Energy storage project in Utah described as world's largest of its kind

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Mitsubishi Hitachi Power Systems (MHPS) announced an ambitious energy storage project to develop what it claims will be the world's largest energy storage project of its kind, in Utah. Renewable hydrogen is at the core.

The project is dubbed "Advanced Clean Energy Storage" (ACES).

MHPS developed gas turbine technology that enables a mixture of renewable hydrogen and natural gas to produce power with lower carbon emissions.

John Parnell in *Forbes* said their gas turbine for power plants "can operate efficiently with a mixture of natural gas and hydrogen." He said that MHPS sketched out a technology roadmap that will eventually see a gas turbine using exclusively hydrogen.

MHPS is a global leader for heavy-duty gas turbines. The company said it will initially develop enough storage to serve the needs of 150,000 households for an entire year.

MHPS is not the only driver in this project, however. They are joined by Magnum Development. Magnum has below-ground technologies to store energy at utility scale.

According to *POWER*, the Magnum Salt Dome is a geologic formation tectonically developed from a bedded salt deposit. Seismic mapping suggests it measures "at least one mile thick and about three miles wide."

The news release said Magnum controls the only known 'Gulf Coast' style domal-quality salt formation in the western United States. The release said five salt caverns were in operation for liquid fuels storage.

The plan: to develop 1,000 megawatts of 100 percent clean energy storage. That number was as per the MHPS press release.

In an article by Sonal Patel in *POWER*, the author focused on clarifying what that 1,000 MW of renewable power actually represents. The project *could* store up 1,000 MW of renewable energy year-round. It

could be provided to "variability-challenged" Western power markets.

Patel also said that, responding to a request for clarification about the 1,000-MW figure attributed to the facility, which will comprise both storage and power generation, "MHPS said on May 31 ACES is still in the project scoping phase, and that the next step, which entails securing off-taker agreements for power, would determine the mix between renewable hydrogen, CAES, solid oxide fuel cells (SOFC), and flow batteries."

So, renewable hydrogen is not the only technology on tap. Three others are involved to serve the needs of 150,000 households for a year. The ACES initiative will deploy a total of four types of clean energy storage at utility scale. Joining renewable hydrogen are compressed air energy storage; large-scale flow batteries; and solid oxide fuel cells.

John Parnell in *Forbes* had more to say about the flow batteries. "The proposed Utah site will also feature flow batteries or flow machines as they are sometimes referred to. They behave like a battery but have longer discharge periods than lithium-based tech making them ideal for tasks beyond tweaking the grid."

"The technologies we are deploying will store electricity on time scales from seconds to seasons of the year," said Paul Browning, President and CEO of MHPS Americas.

Projects and proposals for energy storage are generally important topics. *Forbes* reminds readers of its benefits, for example, in the way that power can be pumped back into the grid at specific frequencies "to address any deviation from the optimal frequency," and its ability to limit the price impact of sudden peaks in demand on the network.

MIT Technology Review commented that "Finding ways to add vast

amounts of cheap energy storage to electricity grids is crucial if clean but erratic renewable sources like wind and solar are to produce a growing share of total generation."

The project would be relying on hydrogen and compressed air stored deep underground. James Temple, senior editor for energy, *MIT Technology Review*, wrote that "Some energy observers raised questions about the project's viability, given the current economics of these technologies, neither of which is in wide use as a grid storage option."

Temple further said that "A growing number of researchers do believe hydrogen could eventually play an important role in grid-scale energy storage. The hope is that cheap surplus renewable electricity can be used to drive an 'electrolysis' process that splits water into oxygen and hydrogen. But currently, electrolyzers are quite expensive and hydrogen can be difficult to transport, among other challenges."

More information: amer.mhps.com/world%E2%80%99s-largest-renewable-energy-storage-project-announced-in-utah.html

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