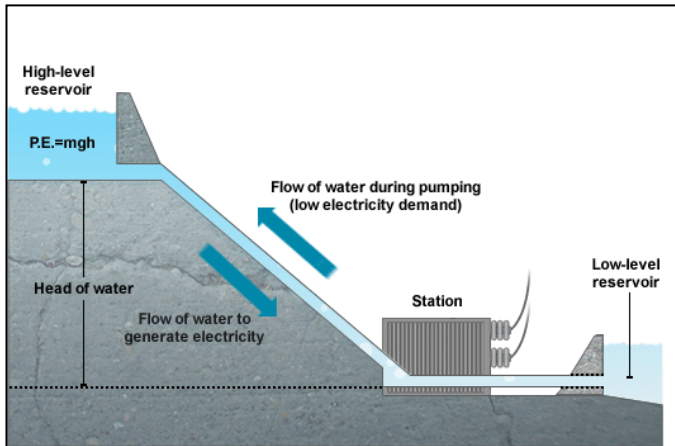


# OPT Demos Hydro-Electric Energy Storage Technology



Ventura, CA (July-2021) For Release – Ocean Pacific Technologies (OPT), operating at the US Navy’s Engineering and Expeditionary Warfare Center’s Seawater Desalination Test Facility, Naval Base, Ventura County, is demonstrating a unique hydro-electric energy storage technology called Pumped Hydro-electric Energy Storage (PHES) or Water Battery Technology.



Typical PHES System Diagram

Similar to a hydro-electric dam, energy derived from water at a higher elevation is converted to electricity by flowing the water through turbines coupled to electric generators located at a lower elevation. In the case of a PHES system, the water is recycled and pumped back to the higher elevation where that energy can be stored for later use. Pumping the water back to a higher elevation is analogous to re-charging batteries and generating electricity through the hydro-electric generators is equivalent to discharging batteries.

Of course, the ratio of energy-in versus energy-out is always less than 100% for any energy storage technology and is often referred to as the round trip efficiency. Although battery storage systems can have efficiencies between 75-95%, electrical grid engineers are impressed to see 80 percent round trip efficiency in any energy storage system.

When it comes to pump and turbine efficiency the axial piston pump (APP) and axial piston motor

(APM) cannot be beat, which make them ideal for a PHES system.

OPT’s APP and APM are up to 96% efficient and the system including electric motor and generator yields a round trip efficiency of 80%. Other benefits of OPT’s PHES system include:

- Ultra-low maintenance
- Ultra-reliable mechanical system
- 50-year life expectancy
- Zero chemicals or rare earth materials
- Same pump and electric motor operate in reverse as axial piston motor and electricity generator
- Maintains charge indefinitely
- Efficient from micro-grid to large scale
- PHES is proven with large facilities operating more than 50 years in US and worldwide
- PHES currently the only long duration solution
- PHES currently the only large-scale solution



OP5 Water Lubricated High Pressure APP and APM

For more information contact OPT at [info@ocean-pacific-tec.com](mailto:info@ocean-pacific-tec.com) and see our website at [www.ocean-pacific-tec.com](http://www.ocean-pacific-tec.com).

Or contact: John MacHarg @ 650-283-7976.