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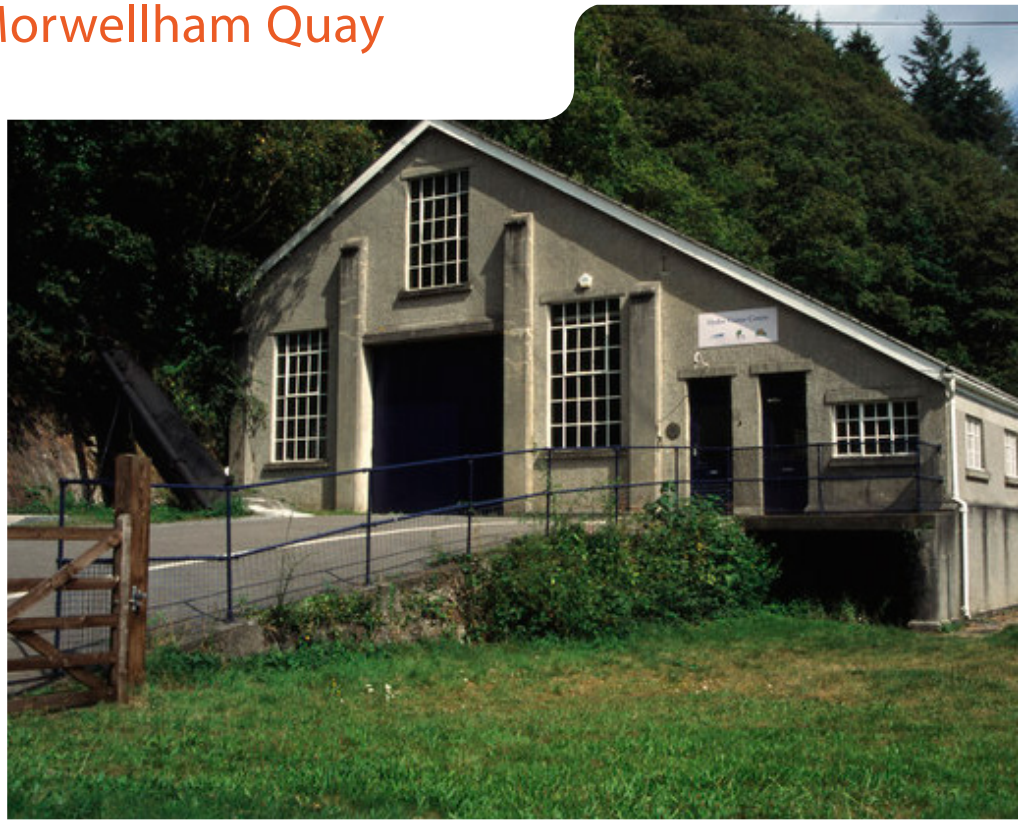
Capturing untapped Energy:

Pump as Turbine - Morwellham Quay



SOUTH WEST WATER

South West Water is part of the Pennon Group plc.

They provide reliable, efficient and high quality drinking water and wastewater service throughout Cornwall and Devon and in small areas of Somerset and Dorset. South West Water came into being in 1989 with the privatisation of the UK water industry. It is their belief that by investing in the future of this region, they are not only improving the quality of life for todays residents and visitors, but are also taking responsibility for future generations.
The Morwell Quay scheme is located within the Tamar Valley, Devon, near Tavistock.

Morwellham Quay Project

KSB, in partnership with Kier (May Gurney) have installed several hydro-electric generating schemes employing Pumps as Turbines (PaT's) for South West Water.

Morwellham Quay Power Station was built in the 1930's and is now owned and run by South West Water. It takes water from the Tavistock Canal (which is in turn fed by a system of leats across Dartmoor) and discharges it into the River Tamar, generating 640kWh of electricity in the process.

The KSB PaT was added in 2011 to provide a ``sweetening" flow at times when water levels in the canal and leats are too low to support the use of the main turbines. This prevents water sitting in the leats and pipes, etc. for long periods, thus avoiding stagnation, whilst still generating useful power. The PaT can also be used in combination with one of the main turbine, to provide more flexibility in generation capacity.

Kier are currently modifying the PaT controls to allow the flow through the PaT to be modulated in line with the levels in leat.

The electrical power yield is 73kW, running as and when circumstances dictate.

The Pump as Turbine solution from KSB and Kier allows more energy to be captured at this site, and facilitates more flexible generation. The capital cost and associated payback period was far more attractive than that of any conventional turbine solutions or other alternatives being offered.

The primary factors for choosing KSB Pumps as Turbines were the benefits offered by centrifugal pumps running in reverse as well as the specialist support and guidance provided by KSB Ltd in Loughborough. Compared with conventional hydraulic turbines, the advantages of KSB PaT's are the low investment, service and maintenance costs. Whilst a conventional turbine has to be specially designed/built to meet customer's requirements, PaT's are essentially standard products.

The KSB PaT chosen for this application is an existing, proven and time-tested design available for installation much more quickly.

The hydraulic efficiency of the Morwellham Quay PaT project is 83.6%.

The design of the product coupled with the comprehensive know-how of our experts has ensured that the operating reliability is maximised and down time kept low.

Should you need more information, please do not hesitate to contact:

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Scope of supply	Technical Specification
1 x Omega 125-365A (77kW)	123.5 l/s @ 76m variable speed
Control system for PaT PLC plain module Inc Software	
	Commissioned: May 2012

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