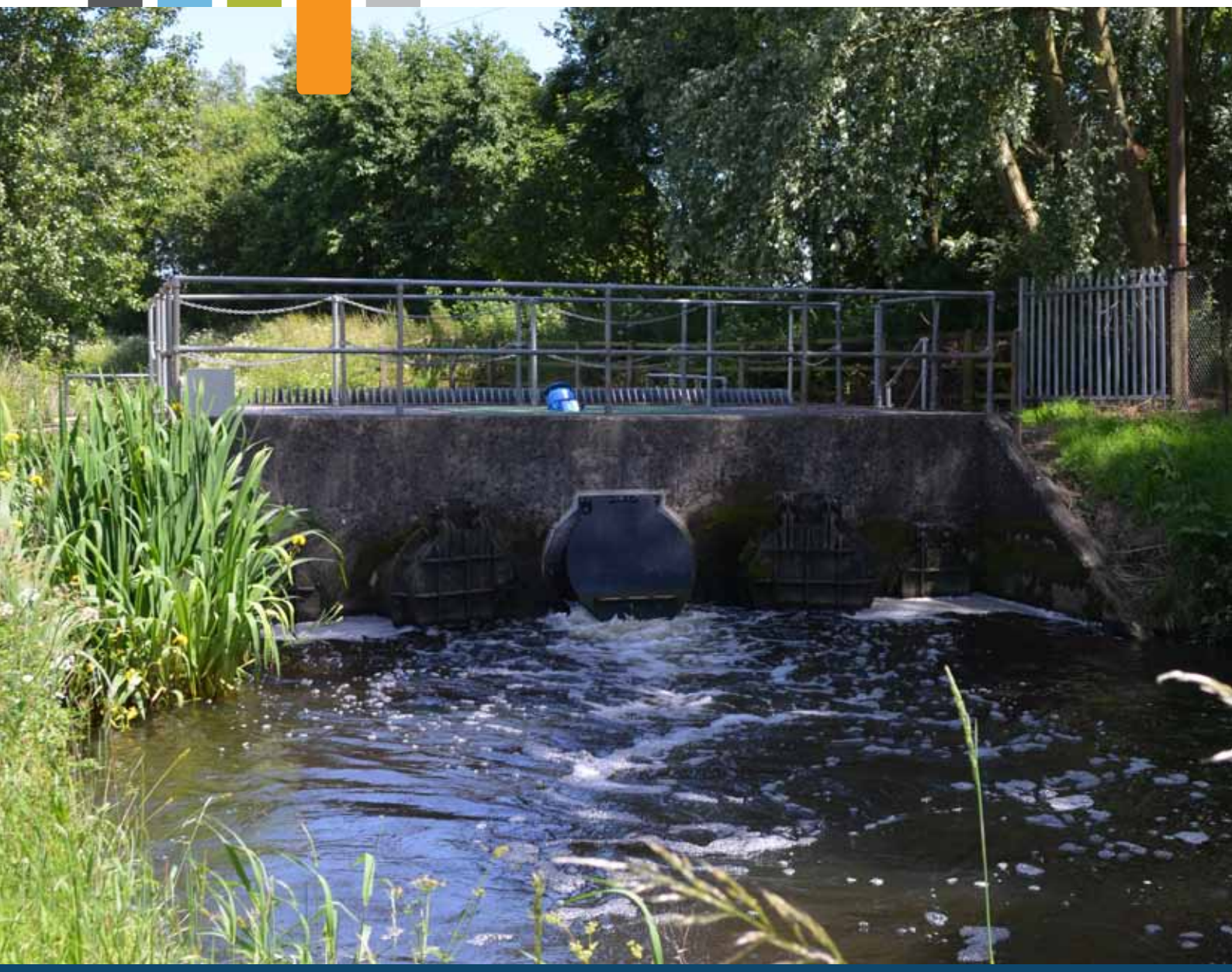
Case Study: 021

ECS Site Services



Case Study:
Improving pumping efficiency in Wales

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The new screw pump incorporates Landustrie's fish-friendly design that has been proven to allow 98% of fish to pass through unharmed

Drainage pumping station

Natural Resources Wales commissioned ECS Engineering Services to design and install a more efficient pumping arrangement to complement the existing submersible drainage pumps. The solution involved an Archimedes screw pump and a new flap valve mechanism, which ensures a one way flow of the drainage water and therefore prevent any tidal water from the River Severn from entering the freshwater channels.

As the official Landustrie distributor in the UK, ECS worked with Natural Resources Wales to design an environmentally sympathetic pumping system that would not only be more energy efficient, but also fish friendly, a feature not associated with conventional submersible pumping systems.

Ideal application

With a level differential of less than 1 metre, the submersible pumps would operate for a short period at regular intervals. However, the submersible pump is better suited for pumping water over greater heights, making it less efficient in this type of application.

The Archimedes screw pump is ideally suited to this application and when used as the primary pump, it can be allowed to operate for longer periods, keeping the remaining submersibles in reserve in case of greatly increased flows.

Precision design

The new, 1 metre diameter screw located in a compact trough, was delivered to site as a complete assembly and installed without any modification to the existing concrete structure. Using a certified underwater dive team to install the sub-frame, allowed the

ECS installed the sub-frame using a certified dive team because it was not possible to lower the water levels to allow a conventional 'dry' installation

The motor and gearbox combination is matched specifically to this application and is driven via a variable speed drive to provide optimum efficiency

ECS engineers completed the commissioning and testing as well as comparing the efficiency of the new screw pump to the remaining submersible pumps

main assembly to be installed quickly without affecting the local water levels.

The existing cast iron flap valve was replaced with a new HDPE flap valve that will ensure that the complete installation will provide a durable and efficient pumping solution.

40% energy saving

The new Archimedes screw pump is powered, through a variable speed drive, by a 5.5kW motor, connected to a reduction gearbox with enables it to pump up to 0.2m3/second, which is more than sufficient for the normal flows at this station. Compared to the submersible pumping system the new screw pump has delivered an expected 40% energy saving.

The Archimedes screw pump is ideally suited to this application and it is used by many utility companies and government agencies across the UK to provide a cost effective solution in maintaining water levels.

Landustrie

InfraCore inside

CE

NICEIC

UVDB empowered by Achilles

UVDB verify

CHAS Accredited Contractor

BM TRADA CERTIFICATION

RoSPA Member

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