knife Gate	Wedge Gate	Tilting Disc / Butterfly Check	Recoil Check	Slanted Seat Check	Needle Control	Automatic Control	Air Valve	Spherical	
<b>Hydro Power Station</b>																			
1 Intake Control																			
2 Turbine Protection																			
3 Turbine Bypass / Tailrace																			
<b>Reverse Pumped Storage</b>																			
4 Reverse Pumped Storage																			



**Bonneted Gate**

Carbon or stainless steel fabricated body and gate, bronze seat and hydraulic or electric actuation.

**Specifics:**

Size:  
Up to 2500 x 3500 mm

Pressure:  
Up to 20 bar



**Radial Gate**

Carbon or stainless steel fabricated gate, three or four side sealing with elastomer seals and hydraulic or electric actuation.

**Specifics:**

Size:  
Up to 20000 x 7000 mm

Pressure:  
Gate height



**Roller Gate**

Carbon steel fabricated gate, roller system for guiding purposes, elastomer seals and hydraulic or electric actuation.

**Specifics:**

Size:  
Up to 6000 x 8000 mm

Pressure:  
Up to 10 bar



**Stop Gate**

Carbon steel fabricated gate, elastomer seals, normally operated with auxiliary lifting equipment / crane.

**Specifics:**

Size:  
Up to 20000 x 7000 mm

Pressure:  
Gate height



**Penstock / Sluice Gate**

Three and four side sealing. Stainless steel full frame and gate, EPDM seals, HMWPE guides and various actuation solutions (manual, pneumatic, electric...etc).

**Specifics:**

Size:  
Up to 4000 x 4000 mm

Pressure:  
4-side: 1 bar on / 0,6 bar off  
3-side: Gate height



**Free Discharge Valve**

Cast body or carbon steel / stainless steel fabricated body, elastomer seat and hydraulic or electric actuator.

**Specifics:**

Size:  
Up to DN3000

Pressure:  
Up to 20 bar



**Submerged Discharge Valve**

Terminal discharge valve providing submerged energy dissipation and flow control. Type – End of line single flanged.

**Specifics:**

Size:  
DN200 – 1800

Pressure:  
10 & 16 bar



**Fabricated Butterfly Valve**

Carbon or stainless steel fabricated body and disc, elastomer seal and hydraulic or electric actuator.

**Specifics:**

Size:  
Up to DN3500

Pressure:  
Up to 10 bar (DN3500)  
Up to 16 bar (DN2000)  
Up to 25 bar (DN1000)



**Butterfly Valve**

Double eccentric butterfly valve with seal on disc design. Fully bi-directional with drop tight shut off and double flanged connection.

**Specifics:**

Size:  
DN200 – 2800

Pressure:  
PN10, 16 & 25 bar



**High Performance Butterfly Valve**

Boving type double eccentric resilient seal on disk and stainless steel body seat. Drop tight shut-off in preferred direction and double flanged connection.

**Specifics:**

Size:  
DN100 – 3000

Pressure:  
PN10, 16, 25 & 40 bar



**Knife Gate Valve**

Bonneted valve, carbon or stainless steel fabricated body bonnet and gate, elastomer or bronze seat and hydraulic or electric actuation.

**Specifics:**

Size:  
Up to DN3500

Pressure:  
Up to 20 bar



**Wedge Gate Valve**

Metal seated gate valve for isolation. Double Flanged (PN 25 available in certain sizes).

**Specifics:**

Size:  
DN50 – 2400

Pressure:  
10 & 16 bar



**High Performance Gate Valve**

Heavy duty ductile iron or steel cast valve, with weld deposit seats, extruded dovetail channel guides and shoes, and thrust bearings.

**Specifics:**

Size:  
DN80 – 1800

Pressure:  
PN10, 15, 25, 40 & 64 bar



**Tilting Disc / Butterfly Check Valve**

Carbon or stainless steel fabricated body and disc, metal or elastomer seat and optional hydraulic damper and counterweight.

**Specifics:**

Size:  
Up to DN2000

Pressure:  
Up to 16 bar



**Recoil Check Valve**

Metal seated high performance, fast acting, non slam check valve.

**Specifics:**

Size:  
DN50 - 1400

Pressure:  
PN10, 16 & 25 bar



**Slanted Seat Check Valve**

Three piece design with replaceable central section, with multiple doors for rapid closing times without slamming and high pressure flushing for cleaning.

**Specifics:**

Size:  
DN500 – 2000

Pressure:  
PN10, 16, 25 & 40 bar



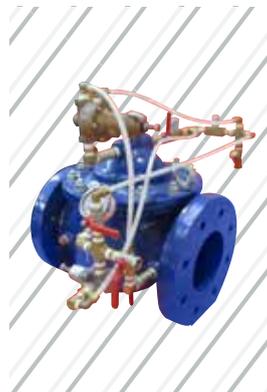
**Needle Control Valve**

Flow, level and pressure control valve used for in-line and terminal applications.

**Specifics:**

Size:  
DN80 – 2000

Pressure:  
PN10, 16, 25, 40, 64 & 100 bar



**Automatic Control Valve**

Ductile iron body/bonnet and stainless steel body seat globe/diaphragm type valve. Large passageways for higher flow rates and greater cavitation resistance.

**Specifics:**

Size:  
DN50 – 500

Pressure:  
PN10, 16, 25 & 40 bar



**Air Valve**

Triple function ventilation air valves with aerokinetic performance. Large discharge capacities and drop tight shut off for full pressure range.

**Specifics:**

Size:  
DN25 – 250

Pressure:  
PN10, 16 & 25 bar



**Spherical Valve**

Cast or fabricated, metallic/soft designs, with movable service seal. Counterweight/hydraulically operated with digital instrumentation systems.

**Specifics:**

Size:  
DN300 - 2000

Pressure:  
PN10, 16, 25, 40 & 64 bar



**WORKING WITH OUR  
INTERNATIONAL SUPPLY CHAIN  
PARTNERS WE CAN SUPPORT  
YOUR PROJECTS WHEREVER  
THEY ARE IN THE WORLD**

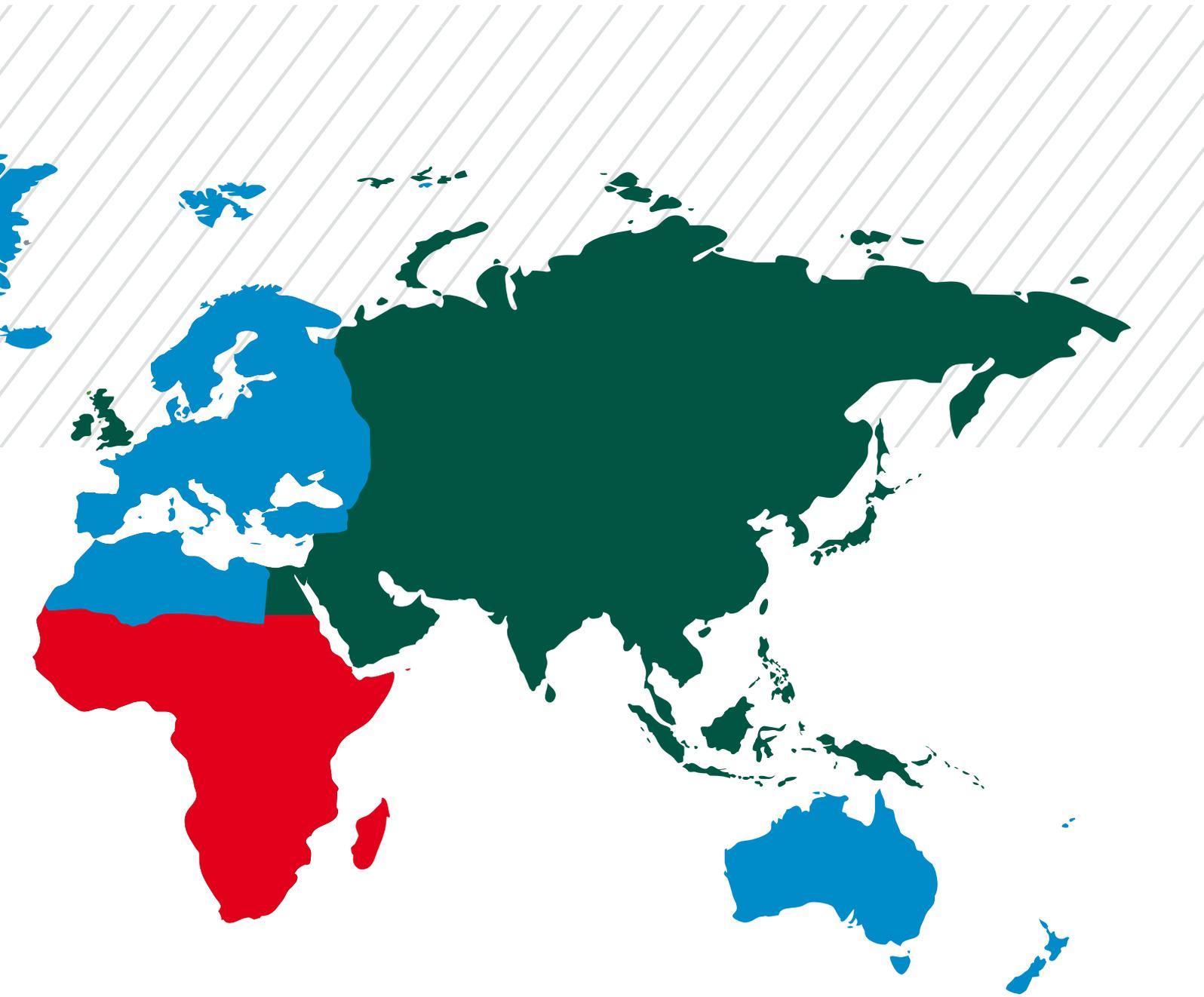


**Glenfield**  
Dams, Reservoirs & Hydro Solutions

**Glenfield Valves**, located in Scotland since 1852 have been designing and manufacturing specialist engineered valves for more than 150 years.

Our products are installed worldwide in dams, reservoir and hydropower applications.

Providing engineered valve solutions ranging from 50mm to 3000mm according to most of the worlds international design standards has made the Glenfield name synonymous with engineering excellence worldwide. Our team of highly qualified engineers and project managers are available to assist in the design, procurement, installation and planned maintenance of the complete range of AVK Group products.



**ORBINOX** is present in more than 70 countries with over 50 years of experience designing, manufacturing and marketing knife gate valves, penstocks, dampers and valves for hydraulic works.

Product quality and customer satisfaction are our goals. We have a highly qualified and experienced team providing the best solutions to suit the needs of our customers.

Our global presence enables us to be close to our customers in order to offer technical advice and respond to their requirements. We think globally, whilst applying local expertise.



The **Premier Valves Group (PVG)** is one of Africa's largest and longest established valve suppliers, that specialises in the manufacture of large bore, high pressure, engineered valve products for both bulk water supply & power/industrial applications.

PVG's range includes butterfly valves up to DN3000, metal seated wedge gate, check, sleeve and spherical valves up to DN2000, and control valves up to DN500 and up to PN40

PVG is based in its own 46,000 sqm factory facility outside Johannesburg, and also offers valve factory repair and refurbishment services, as well as on site installation, commissioning and preventative maintenance services.



**GLENFIELD Valves Limited**

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**Glenfield**  
Dams, Reservoirs & Hydro Solutions

Members of the **AVR** group