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Johnson Controls considers branching out in energy storage business

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MILWAUKEE -- As Americans increasingly clamor for renewable energy sources to supplement utility power grids, Glendale-based Johnson Controls is exploring a possible new product line: energy storage hubs.

"We have a building efficiency business, we have a battery business and we have automotive," said Brian Dillard, executive director of systems electronics and integration for Johnson Controls. "Energy storage kind of fits somewhere in between buildings and batteries for us. It's a new area that we're focused on."

But Dillard cautioned that for Johnson Controls to move forward, "there must be a reward" to offset the risk of investing in new technology.

And at least one utility spokesman suggests the power industry will have to be convinced that special storage batteries are the right solution to storing and distributing the influx of energy flowing from wind turbines and solar systems.

Dillard participated Tuesday in a panel discussion on energy storage and microgrids at the 2015 Mid-America Regulatory Conference in Milwaukee. Other panelists were Adel Nasiri, professor of electrical engineering at UW-Milwaukee; Frank Novachek, manager of planning and technology assessment for Xcel Energy's Denver office; and Jacqueline DeRosa, director of regulatory affairs-West for Philadelphia-based Customized Energy Solutions.

"Obviously, we're a manufacturer, we're interested in manufacturing these energy storage systems," said Dillard, adding that Johnson Controls is also capable of servicing and replacing the storage systems as needed.

But Novachek said that from a utility's standpoint, battery storage units are but one possible tool to solve the challenge of taking in power from multiple "micro-grids" that collect energy from wind farms or solar panels and then juggling energy output to match fluctuating customer demands.

"We are looking at the potential benefits of storage as they apply to serving our system," said Novachek. "And we want to better know when to invest in storage, when it makes the most economic sense to do that for the benefit of our customers."

Later in the discussion, Novachek noted that currently, "the cost of energy

storage is so high that there are other technologies that can address things. But we're trying to think of different ways, even though it's not economical today, to put it into applications where it will be economical in the future."

All of the experts agreed times are changing. The nation's major power grids are not only aging, they were never designed to handle an expanding two-way power flow -- simultaneously collecting and re-distributing energy from solar and wind "micro-grids."

Adding to the challenge: The power flowing from renewable energy sources is unpredictable, yet users need reliable electricity at all times.

"If you look at problems with the grid today, it's inflexible," said Dillard. "You're trying to match consumption with available generated electricity in real time. It was designed 50 years ago. In the future, we see a little bit of a different grid. It will have these shock absorbers and these assets that are able to smooth out some of the disturbances. It will accommodate two-way power flow."

Dillard said solar and wind power bring important benefits of clean energy and helping states comply with renewable portfolio standards.

"It's downside is that it creates intermittency," he said, noting that "you can't predict when the wind blows." As for sunshine, a sudden cloud cover can produce a dramatic drop in power within minutes.

That's why UWM is testing various models of energy storage, said Nasiri. Starting with a wind turbine, visible along Interstate 43 near the campus, researchers are experimenting with various ways to store the energy and connect it to a grid. The university has found that used auto batteries can be recycled for stationary storage use, Nasiri said.

Nasiri predicts energy storage batteries will see future market growth. "We see this technology evolving," he said. "When the cost goes down (and) reliability goes up, then you see the benefit. It becomes cost-competitive."

DeRosa, whose firm offers consultation and schedules energy storage for clients, predicted the cost of storage "will come down tremendously" by 2020.

For now, she said, "Energy storage is real. But the challenge is monetizing the benefits of energy storage -- how does a utility earn the revenues to invest in this?" She said the industry is looking at ways to store renewable energy when prices are low and return it when prices are higher.

-- *By Kay Nolan*
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