Water energy is the power generated by flowing or falling water. Capturing it has traditionally taken the form of hydro dams, pumped storage reservoir installations, or river water wheels which have proven to be efficient and cost-effective ways to produce electricity. Today work is also being done to harness the mechanical power held in the movement of the ocean with innovative and often unusual wave and tidal turbines. Whatever the generation method, Parker is there with a wide range of motion and control systems and components. From cylinders that move the wicket gates in hydro dam installations and the array cables that export the electricity from ocean wave turbines to the transformer stations to the gearbox lubrication systems on tidal turbine generators and advanced, cooled electrical power conversion systems. Parker has the experience, products, and technical competence needed to further the science of water energy. As well as the global presence necessary to supply and support its capture.

Subsea electrical array cables

When you’re generating electricity in the middle of the ocean, transporting the power can be a problem, but Parker Scanrope in Norway has a solution. The division manufactures mooring lines that both attach an ocean wave power generation device to the seabed and export its electricity to offshore transformer stations through subsea electrical array cables. Parker Scanrope has years of experience producing and servicing products for the offshore industry. With its own quay to enable direct loading of the mooring lines and cables to the cable-laying vessels, Parker Scanrope combines expertise with flexibility to best serve its customers.

Micro-hydro: Harnessing the power of small rivers

One of the most traditional methods to harness the power of water is with a water wheel. By transferring the power of flowing water from small rivers into rotational movement and spinning a generator, electricity in the range of 100 KW to 1 MW is produced. Varying river flows result in inconsistent generator speeds, which prevent the generation of electricity at a constant frequency. Rather than regulating water flow to control the generator speed, a more cost-effective approach is to pass the signal through Parker’s power conversion system and produce regulated output at grid frequency. The core of the power conversion system, Parker’s AC890PX inverter provides quality power by incorporating an advanced pulse-width-modulated voltage control technology, automatically synchronizing to the AC power grid. The insulated-gate bipolar transistor-based active bridge bi-directional inverter within the inverter actually never capacitively delivers full power in either direction within three cycles, making it ideal for applications like grid frequency stabilization. The efficiency of the inverter exceeds 98%.
WATER

Harnessing power from rivers, waves, currents, and tides.

Look to Parker for:

- "Wave attenuator" energy converters
- Point absorber
- Paddle style wave harvesters
- Mooring lines and subsea electric cables
- Total turbines

Hydro Systems

Hydraulic controls for turbines and generators
Fluid conveyance
Bearing labs oil system
Gate actuation

Waves/Tidal Solutions

"Wave attenuator" energy converters
Point absorber
Paddle style wave harvesters
Mooring lines and subsea electric cables
Total turbines

Hydro expertise

Harnessing power from rivers, waves, currents, and tides.

From "micro-hydro" to "tidegen" drive, Parker engineers design systems ranging from sophisticated hydraulic systems to state-of-the-art controls. Parker systems optimize turbine operation and reliable (I) controls with critical technologies ranging from hydraulics, pneumatics, and electronics—

critical to carrying out maintenance work for onshore and offshore projects. Parker's Hydraulics Group offers a complete range of products, including electric cables, Mooring lines and subsea electric cables., Fluid conveyance, Bearing labs oil system, Gate actuation, Paddle style wave harvesters, Mooring lines and subsea electric cables, Total turbines.

"Wave attenuator" energy converters

"Wave attenuator" energy converters distribute the energy from river currents utilizing vertical oscillations near the ocean's surface. Linear motion is converted into rotary motion, which in turn drives a generator to produce electrical power. The core of the power conversion system may either be hydraulic or electromechanical and can be designed and constructed in a range of products available from Parker.

Solution:
Using Parker's ruggedized grid tie inverter provides a reliable and efficient way to return power to the grid. Installing Parker's ruggedized grid tie inverter will keep power electronics free from shock and damage. With the self-contained, two-phase liquid heat exchanger, Parker's grid tie inverter will keep power electronics free from ambient conditions and the modular design provides a reliable solution.

Customer Advantage:
From the very start of the project, Parker's experience and ability to produce highly specialized hydraulic cylinders have proven that Parker is the right provider of modern turbine governing systems.

Paddle style wave harvesters

Paddle style wave harvesters are immersed in the coastal surf zone. They incorporate the ocean's vertical oscillations to produce electrical power. Parker provides custom hydraulic systems, including hydraulic power packs, piping, and filters to ensure optimum performance for customers.

Solution:
Using Parker accumulators results in a reliable source of reserve power for peak requirements or emergency shutdowns are required, allowing ample warning of deterioration and allowing ample warning of deterioration.

Customer Advantage:
Parker's experience and ability to produce highly specialized hydraulic cylinders have proven that Parker is the right provider of modern turbine governing systems.

Mooring lines and subsea electric cables

Mooring lines and subsea electric cables are vital for problem-free operation of ocean devices. They must deliver reliable performance under tough conditions.

Solution:
Parker offers the world's largest cable and hose capabilities to carry out maintenance work for onshore and offshore projects. Parker's Hydraulics Group offers a complete range of products, including fluid conveyance, Bearing labs oil system, Gate actuation, Paddle style wave harvesters, Mooring lines and subsea electric cables, Total turbines.

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Fluid conveyance

Fluid conveyance is a key part of any system and a Parker specialty. Parker hydraulic systems provide customers with a system solution that will provide a cost effective, trouble-free solution.

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Hydraulic systems are critical elements of many power units. Parker's ruggedized grid tie inverter provides a reliable and efficient way to return power to the grid. Installing Parker's ruggedized grid tie inverter will keep power electronics free from shock and damage. With the self-contained, two-phase liquid heat exchanger, Parker's grid tie inverter will keep power electronics free from ambient conditions and the modular design provides a reliable solution.

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Bearing labs oil system

Bearing labs oil system equipment provide customers with a cost effective, trouble-free solution. Parker hydraulic systems provide customers with a system solution that will provide a cost effective, trouble-free solution.

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Gate actuation

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Electric cable

Electric cable is a key part of any power unit. Parker hydraulic systems provide customers with a system solution that will provide a cost effective, trouble-free solution.

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