BEDFORD PUMPS LTD.
Part of the Hidrostal group of companies

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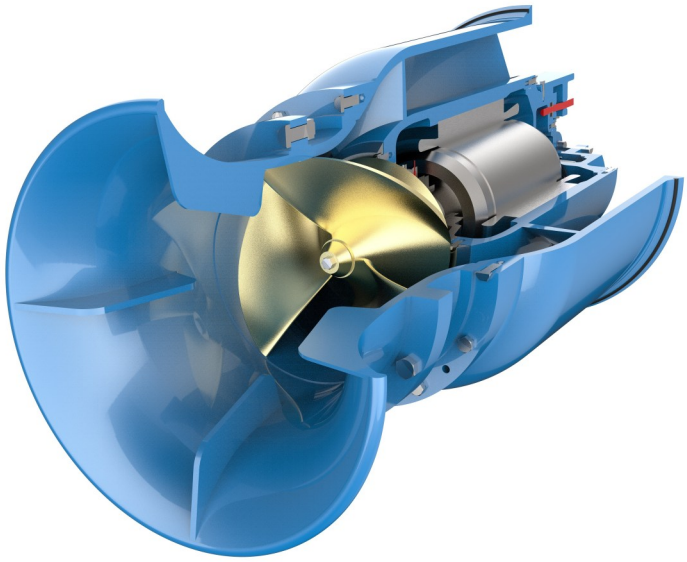
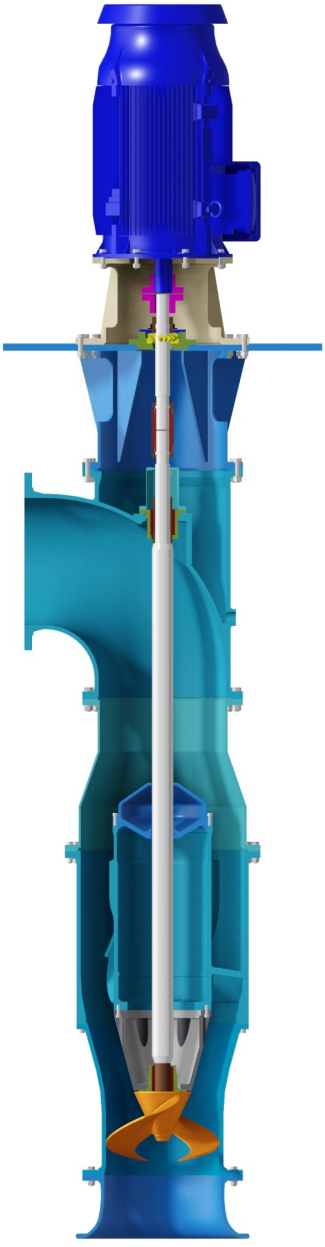
Fish Friendly Pumps

Bedford Pumps' range of Fish Friendly pumps comprises axial, bowl, immersible and submersible variants, covering capacities from 300 to 10,000 litres per second at heads up to 16 metres.

Larger capacity pumps can also be designed to meet specific requirements.





TYPICAL APPLICATIONS

- **Land Drainage**
- **Surface & Storm Water**
- **Flood Defence**
- **Fish Farms**

Can also be utilised for

- **River Abstraction**
- **Return Activated Sludge**

FISH FRIENDLY SUBMERSIBLE & IMMERSIBLE PUMPS

Fish Friendly Pump Range

Designed to Protect Aquatic Life

In response to EU legislation introduced in 2007 to combat the sharp decline in European eel populations, Bedford Pumps developed a specialist range of Fish Friendly pumps — engineered to protect migrating species during their journey.

European eels migrate thousands of miles to spawn in the Sargasso Sea. However, barriers like pumping stations can disrupt this critical journey, contributing to their decline.

Independently Tested - Proven Performance

Our Fish Friendly pumps have been rigorously tested by independent experts at VisAdvies BV, earning an “Excellent” rating for their ability to safely pass fish and eels without mortality.

Efficiency Meets Sustainability

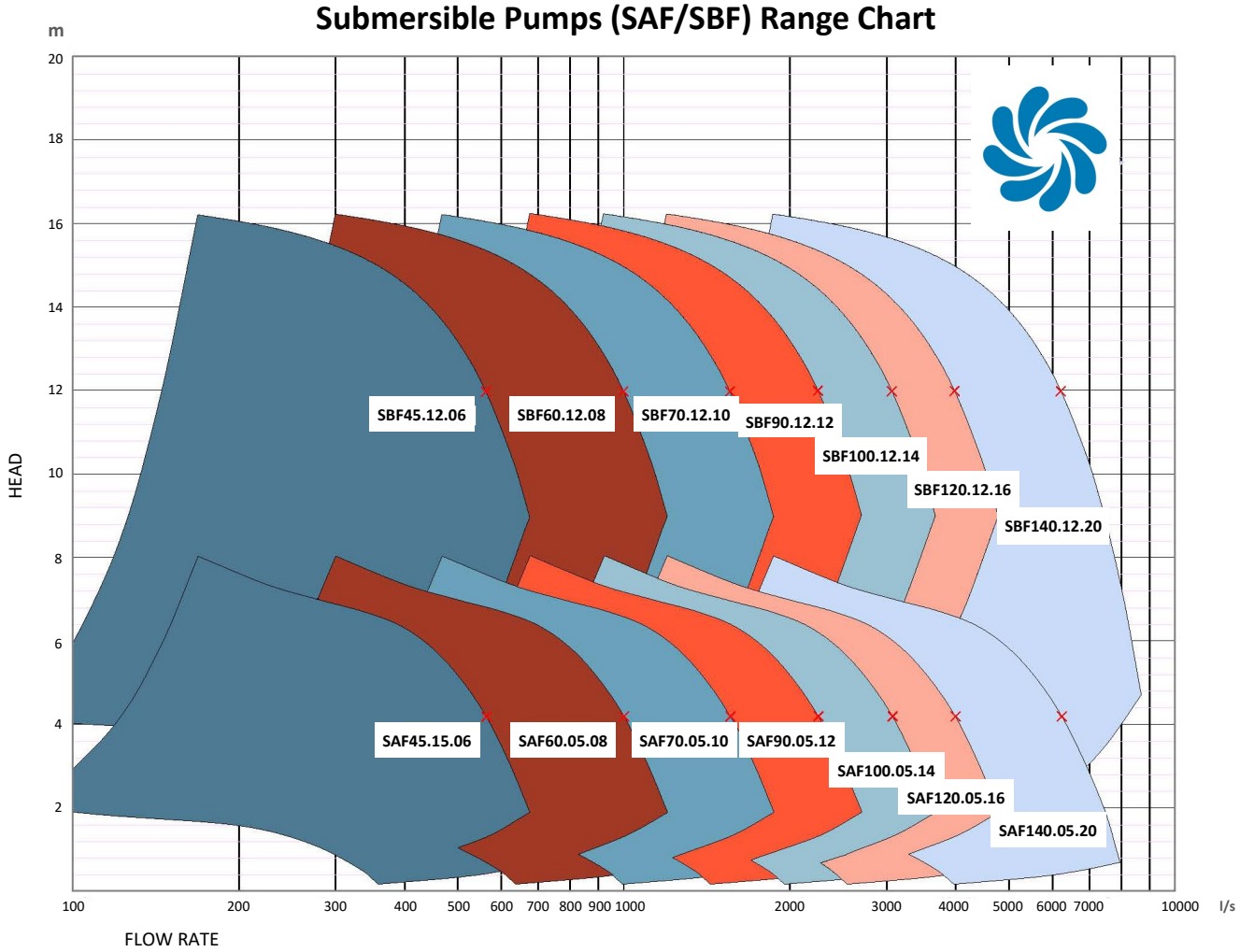
In addition to protecting aquatic life, the pump design delivers a significant improvement in hydraulic efficiency, resulting in an 8% reduction in power consumption. This helps meet objectives for both fish protection and carbon reduction, aligning performance with sustainability goals.

Discover the Difference

- → Environmentally responsible
- → Energy efficient
- → Field-proven in real-world applications
- → Trusted by water authorities and conservation groups

Case studies and full test results are available for download at: **www.bedfordpumps.co.uk**

Submersible Pumps (SAF/SBF) Range Chart



Cable

Heavy duty trailing flexible rubber cable to BS 7919. Optional symmetrical cable for variable speed applications or WRAS approved cable for potable water applications. Other cable types available on request.

Terminal Box

High integrity IP68 profiled design. Easy access to terminal plate without removing cables. Designed to EN50019 (EExe) where applicable.

Motor

Conventional dry wound, squirrel cage, high efficiency, induction motor designed to BS4999, BS EN 60034 where applicable with Class F insulation. The motor is contained within an IP68 motor casing. Suitable for Star Delta, D.O.L., Auto-Transformer or Inverter starting. Motor enclosures designed to EN 50018 (EExd) available where applicable. Electrical supply 480V, 3.3 kV or 6.6 kV, 60Hz.

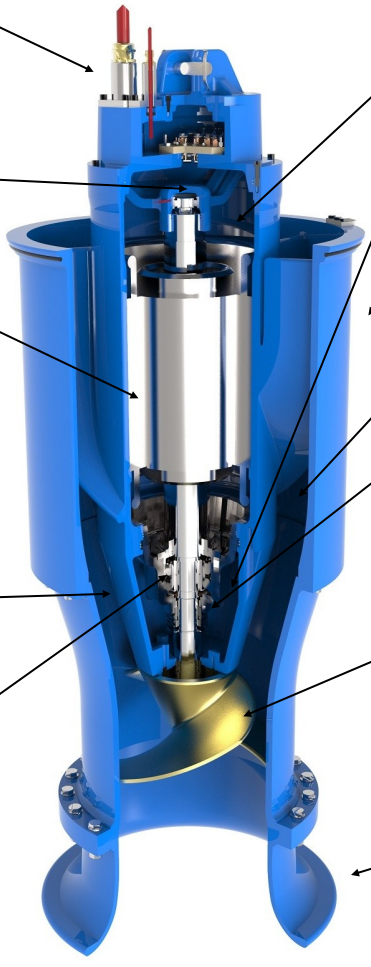
Clearance Gap

Extra-large clearance gap between the impeller and the diffuser-vane to avoid the close proximity of rotating parts with stationary components.

Instrumentation

Each pump is supplied with a Bedford Pumps Condition Monitor as standard. This “free issue” instrument records and displays:-

Barrier oil condition which enables the health of the primary seal to be analysed
Secondary seal failure detection (trip)
Thrust and journal bearing temperature indication (alarm and trip)
Motor winding temperature (alarm and trip)



Bearings

Grease lubricated, angular contact thrust and deep ball groove journal bearings packed for life. Typical design life 50,000 hours. Insulated bearings provided on inverter driven motors

Pump Casing

Solid Cast Iron construction BS EN 1561/EN-GLJ-250. Alternatives available on request.

Static Diffuser Vane

Set back to prevent shearing of passing fish.

Mechanical Seals

Two high quality, independently mounted, mechanical seals in an oil-filled enclosure to prevent water ingress into the motor. The barrier oil can be supplied to WRAS approval for potable water and environmentally sensitive installations.

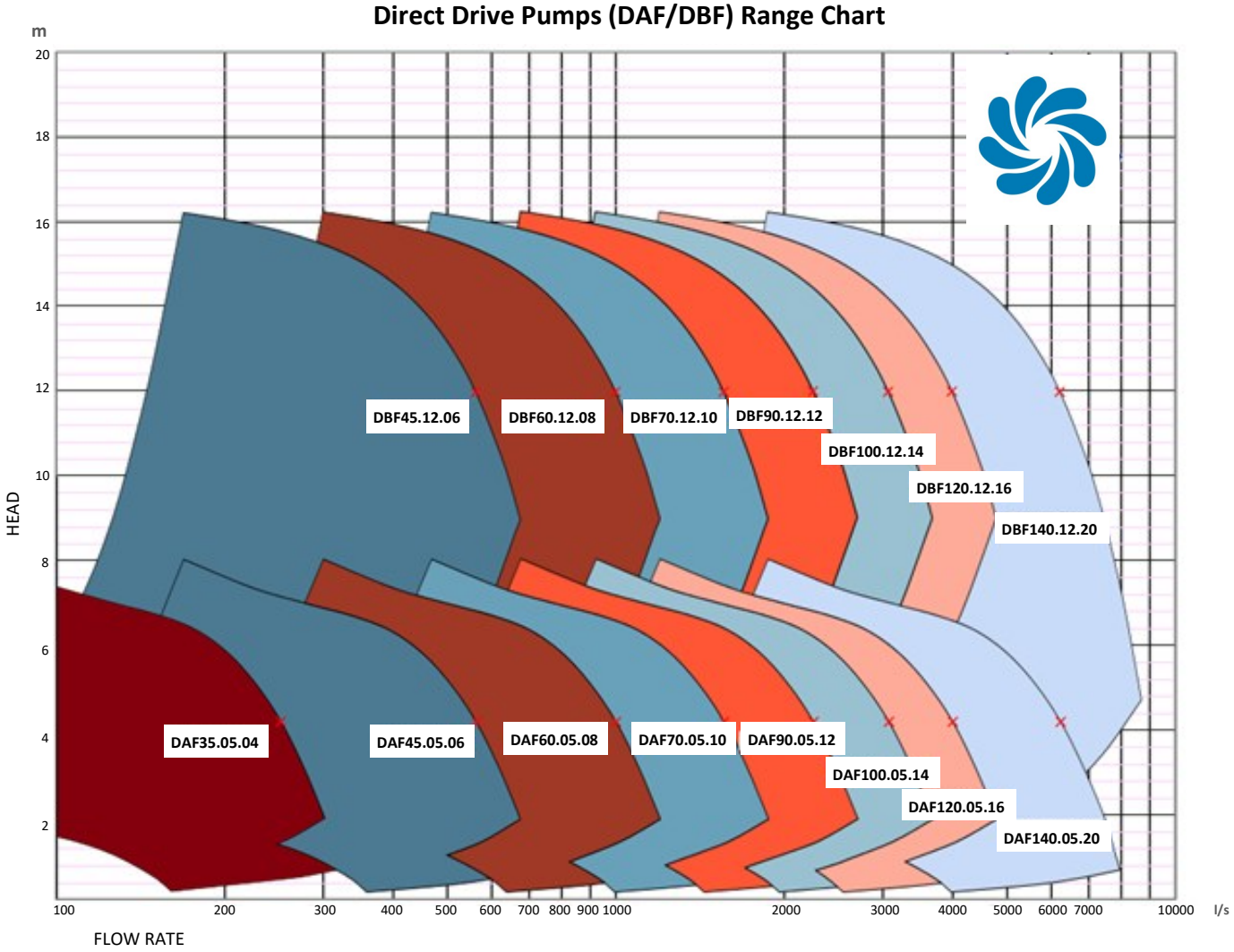
Impeller

High efficiency open bladed design of solid cast construction. Statically & dynamically balanced prior to assembly. Standard material Aluminium Bronze BS EN 1982 CC333G. Shaped to allow fish, eels and other solids through the pump.

Bellmouth

Low loss, high efficiency bellmouth entry with optimised velocity profile. Generally Cast Iron to BS EN 1561 / EN-GJL-250 with alternatives available on request.

Direct Drive Pumps (DAF/DBF) Range Chart



Motor
Standard squirrel cage induction design, TEFC, Class F insulation with Class B temperature rise IP55 enclosure with weather cowl, or to meet clients' requirements.
High efficiency EFF1 machines optional.

Coupling
Flexible compensating pin & bush type drive coupling offering maintenance free operation.
Alternative couplings are available.
Similar arrangements can also be used.

Bearing
Rolling element grease lubricated thrust bearing. Designed for minimum of 50,000 hours with re-lubricating facility.

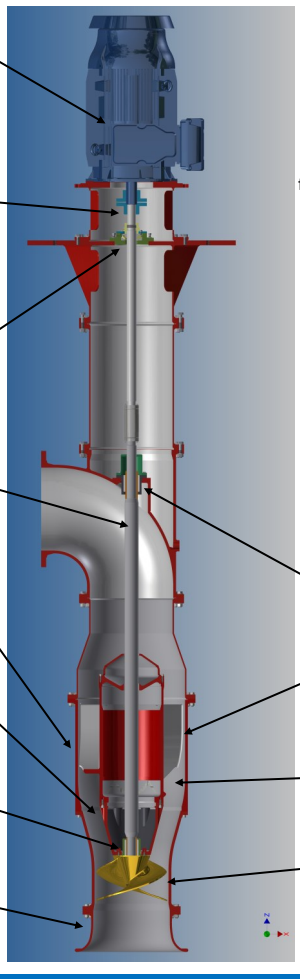
Shaft
Optional steel or stainless steel with tunnel tube.

Pump Casing
Solid Cast Iron construction with swept profiled guide vanes designed to minimize fish damage.

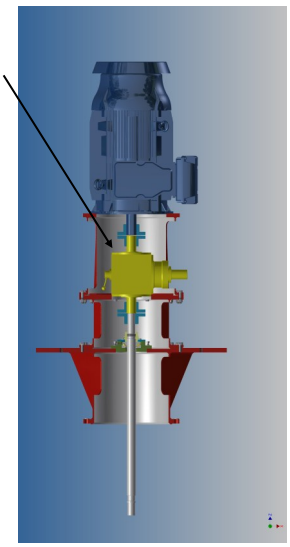
Clearance Gap
Extra-large clearance gap between the impeller and the diffuser-vane to avoid the close proximity of rotating parts with stationary components.

Sleeve Bearing
Low friction, self lubricating, dimensionally stable journal bearings. Designed specifically to run dry during start-up.

Bellmouth
Low loss, high efficiency bellmouth entry, to optimize velocity profile.



Gear Drive
Optional bevel Power Take Off gear drive. Provides facility for driving pump using farm tractor under mains failure conditions.



Gland
Optional Soft packed, mechanical seal or control leakage design as required.

Shaft Sleeves
Shaft sleeves are fitted under gland and journal bearings. Alternatively grease lubricated bearings with tunnel tube.

Static Diffuser Vane
Set back to prevent shearing of passing fish.

Impeller
High efficiency, Aluminium Bronze, two bladed open design of cast construction. Statically & dynamically balanced prior to assembly. Shaped to allow fish, eels and other solids through the pump.

TYPICAL SUBMERSIBLE ARRANGEMENTS

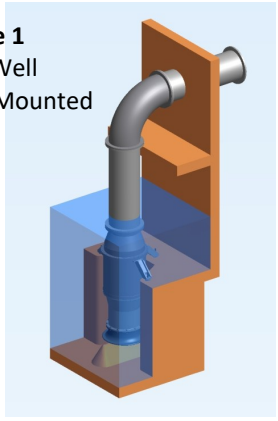


Figure 1
Wet Well
Foot Mounted

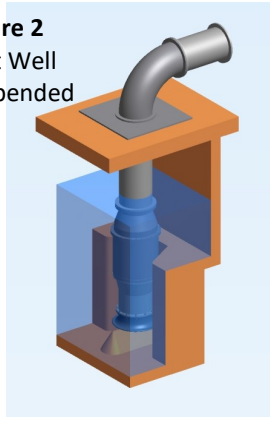


Figure 2
Wet Well
Suspended

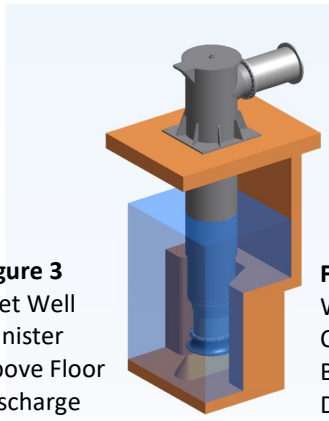


Figure 3
Wet Well
Canister
Above Floor
Discharge

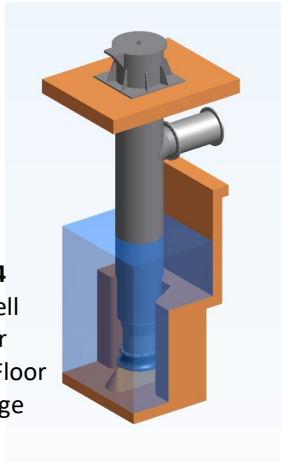


Figure 4
Wet Well
Canister
Below Floor
Discharge

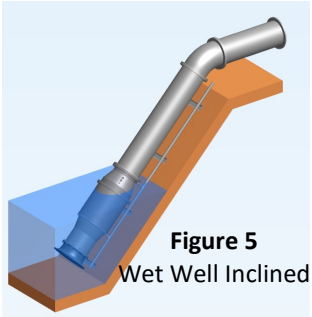


Figure 5
Wet Well Inclined

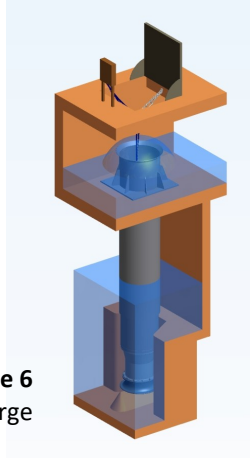


Figure 6
Wet Well Canister Cascade Discharge

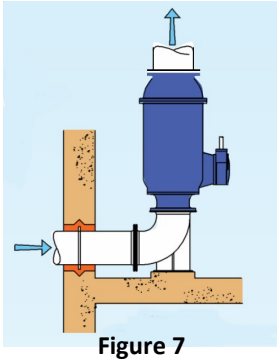


Figure 7
Dry Well Vertical

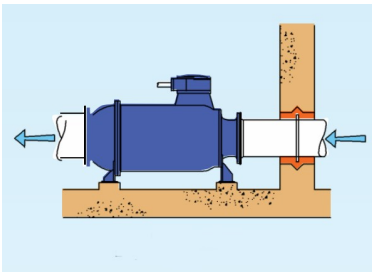


Figure 8
Dry Well Horizontal

TYPICAL SHAFT DRIVEN ARRANGEMENTS

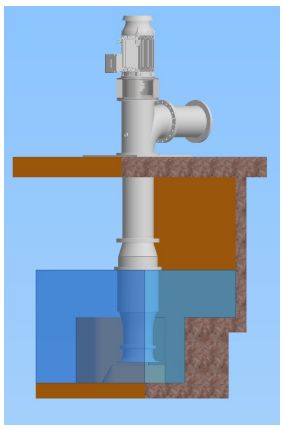


Figure 1
Above floor discharge

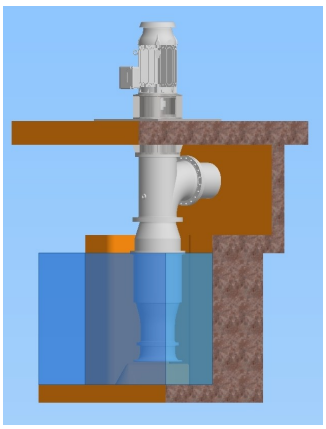


Figure 2
Below floor discharge

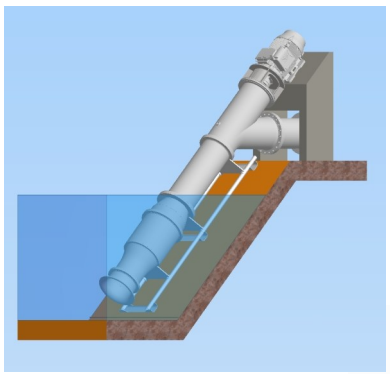


Figure 3
Wet Well Inclined

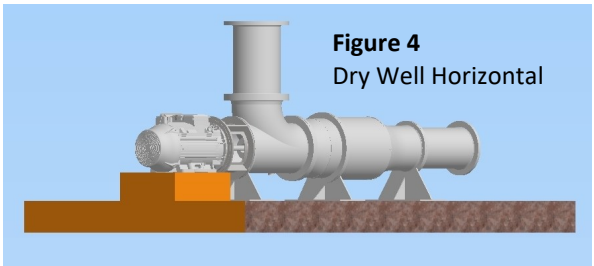


Figure 4
Dry Well Horizontal

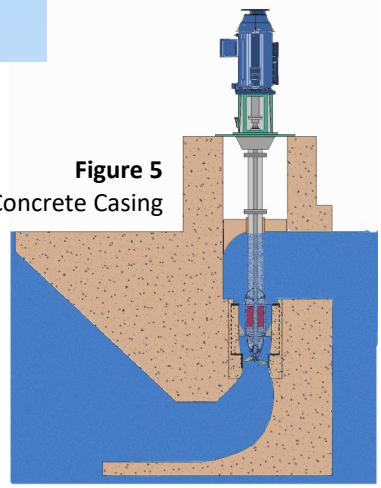
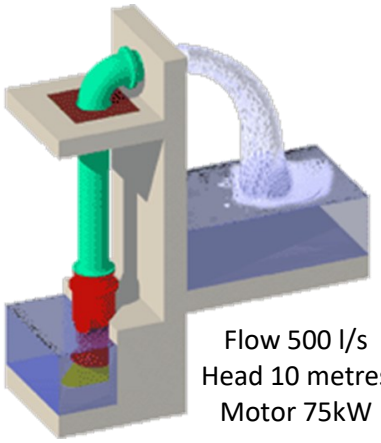


Figure 5
Concrete Casing

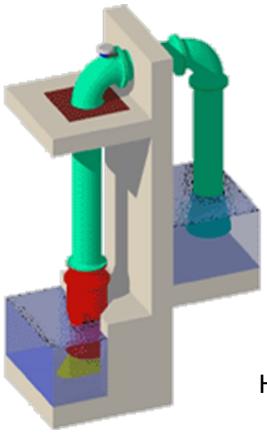
TAKE ADVANTAGE OF SIPHONIC RECOVERY

Are you doing this ...



Flow 500 l/s
Head 10 metres
Motor 75kW

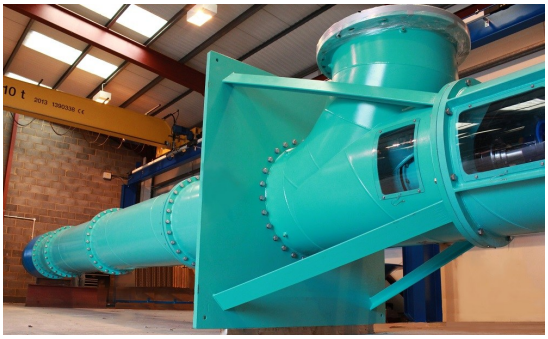
When you could be doing this ...



Flow 500 l/s
Head 7 metres
Motor 50kW

The Fish Friendly variant of the proven Bedford Pumps Ltd Siphon Breaker Valve incorporates a stream-lined profile paddle which results in safer passage for migrating eels passing along the piped system.

AXIAL, MIXED & RADIAL FLOW PUMPS IN ALL ARRANGEMENTS



Single and multi-stage vertical suspended bowl pumps

Space saving, noise reducing, flood-proof inline pumps

Submersible canister pumps

Shaft driven, volute pumps

Submersible volute pumps

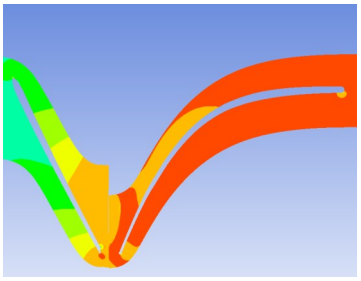
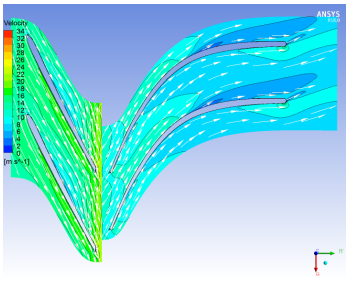
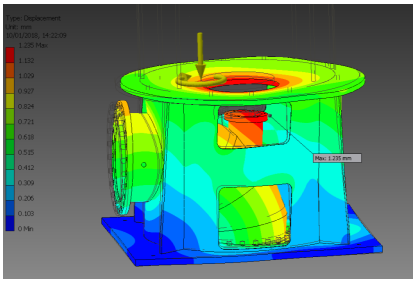
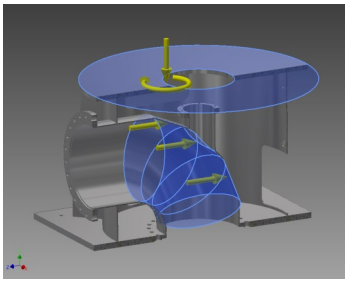
Corrosion and erosion resistant metallurgies

HYDRAULIC & MECHANICAL PUMP DESIGN

EXPERTS IN PUMPING SYSTEMS & TECHNICAL SUPPORT

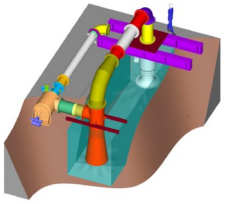
Bedford Pumps is a global leader in the design and manufacture of high-capacity rotodynamic pumps and high-efficiency submersible and immersible motors, suitable for both wet and dry sump applications.

With decades of expertise in hydraulic and mechanical design, our engineering team leverages cutting-edge software to optimise and analyse every product and component, ensuring maximum performance and reliability.

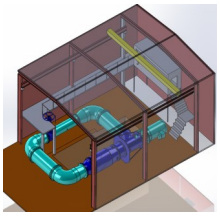





PUMP PERFORMANCE & HYDRAULIC MODEL TESTING

Bedford Pumps has a wealth of knowledge and experience in pump performance testing. Our in-house test facility features state-of-the-art software and variable speed drives, allowing us to test pump sets at low, medium, and high voltages, across all frequencies.



Every pump we manufacture is rigorously tested to verify performance prior to dispatch. In addition, we offer a comprehensive testing service for pumps returned for upgrade or refurbishment.



Our specialisation in the design and manufacture of high Specific Speed pumps has enabled us to build extensive expertise in sump and pump intake design.

Bedford Pumps offers expert support in sump design, including physical modelling and Computational Fluid Dynamics (CFD) analysis, helping clients ensure optimal hydraulic performance from the outset.

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