



**BEDFORD PUMPS LTD.**

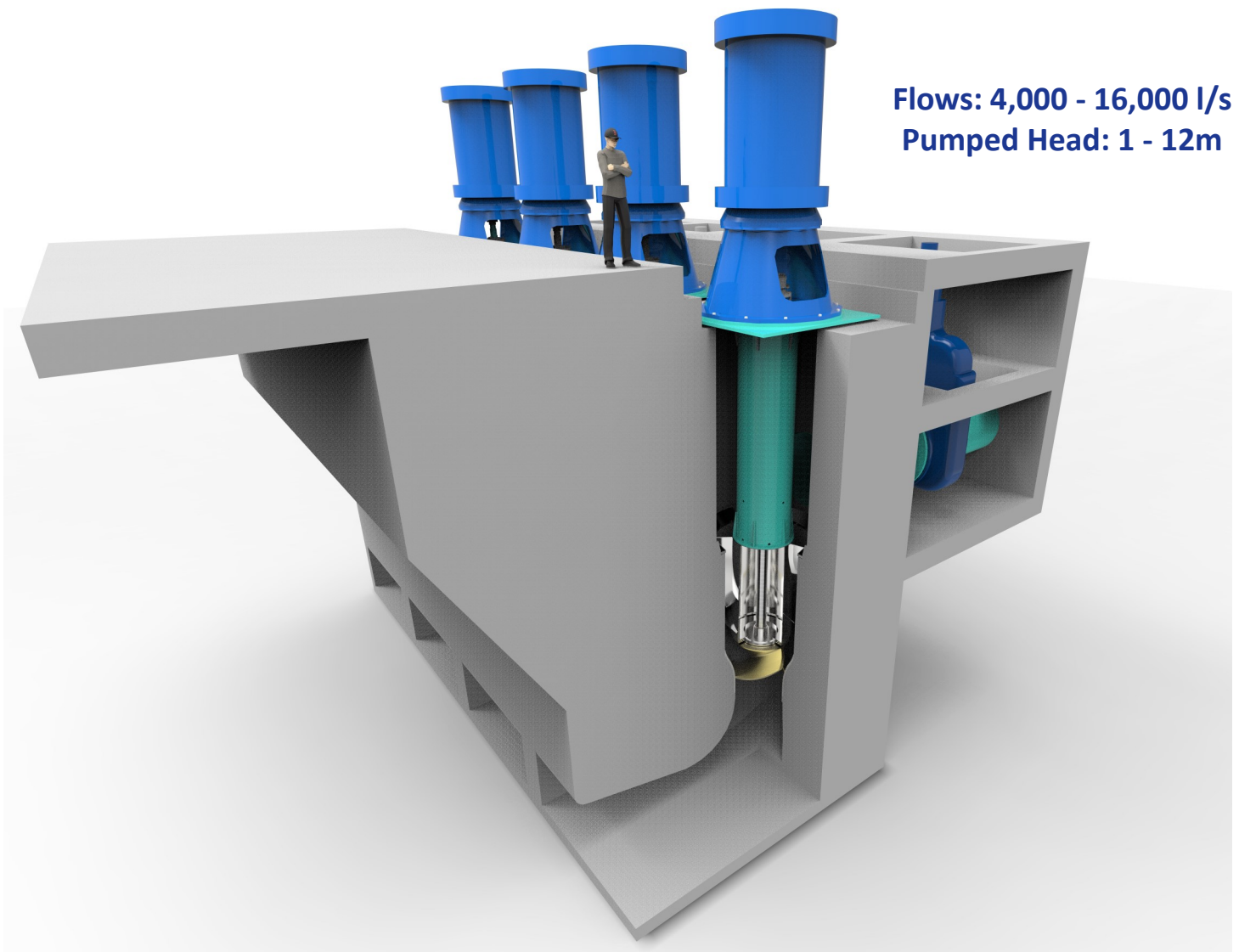
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## **MONOLITHIC CONCRETE CASING PUMPS**



**Flows: 4,000 - 16,000 l/s**

**Pumped Head: 1 - 12m**

**High efficiency, ease of installation, low maintenance,  
Concrete Casing Pumps for Flood Control Applications**

**CAF / CBF RANGE**

# Bedford Pumps Ltd

Bedford Pumps Ltd is a knowledge based business, built on a 140 year legacy of design and manufacture of high capacity water and waste water pumps. Our innovative designs are both efficient and robust and we have an unrivalled ability to engineer bespoke solutions to match the most demanding of customer needs.

## Quality Assurance

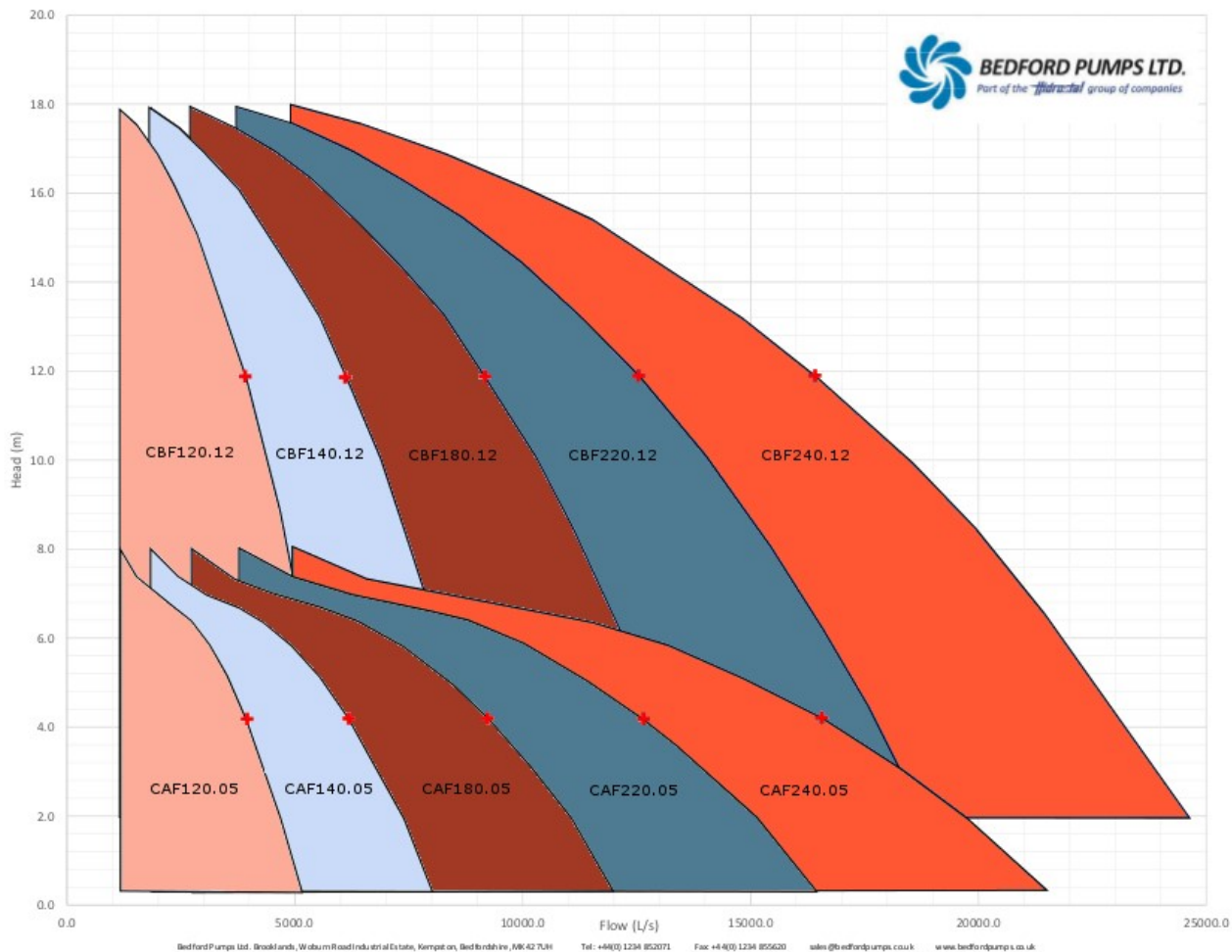
Bedford Pumps operate a quality system approved to ISO 9001:2015 for the design, development and manufacture of Rotodynamic Pumps and the design, development, procurement, installation and commissioning of pumping systems for the water and sewerage industries. This is in addition to the company's project management of pumping systems projects for the water and sewerage industries.



## Concrete Pumps

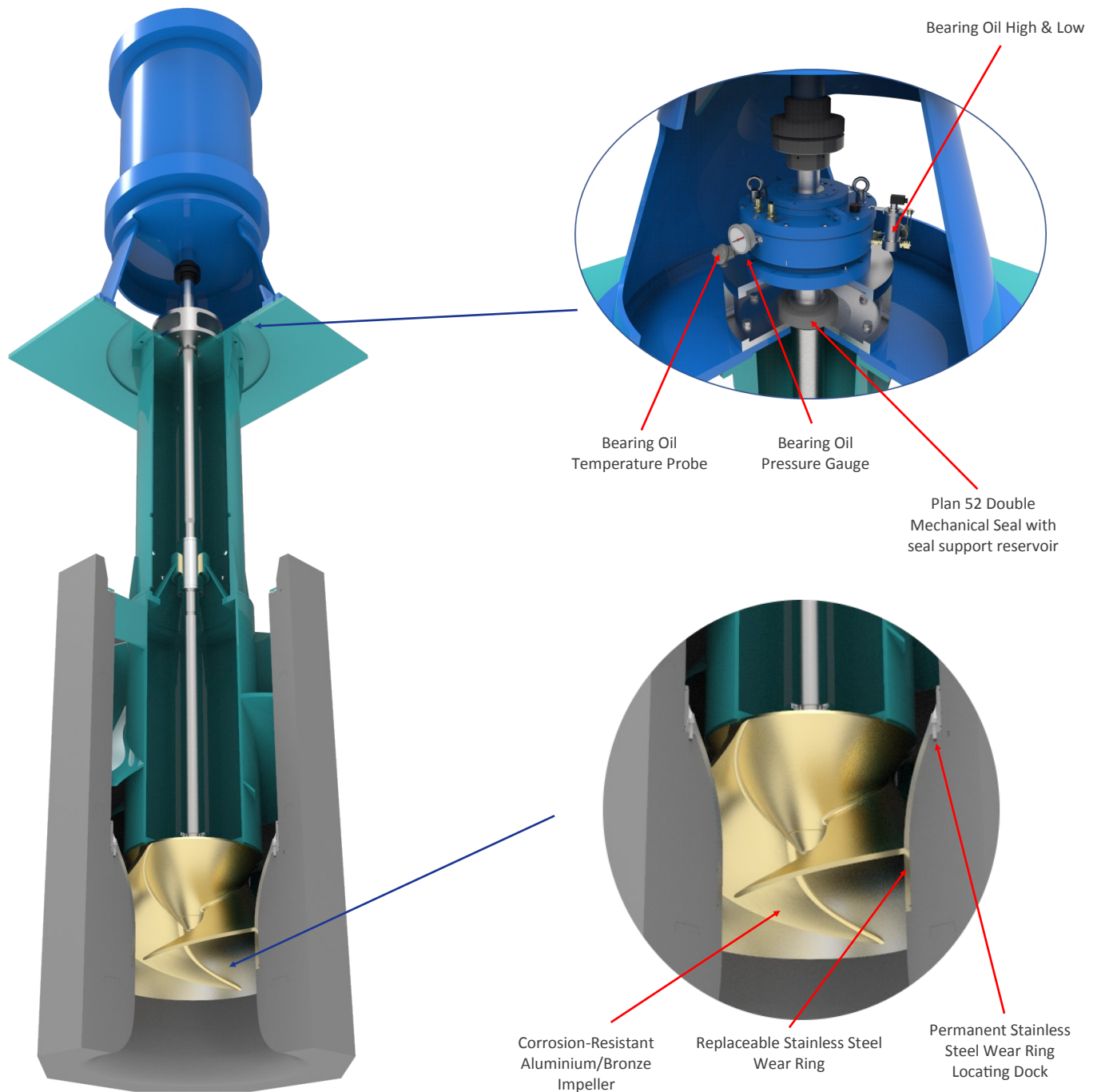
Concrete Casing Pumps for Flood Control Applications are highly efficient, low maintenance pumps for higher capacity low lift applications. A primary benefit of the Bedford Pumps' monolithic design is ease of installation as the concrete casing is supplied pre-cast as a single piece, rather than a series of pre-cast segments as is the case with other types of concrete casing pumps.

## Pre-Engineered Range Chart



# Monolithic Concrete Casing

Single piece (monolithic) concrete casing simplifies installation reducing both cost and complexity.



Bedford Pumps high efficiency twin spiral vane impellers offer higher efficiency than conventional axial flow or high Specific Speed mixed flow pumps, thus reducing energy costs. The pumps have exceptional solids handling capabilities and as such handle floating debris much better than more conventional designs. A secondary benefit is that the pumps have been extensively tested and proven to safely pass fish and migratory eels without harm.

The pumps are designed for ease of maintenance with the motor, thrust bearing and mechanical seal all accessible from the motor room floor level. Importantly the whole pump unit can be removed without recourse for maintenance personnel to enter confined spaces, thus simplifying maintenance and reinstallation of the complete pump.

# Pump Construction

## Impeller

Single piece cast, two vane impeller is based on the open mixed or axial flow designs .

## Diffuser Hub

The inner diffuser hub casing incorporates contoured aerofoil-section guide vanes. The profile of these vanes has been designed to maximise hydraulic efficiency, maximise solids passing and importantly minimise damage to fish that may pass through the pump.

## Pump Concrete Outer Casing Assembly

The pump casing is supplied as a single piece (monolithic) pre-cast concrete block for ease of construction, with internal contours pre-formed to house the diffuser assembly, which is located against stainless steel insert rings.

## Pump Head Assembly

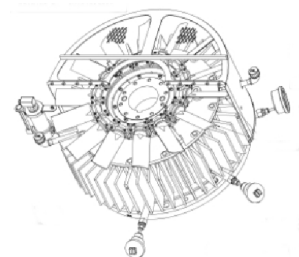
The head assembly, which carries the air cooled thrust bearing assembly, is designed to support the prime mover and is complete with flexible drive coupling and seal chamber. The head assembly is located on a accurately machined sole plate and is doweled after installation. The head assembly and sole plate are sealed to prevent water ingress to the motor room floor.

## Mechanical Seal System

The seal chamber houses a double cartridge type mechanical seal, which is typically supplied with a buffer fluid reservoir to ensure fluid is always available to lubricate and cool the seal faces. This is particularly important in applications when the sump water level is consistently below the level of the mounting floor. Critically both the thrust bearing assembly and mechanical seal can be accessed for maintenance from the motor room floor, without the need to enter any confined spaces at lower levels.

## Thrust Bearing Assembly

The default thrust bearing assembly is a air-cooled, tilting pad hydro-dynamic assembly which can be removed as a single sub-assembly. The tilting pads are of the PTFE type, which have a low co-efficient of friction, hence are ideal for applications when lubricating oil can not be guaranteed to be present on the initial start-up.



## Suspension Column

The rotating assembly is suspended from the pump head assembly by suspension columns. The suspension columns can be single piece or multiple units dependant on the sump depth. These are fabricated and spigotted together with Intermediate column bearings, which are located in specially designed housings, which are also spigotted to ensure exact alignment.

## Shafts

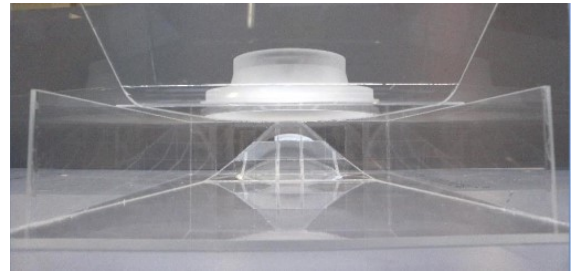
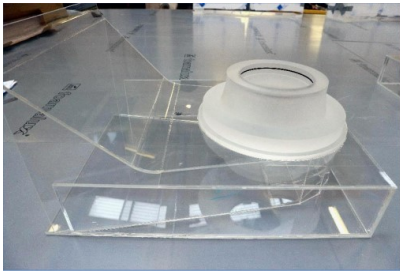
Multiple Shafts are connected by 'muff type' coupling, which facilitate ease of disassembly. All shafts are designed to ensure that the first critical speed of the rotating element is in excess of 25% of the maximum running speed.

## Installation & Maintenance Lifting

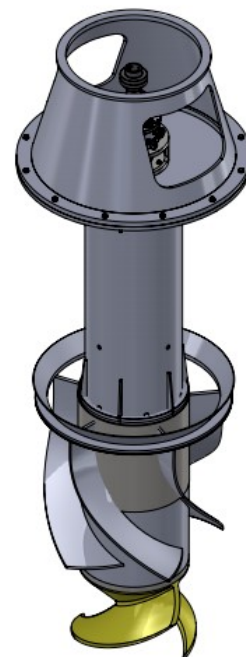
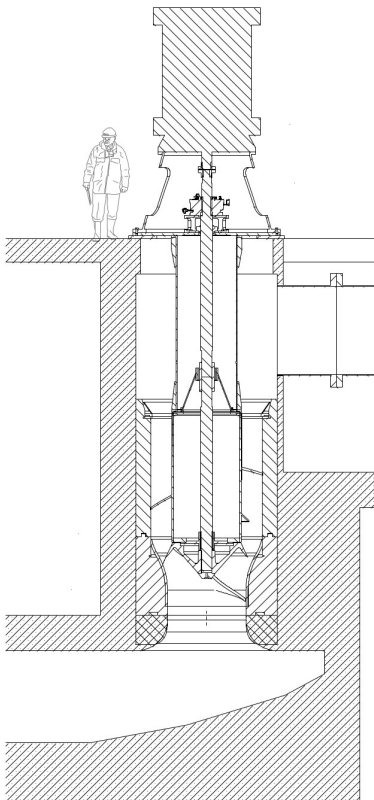
The whole pump rotating assembly is designed so that it can be lifted out of the pump chamber without the need for confined space working.

## Suction Intake

Bedford Pumps formed suction intakes, often referred to as suction boxes, have been optimised to provide the optimum inlet conditions for high capacity pumps. The intakes are in full compliance with ANSI/HI9.8 2018 and operate free from any vorticity, pre-swirl or air ingress.



## Typical Arrangement



# Standard Materials of Construction

The pump components would be manufactured from the following materials:

Casing:	Pre-cast Concrete (Inserts Stainless Steel)
Impeller shroud:	Stainless Steel
Impeller:	Aluminium Bronze
Diffuser:	Carbon Steel (Fusion Bonded Epoxy Coated)
Shaft:	Stainless Steel
Suspension Column:	Carbon Steel (Fusion Bonded Epoxy Coated)
Bolts and Nuts:	Stainless Steel

\*Options exist for pumps in alternative materials including Duplex Stainless Steels for sea or brackish water applications.

## Features and Benefits

- High efficiency
- Robust construction
- Simplified installation
- Ease of maintenance
- Eliminates necessity for confined space entry
- Exceptional solids handling capabilities
- Mixed or axial flow
- Reduced energy costs
- Can handle floating debris
- Fish and eel friendly

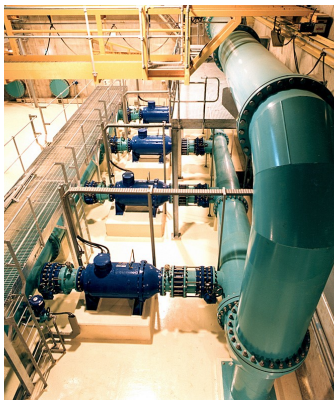
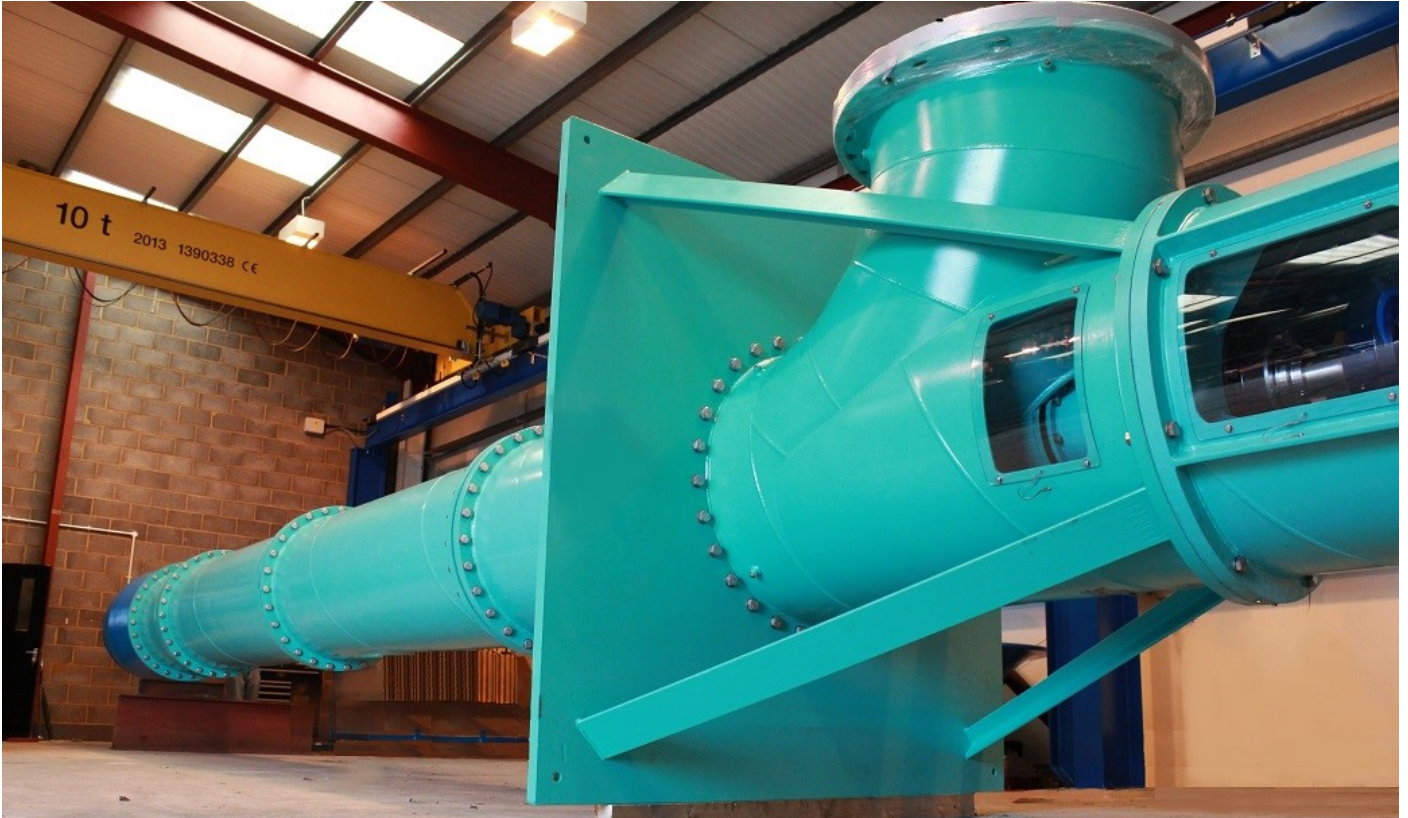
## Typical Applications

A range of highly efficient, robustly constructed solids handling pumps suitable for:

- Flood Control
- Land Drainage
- Raw Water Extraction
- Fish Friendly
- Surface & Storm Water



# Additional products and capabilities from Bedford Pumps



Space saving, noise reducing,  
flood-proof inline pumps



Fish Friendly pumps



Submersible  
canister pumps



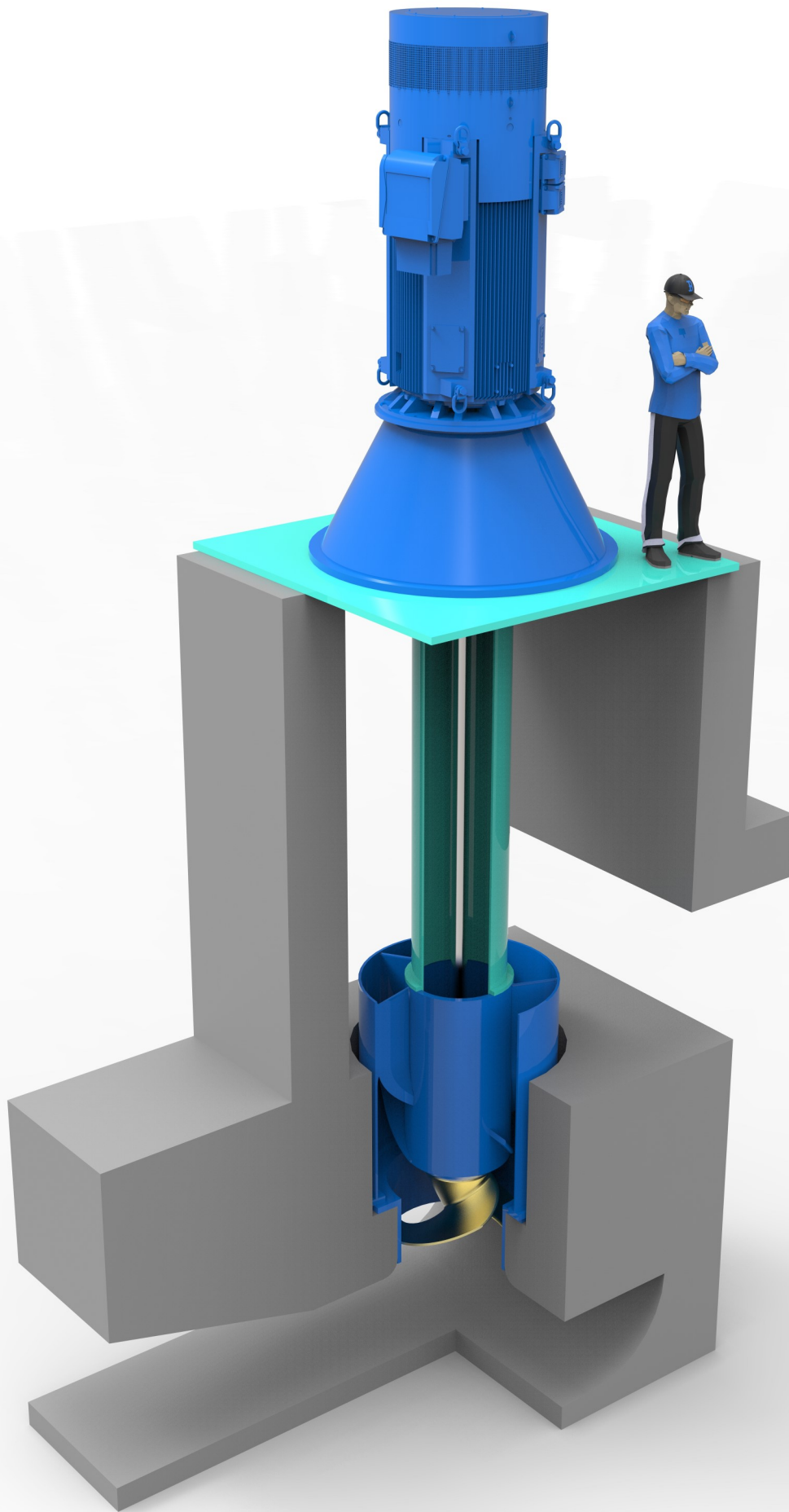
Shaft driven,  
volute pumps



Submersible  
volute pumps



Corrosion and erosion  
resistant metallurgies



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