DAMS, RESERVOIRS AND HYDROPOWER SOLUTIONS

ROBUST SOLUTIONS FOR COMPLEX INFRASTRUCTURE

Dams and hydropower installations play a pivotal role in modern water infrastructure by offering storage, flood control, irrigation, and sustainable electricity generation.

Managing water and energy resources

Dams and reservoirs help manage scarce and unevenly distributed freshwater resources by storing it and releasing it as required. Hydropower from dams generates a substantial part of the world's renewable energy. Pumped storage schemes play an increasingly critical role as large scale virtual batteries that can store the surplus energy, including that produced by intermittent renewable sources, and release it during periods of peak demand, thereby balancing the electricity grid.

Design considerations

When engineering valve and hydraulic systems for dam and hydropower applications, the following parameters must be carefully considered:

- Max. static and dynamic waterhead
- Required flow rate at max. and min. heads
- Valve/gate size
- Max. valve/gate emergency closure velocity
- Water quality (clean, silt laden, dirty, with rocks and branches, corrosive)
- Actuation requirement
- Site location/accessibility
- Maintenance considerations

Designs often require customization to match project-specific hydraulic profiles, which may involve CFD analysis to ensure performance under operational scenarios.

Engineering and industry expertise

With the increasing demand for resilient water infrastructure and renewable energy, the need for technically advanced, reliable, and efficient valve systems in dams and hydropower stations continues to grow. AVK, leveraging engineering excellence and deep industry expertise, is well-positioned to offer tailored solutions to meet these challenges.

YOUR RELIABLE VALVE PARTNER

The AVK Group offers a comprehensive selection of high-quality discharge, regulation and guard valves of our own manufacture, along with a wide range of other valve types from our own brands and selected trusted partners.

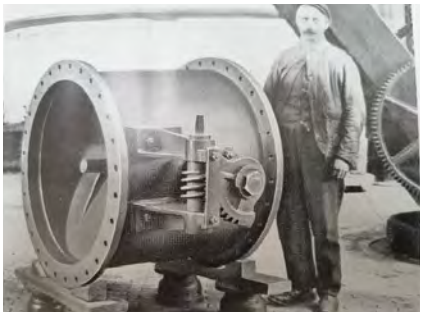
AVK is a recognised brand in the water supply sector, and several of our companies are renowned for their expertise in infrastructure projects involving dams, reservoirs, and hydropower.

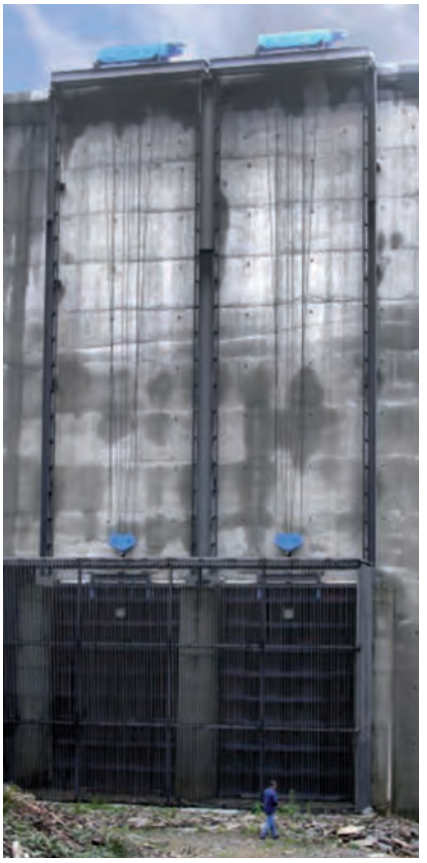
Orbinox has a proven track record of delivering tailor-made solutions to a wide range of projects across the globe over the past 40 years. They offer an extensive selection of valves and gates, including fabricated fixed cone discharge valves, bonneted gate valves, radial and roller gates, penstocks, butterfly valves, high-pressure knife gate valves, and tilting disc check valves.

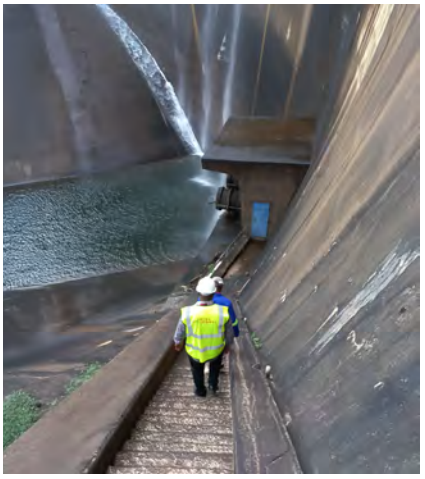
Glenfield contributes with more than a century of expertise in this segment. One of their earliest projects dates back to 1913, with the delivery of a free roller sluice gate for the Oliphants River in Pretoria, South Africa. Today, their highly durable designs are manufactured at our high-tech large valve facility in China, with a product portfolio that includes cast submerged and fixed cone discharge valves, metal seated gate valves, recoil check valves, and automatic control valves.

AVK offers our renowned resilient seated gate valves, double eccentric butterfly valves, ball float valves, air valves and dismantling joints complementing the range and offering proven reliability and performance across demanding applications.

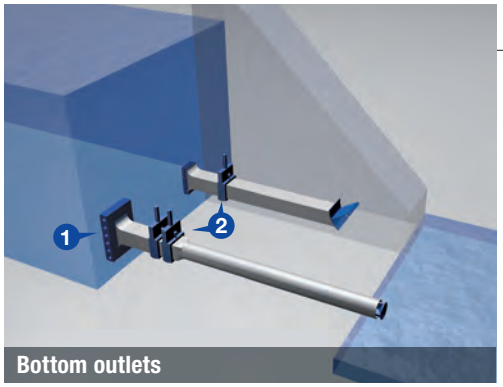
AC.MO adds a wide selection of needle valves, which are particularly well-suited for control and discharge functions, further strengthening the AVK Group's wide product range for dams, reservoirs, and hydropower.





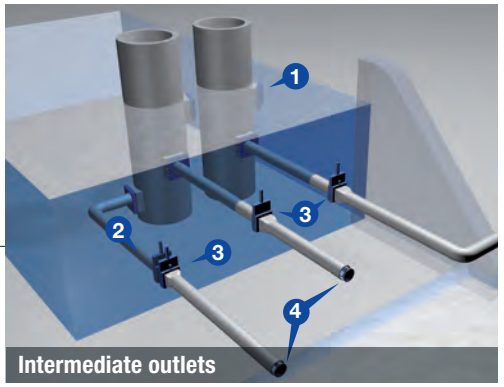


APPLICATION MATRIX
VALVE TYPES



Bottom outlets

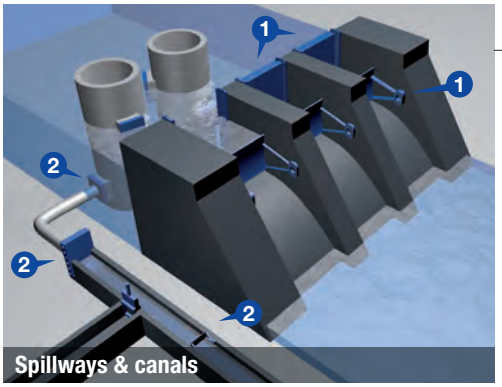
1 Intake gate
2 Guard valve
3 Discharge valve



Intermediate outlets

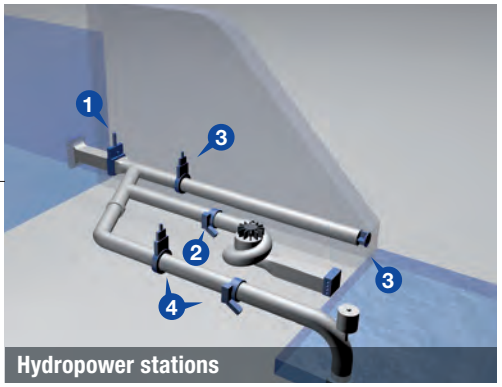
1 Intake gate
2 Intake gate
3 Guard valve
4 Control / discharge valve

	Bonneted gate valve	Radial gate	Roller gate	Stop log	Penstock / sluice gate	Fixed cone discharge valve	Submerged discharge valve
Bottom outlets							
Intake gate			●				
Guard valve	●						
Discharge valve		●				●	●
Intermediate outlets & spillways							
Intake tower							
Intake gate			●				
Intermediate outlet							
Intake gate			●				
Guard valve	●						
Control / discharge valve		●				●	●
Spillways & canals							
Spillway							
Gate		●	●	●	●		
Canal							
Gate		●	●	●	●		
Hydropower stations							
Intake control	●	●	●		●		
Turbine protection			●				
Turbine bypass / tailrace	●					●	●
Reverse pumped storage							
Reverse pumped storage	●						



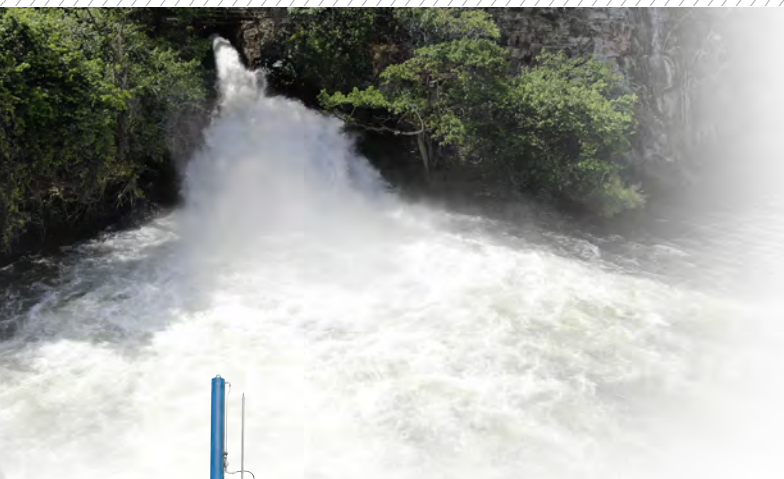
1 Gate
2 Gate

1 Intake control / penstock pipe protection
2 Turbine protection / main inlet valve
3 Turbine bypass / tailrace
4 Reverse pumped storage



Fabricated butterfly valve (main inlet valve)	Double eccentric butterfly valve	Knife gate valve	Wedge gate valve	Tilting disc check valve	Recoil check valve	Needle control valve	Air valve	Ball float valve
		●	●				●	
						●		
	●	●	●				●	
	●		●			●		
●	●	●	●				●	
●	●						●	●
		●	●			●	●	●
●	●	●	●	●	●			●

PRODUCT RANGE



AVK's wide valve range covers a lot of different valve types, all designed with durability, performance and safety in focus. Please find technical details at www.avkvalves.eu/en/water-supply/dams-reservoirs-hydropower or scan here.

Bonneted gate valve
Fabricated. Carbon or stainless steel body and gate, bronze seat. Hydraulic or electric actuation.

Size:
Up to 2500 x 3500 mm
Pressure:
Up to 200 mWc

Radial gate
Fabricated. Carbon or stainless steel gate, three or four side sealing with elastomer seals. Hydraulic or electric actuation.

Size:
Up to 20000 x 15000 mm
Pressure:
Gate height

Roller gate
Fabricated. Carbon steel gate, roller system for guiding purposes, elastomer seals. Hydraulic or electric actuation.

Size:
Up to 8000 x 8000 mm
Pressure:
Up to PN10

Stop log
For open channel installation
Stainless steel frame and logs
EPDM seals
HMWPE guides
Manual operated or with lifting device

Size:
150x150-2000x2000 mm

Penstock / sluice gate
Three or four side sealing. Stainless steel full frame and gate, EPDM seals, HMWPE guides. Various actuation solutions.

Size:
Up to 4000 x 4000 mm
Pressure:
4-side:
Up to 3000 x 3000: 20 mWc
Up to 4000 x 4000: 10 mWc
3-side:
Gate height

Fixed cone discharge valve
Fabricated. Carbon or stainless steel body, elastomer seal. Hydraulic or electric actuator.

Size:
Up to DN3500
Pressure:
Up to DN2000: 200 mWc
Up to DN3000: 160 mWc
Up to DN3500: 100 mWc

Fixed cone discharge valve
Ductile iron body and resilient seal. Shaft and worm gear operated with optional electric actuator or gearbox.

Size:
DN200-2200
Pressure:
PN16

Submerged discharge valve
Ductile iron body with bronze port and resilient seal. Bare shaft with optional electric actuator or gearbox.

Size:
DN200-1800
Pressure:
PN10 & PN16

Double eccentric butterfly valve
Fabricated. Carbon steel or stainless steel body and disc, elastomer seal. Hydraulic or electric actuator.

Size:
Up to DN3500
Pressure:
Up to PN10 (DN3500)
Up to PN16 (DN2000)
Up to PN25 (DN1000)

Double eccentric butterfly valve
Ductile iron body with integral or welded stainless steel seat. Various types of gears and optional electric actuator.

Size:
DN200-2800
Pressure:
PN10, 16 25

Knife gate valve
Fabricated. Carbon or stainless steel body and bonnet, stainless steel gate, elastomer or bronze seat. Hydraulic or electric actuator.

Size:
Up to DN4000
Pressure:
Up to PN16

Knife gate valve
Cast body and bonnet in carbon steel or stainless steel, stainless steel gate, metal or resilient seat. Pneumatic, hydraulic or electric actuator.

Size:
DN80-1000, larger on request
Pressure:
DN80-200: PN100
DN250-400: PN63
DN400-600: PN40
DN700-1000: PN10

Wedge gate valve
Ductile iron body and bonnet, metal seat. Free shaft with optional actuation.

Size:
DN50-2500
Pressure:
PN10, 16, 25 & 40

Wedge gate valve
Ductile iron body and bonnet, resilient seat. Free shaft with optional actuation.

Size:
DN40-1200
Pressure:
PN10 & 16

Tilting disc check valve
Fabricated. Carbon or stainless steel body and disc, metal or elastomer seat. Optional hydraulic damper and counterweight.

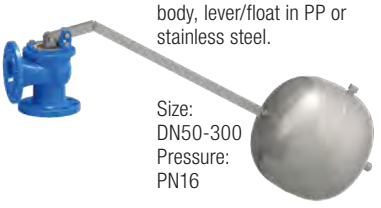
Size:
Up to DN1600
Pressure:
Up to PN16

Recoil check valve
Multi door. Ductile iron body, metal seat, various configurations.

Size:
DN600-1600
Pressure:
PN10, 16 & 25

Needle control valve
Ductile iron body (stainless steel up to DN150), internal parts of stainless steel. Various options for actuation and cavitation trim.

Size:
DN80-2000
Pressure:
PN10, 16, 25, 40, 64 & 100



Ball float valve
Balanced equilibrium design. Ductile iron body, lever/float in PP or stainless steel.

Size:
DN50-300
Pressure:
PN16

Air valve
Double orifice cluster arrangement. Ductile iron body, ABS float/guide/seat.
Other air valves are available.

Size:
DN150-250
Pressure:
PN16

Dismantling joint
Ductile iron body, tie rods in stainless steel A2 or steel 4.6.

Size:
DN40-2600
Pressure:
PN10, 16 & 25

Ivirizu hydropower plant, Bolivia
2 fabricated butterfly valves, a DN2650 PN16 and a DN2300 PN25, were installed for hydroelectric power plant penstock protection and breakdown detection.

Blackwater dam, Scotland
Three DN1000 penstocks were replaced, originally installed by Glenfield almost 100 years ago, and still in operation.

Mulunggushi Power Station, Zambia
It is the oldest hydropower plant in Africa, formally opened in 1925. An old needle valve was replaced with a DN1600 fixed cone valve.

Kvassay Dam, Hungary
The Kvassay Dam and Pumping Station is undergoing a major rehabilitation to continue contributing to water management, flood defence and energy supply to Budapest and surrounding areas. AVK delivered four DN1800 double eccentric butterfly valves, check valves and dismantling joints.

Undurraga Dam, Spain
5 roller gates designed for 10 mWc in sizes 5700 x 1400 and 8000 x 2000 were installed at the reservoir entrance. This reservoir supplies water to the metropolitan area of Bilbao.

The Angat Dam, The Philippines
The dam serves potable water to millions of families in Manila, and to replace the turbine, a gate was needed. A DN1400 Orbinox BU bonneted gate valve was installed.

AVK International A/S
Bizonvej 1, Skovby
8464 Galten
Denmark

Tel.: +45 8754 2100
www.avkvalves.eu

2026.01.20