



			<h1>ENVIRONMENTAL WATER CONTROL SOLUTIONS</h1>	 <p>Glenfield Invicta Delivering Project Solutions</p>
				



CONTENTS PAGE

ENVIRONMENTAL WATER CONTROL SOLUTIONS 4

FEATURES AND BENEFITS 5

ENVIRONMENTAL WATER CONTROL PRODUCT RANGE OVERVIEW 6-8

DETAILED PRODUCT OFFERING 10-11

EXTENDED PRODUCT AND SERVICE OFFERING 12

STAINLESS STEEL VS CAST IRON PENSTOCKS 13

REPAIR, REFURBISHMENT AND REPLACEMENT 14

WHY CHOOSE GLENFIELD INVICTA 15





GLENFIELD INVICTA

ENVIRONMENTAL WATER CONTROL SOLUTIONS



Effective water control solutions ensure sustainability, reduce environmental impact and flood risk.

At Glenfield Invicta we have over 160 years experience within water management, supporting major contracting organisations, MEICA specialists, civil engineering companies, local councils, IDBs, Canal & River Trust and the Environment Agency with their water management and flood alleviation schemes.

As such we understand the challenges faced and have a proactive approach to our product and service offering for water management and flood alleviation. To this end, we have a 'One Stop Solution' that provides products and services that guarantee surety of delivery, resilient solutions and that maximise efficiencies and benefits.

Our services include.

- **Site survey**
- **Design**
- **Product selection and supply**
- **Associated ancillaries**
- **Actuation**
- **Installation**
- **Commissioning**
- **Programmed maintenance and servicing**

Dedicated Member of the **AVR** group



FEATURES AND BENEFITS

EXCEPTIONAL QUALITY

We continually provide highly engineered customer driven valve solutions.

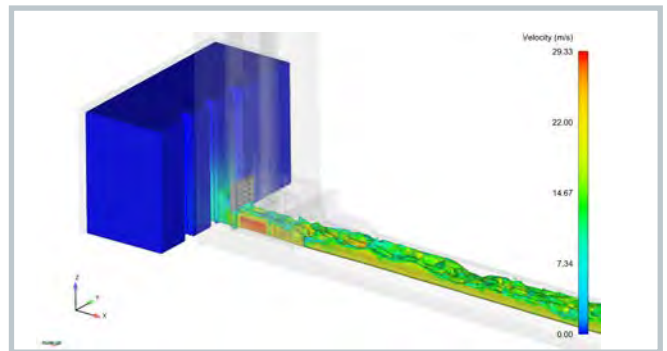
With installed population in hundreds of water, waste water, dams, reservoirs, hydropower and flood defence projects our dedication to offering tailor made solutions, that meet or exceed national and international standards, ensures that we continue to build on our exemplary history of project supply.



HEAVY DUTY CONSTRUCTION AND ROBUST DESIGN

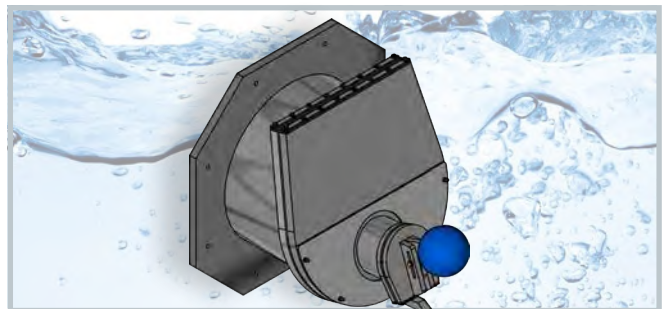
Computation Fluid Dynamics (CFD) is used to ensure we achieve the optimum flow characteristics from our products and compatibility with our customer's applications

Our designs are optimised using FEA analysis, to achieve the optimum compromise between strength, rigidity, weight and cost. Robot cutting and welding is used for consistently high quality, and to ensure minimum waste and maximise usage of materials.



FISH/EEL FRIENDLINESS

Our HDPE (High-density polyethylene) flap valves can be supplied as bespoke fish/eel friendly variants to suit your exacting requirements and to satisfy the most discerning of environmentalists. From bottom hung, float operated 'pet' flaps to spring or hydraulic damper systems, we can provide a solution to meet your critical flood defence requirements without any compromise on fish and eel migration.



CORROSION PROTECTION

In order to ensure a 35+ year design life on all of our products, even in the most demanding coastal and brackish water applications, we offer an extensive range of material grades and high specification coating systems to ISO12944.

All stainless steel surfaces are fully shot-blasted to passivate them and are acid bath cleaned to ensure maximum protection against corrosion and to ensure a first class finish.



TECHNICAL PRODUCT TRAINING

We have a responsibility to ensure customers receive the best from our products and as such we offer free training and insights into the manufacturing processes.

Our training sessions are tailored to your requirements and held at any of our offices across the UK, or, at your convenience, at your site or online. Any number of delegates can be catered for and training is suited to the various levels of experience and product knowledge – from new employees through to refresher courses for advanced engineers.



GLENFIELD INVICTA

ENVIRONMENTAL WATER CONTROL PRODUCT RANGE OVERVIEW



PENSTOCKS

Market leaders distinguished by industry expertise and experience, Glenfield Invicta are the 'go to' solution provider for penstock supply and installation throughout the UK.

Our stainless steel penstocks are designed and manufactured in-house by our sister company Orbinox, an AVK Group company since 2011. With more than 50 years of global experience in the design and manufacturing of these products, Orbinox together with Glenfield Invicta offer world class expertise, performance and quality in this specialism.



FLAP VALVES

Our flap valve product range is produced in HDPE or stainless steel, but whichever your material choice, they are always dependable and resilient.

We offer both standard and highly customised HDPE flap valve solutions, manufactured by our Danish partners ProAgria. These include fish and eel friendly variants to meet the demands of the most discerning environmentalists. For more heavy duty application, Orbinox stainless steel flap valves are available.



STOP LOGS AND STOP GATES

Custom made stainless steel or lightweight aluminium stoplog and stopgate solutions to suit your individual application and needs.

Our stoplog solutions are a cost effective method of periodic isolation or level control that you can count on. They feature resilient seals that provide exceptional sealing performance, without any requirement for maintenance or adjustment throughout their lifetime.

See page 10&11 for our full product range.

GLENFIELD INVICTA

ENVIRONMENTAL WATER CONTROL PRODUCT RANGE OVERVIEW



RUBBER CHECK VALVES

Our rubber check valves are a cost effective way to control back pressures from outfalls and tidal operations.

Our duckbill and in-line rubber check valves from world leading US manufacturer Proco Products, are specifically designed to be durable and effective, reducing the likelihood of common maintenance problems associated with other non-return valve types. They are a fully passive device requiring neither maintenance nor any sources of outside power or manual assistance to operate.



GATE VALVES

We have designed and manufactured gate valves for over 160 years and this is patently evident in their quality.

They feature outstanding durability due to the double bonding vulcanization process and the sturdy wedge design. The triple safety stem sealing system, the high strength stem and the thorough corrosion protection safeguard the unmatched reliability.



BUTTERFLY VALVES

Our butterfly valves are produced by Wouter Witzel, an esteemed manufacturer of centric fixed liner butterfly valves, founded in 1966 in the Netherlands and since 2005 a member of the AVK Group.

We offer one of the widest ranges of butterfly valves in the market reflecting our customers' needs. And of course, we offer a wide variety of material configurations for each of these types as well as any type of actuation.

See page 10&11 for our full product range.

GLENFIELD INVICTA

ENVIRONMENTAL WATER CONTROL PRODUCT RANGE OVERVIEW



KNIFE GATE VALVES

Our knife gate valves use high quality materials and unique design features to give outstanding reliability and long service life even for the toughest duties.

The full bore design permits the passage of liquid of whatever viscosity, the valves are self cleaning and gate scrapers and deflector cones can be provided for particulate or abrasive media. Furthermore, the design of our knife gate valves is simple and allows easy maintenance and cost effective installation.



CHECK VALVES

Our non-return valves are used to protect the pump and system by reducing the risk of high transient (or surge) pressures.

Check valves are safety critical valves that protect the system and its equipment from damage which can range from accelerated wear and tear to full, catastrophic system failure depending on the extent of the system design. We have an extensive range of check valve types to suit any application.



AIR VALVES

Our air valves improve the performance and asset life of pipe systems. They manage the air discharge, increasing system efficiency and to draw air back into the pipeline to negate any vacuum conditions caused by negative pressures.

AVK air valves feature an innovative design with a large air gap between liquid and sealing system. A spring between stem and float compensates for slight pressure changes and maintains the air gap ensuring reliable function even when used with seawater or river water carrying suspended solids, as seen on EA pumping station applications.

See page 10&11 for our full product range.



DETAILED PRODUCT OFFERING



Penstock

Three and four side sealing. Stainless steel full frame and gate, EPDM seals, HMWPE guides and various actuation solutions (manual, pneumatic, electric etc). Wall or open channel mounting options available.

Specifics:

Size:
Up to 4000 x 4000 mm

Pressure:
up to 30mWC.



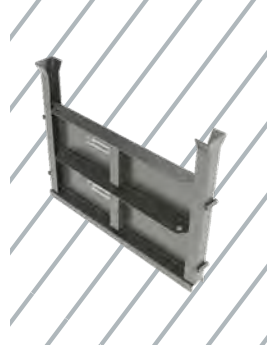
Roller Gate

For large apertures and high pressure applications. Four sided sealing, carbon or stainless steel construction, with elastomer seals. Hydraulic or electric actuation options.

Specifics:

Size:
Up to 6000 x 6000 mm

Pressure:
up to 70mWC.



Stop logs

3 sided sealing. Stainless steel construction for frame, logs in stainless steel or aluminium, with EPDM sealing. Wall or open channel mounting options available.

Specifics:

Size:
Up to 4000 x 4000 mm

Pressure:
Log height.



Stop Gate

3 sided sealing. Stainless steel construction for frame and gate, with EPDM sealing. Wall or open channel mounting options available. For operation by crane.

Specifics:

Size:
Up to 4000 x 4000 mm

Pressure:
Gate height.



Stainless steel flap valve

Opening and closing by seating and unseating differential pressure. Double hung to allow proper seating and minimal leakage. Self-adjusting EPDM seals, ensuring watertight performance.

Specifics:

Size:
Up to 4000 x 4000mm

Pressure:
Typically 5m, higher upon request.



HDPE flap valve

Lightweight but robust HDPE construction. Opening and closing by seating and unseating differential pressure. Self-adjusting EPDM seals, ensuring watertight performance.

Specifics:

Size:
Up to 4000 x 4000mm

Pressure:
Typically 5m, higher upon request.



Butterfly Valve

Concentric valves with vulcanised rubber seats or double eccentric valves with metal seats. All with bi-directional drop tight shut off. Manual, electric, pneumatic and hydraulic actuation available.

Specifics:

Size:
DN200 – 2800

Pressure:
PN10, 16 & 25 bar.



Duckbill check valves

A range of styles including in-line, jacketed, flanged, slip-on and slope bottomed. Choice of elastomers to suit any media.

Specifics:

Size:
DN1800

Pressure:
up to 10 bar, depending on DN.



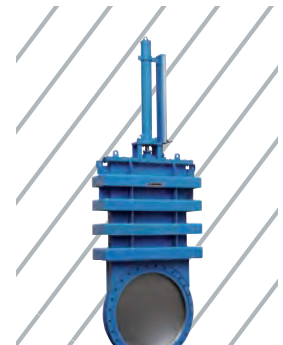
In-line check valves

Ultra low-headloss, single piece, elastomer non-return valve. Choice of elastomers to suit any media.

Specifics:

Size:
DN1800

Pressure:
up to 10 bar, depending on DN.



Knife Gate Valve

Cast iron, carbon or stainless steel body, stainless steel gate, elastomer or bronze seat and hydraulic or electric actuation. Various flange drillings available.

Specifics:

Size:
Up to DN3500

Pressure:
Up to 20 bar.



Wedge Gate Valve

Metal or resilient rubber seated valve for standard isolation applications. Manual, electrical and hydraulic actuation options available. Various flange drillings available.

Specifics:

Size:
DN50 – 2400

Pressure:
PN10, 16 & 25 bar.



Swing check valve

Metal or vulcanised rubber seated, flanged non-return valves with external lever and weight. Options include safety guard and limit switches. Various flange drillings available.

Specifics:

Size:
DN350 – 600

Pressure:
PN16 & 25 bar.



Recoil check valve

Metal seated, fully automatic operation Recoil (non-slam) design eliminates water hammer Suitable for both drinking water and waste water.

Specifics:

Size:
DN100 – 500

Pressure:
PN16, 25 bar.



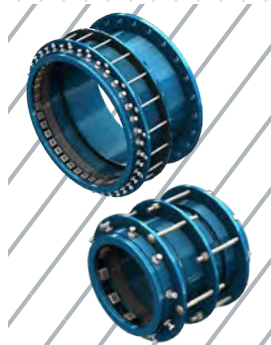
Air Valve

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

Specifics:

Size:
DN25 – 250

Pressure:
PN10, 16 & 25 bar.



Fabricated Fittings

Flange adaptors, pipe couplings, dismantling joints, flange convertors and any other fabricated fitting to suit any pipe material and flange drilling.

Specifics:

Size
DN50 - 2000

Pressure:
PN10, 16 bar.



EXTENDED PRODUCT AND SERVICE OFFERING

Site Services

Our site installation team is comprised of highly qualified, certified and experienced engineers of various disciplines which ensures that our environmental water control solutions don't end with product delivery, but are seen all the way through to installation and commissioning.

Our nationwide coverage of in-house site engineers means that you can have the piece of mind of a turnkey water control solution from a specialist provider, wherever you are in the UK.

This wealth of capability ensures unrivalled competence at all phases of a project ensuring that your assets are perfectly designed, manufactured, installed, tested and commissioned.

Our 'right first time' approach at all aspects of a project cycle, will give you the confidence that you will have a high quality installation from a company that stands behind its products.



Fabricated Ancillaries

With our team of design engineers, our local workshop facilities and our dedicated site service personnel, we can deliver a limitless range of dependable actuation solutions and ancillary items for new existing flow control products.

From periodic manual isolation to round-the-clock flow control or fast acting fail-safe applications, we have an individual actuation solution for every flow control device.

We have a wide array of standardised operating equipment solutions and are also ready to provide bespoke solutions for the most unusual and challenging operations.

Fittings

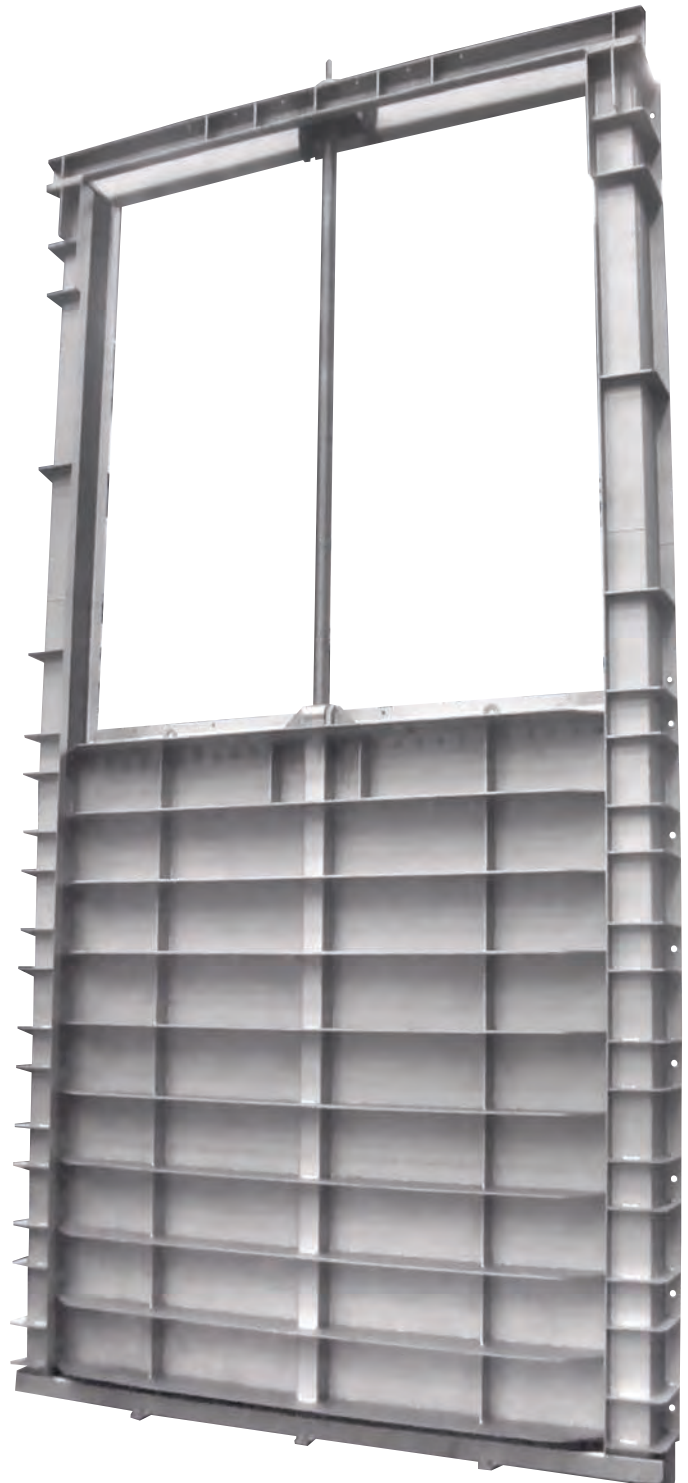
AVK is a leading manufacturer and supplier of a wide range of high quality, fabricated, universal and tensile flange adaptors and couplings to suit all pipeline materials up to DN2200. We design and manufacture all of our fabricated fittings in Great Britain.



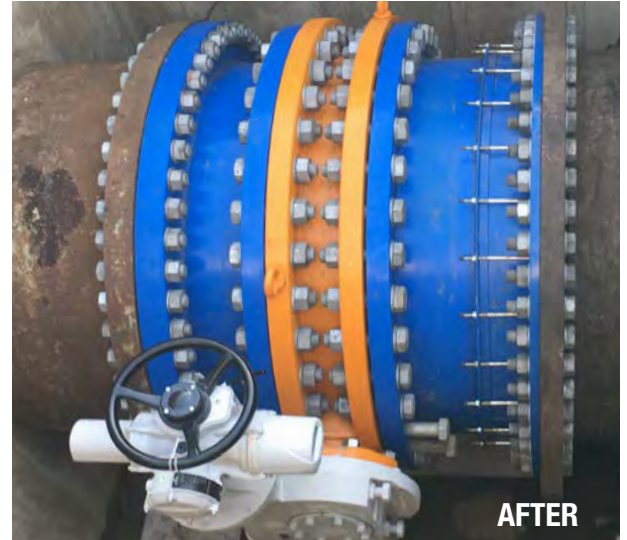
STAINLESS STEEL VS CAST IRON PENSTOCKS

The advantages of stainless steel or HDPE penstocks and flap valves vs cast iron:

- Bespoke fabrication, tailored to suit each unique application and civil structure. Cast iron products are typically available in a range of standard sizes only.
- For channel mounting applications, stainless steel and HDPE penstocks are designed for mounting into rebates, to leave the frame flush with the channel invert and side walls. Cast iron penstocks are designed for face mounting only.
- Much lighter than cast iron, making installation simpler, safer and more economical.
- Less prone to corrosion.
- Vastly superior sealing performance.
- Seals are easily replaceable with product in-situ. Not possible with a cast iron product's bronze sealing faces.
- No adjustment to sealing required throughout lifetime of product. Adjustment of wedges is required with cast iron penstocks and replacement of hinge bushes is required with cast iron flap valves to maintain original sealing performance.
- Lower torque requirement – cheaper actuation and less wear, meaning longer lifetime.
- Generally much shorter delivery lead time. Cast iron penstocks and flap valves > 600mm are generally cast from new.
- Lower carbon foot print.



REPAIR, REFURBISHMENT AND REPLACEMENT



Glenfield Invicta has successfully repaired and refurbished flow control products on numerous projects in the past and our reputation is such that we are considered 'specialists' in this field.

We are frequently called upon to inspect and recommend a resolution for a whole range of flow control products related issues including defective installation, operational failure, obsolescence issues and leakage.

We often find that repair and refurbishment solutions are more cost effective for our clients than replacement. Using our in-house expertise and skilled engineers, we can bring a new lease of life to ageing assets so that they give decades more dutiful service.

We can provide this service on or off site depending upon the circumstances. Actuators and related ancillaries are included within the scope of our service offer.

Our Repair, Refurbishment and Replacement Service Offering Includes:

- **Feasibility Studies**
- **Bespoke Ancillaries and Actuation Solutions**
- **Condition Reports**
- **Servicing**
- **Reverse engineering of obsolescent parts**
- **Actuator retrofit**
- **Product upgrades**



WHY CHOOSE GLENFIELD INVICTA

Complete Water Control Solutions

Specialists in the UK Water Industry with a proven track record spanning over 160 years Glenfield Invicta are part of the AVK Group of companies. ISO Certified.

Industry Expertise

In-house design and manufacture

Most of our products are designed and manufactured in house by our sister AVK companies. Where necessary, we occasionally source from outside of our group, from trusted and established partner companies.

Market Leading Suppliers

Installation

Mechanical, electrical, pneumatic and hydraulic installations. On-site repairs with nationwide by a team of certified engineers (Confined spaced trained).

Minimal Plant Shutdown

Engineered Solutions

Valve and actuator selection with flow control valve sizing, design of extension spindles & valve operating kits. Modifications to pipework if required by valve installation and general valve/actuator troubleshooting.

Quality of Workmanship

Repair and Refurbishment

Repair and refurbishment of all flow control equipment, both on and off site repairs. Site surveys to assess your requirements, carried out free of charge.

Extended Warranties

Fabrication of Ancillaries

- Extended valve spindles
- Actuator/gearbox pedestals
- Actuator/gearbox drive bushes
- Actuator/gearbox mounting kits
- Spindle guide and support brackets

Long Term Solutions

CUSTOMER FEEDBACK

'The team put the hours in and were **good to work with**, the Glenfield Invicta guys did a **great job** – they had everything with them that they needed, they executed the installation works in a **very efficient** and **professional manner**, AND they **cleaned up** after themselves, something you rarely find these days! **Laing O'Rourke**

Please pass on my thanks to Vince and Tom for all their **hard work** and endeavours and going that **'extra mile'** to complete the Penstock & FFT Drop Pipe installation it was much **appreciated** by the AGT site team.' **Aecom Galliford Try**

EXAMPLE CLIENT LIST





Glenfield Invicta
Units 9 -12 Boxmend,
Parkwood Industrial Estate,
Maidstone, Kent, ME15 9YG

T: +44(0) 1622 754613
E: enquiries@glenfieldinvicta.co.uk

Glenfield Invicta
Queens Drive,
Kilmarnock,
Ayrshire, KA1 3XB

T: +44(0) 1563 521150
E: enquiries@glenfieldinvicta.co.uk



A dedicated member of the **AVR** Group