Automated for Efficiency

Two reciprocating engine generation facilities in remote areas of Michigan's Upper Peninsula are models of savings and efficiency for the power industry.

Commissioned in early 2019, the F.D. Kuester and A.J. Mihm power plants are among the most automated ever built. Owned and operated by Upper Michigan Energy Resources Corp. (UMERC), they are operated remotely by two-person teams working from control centers in Green Bay and Milwaukee, Wisconsin.

"This project was a success because the owner and design and construction teams closely collaborated toward one common goal," says Dary Burnett, a project manager at Burns & McDonnell. "The partnership formed on this project drove us to an on-time and under-budget delivery. EPC (engineer-procure-construct) projects occasionally can take on an us-versus-you mentality. This is an example of what can happen when you take that mentality out of the process."

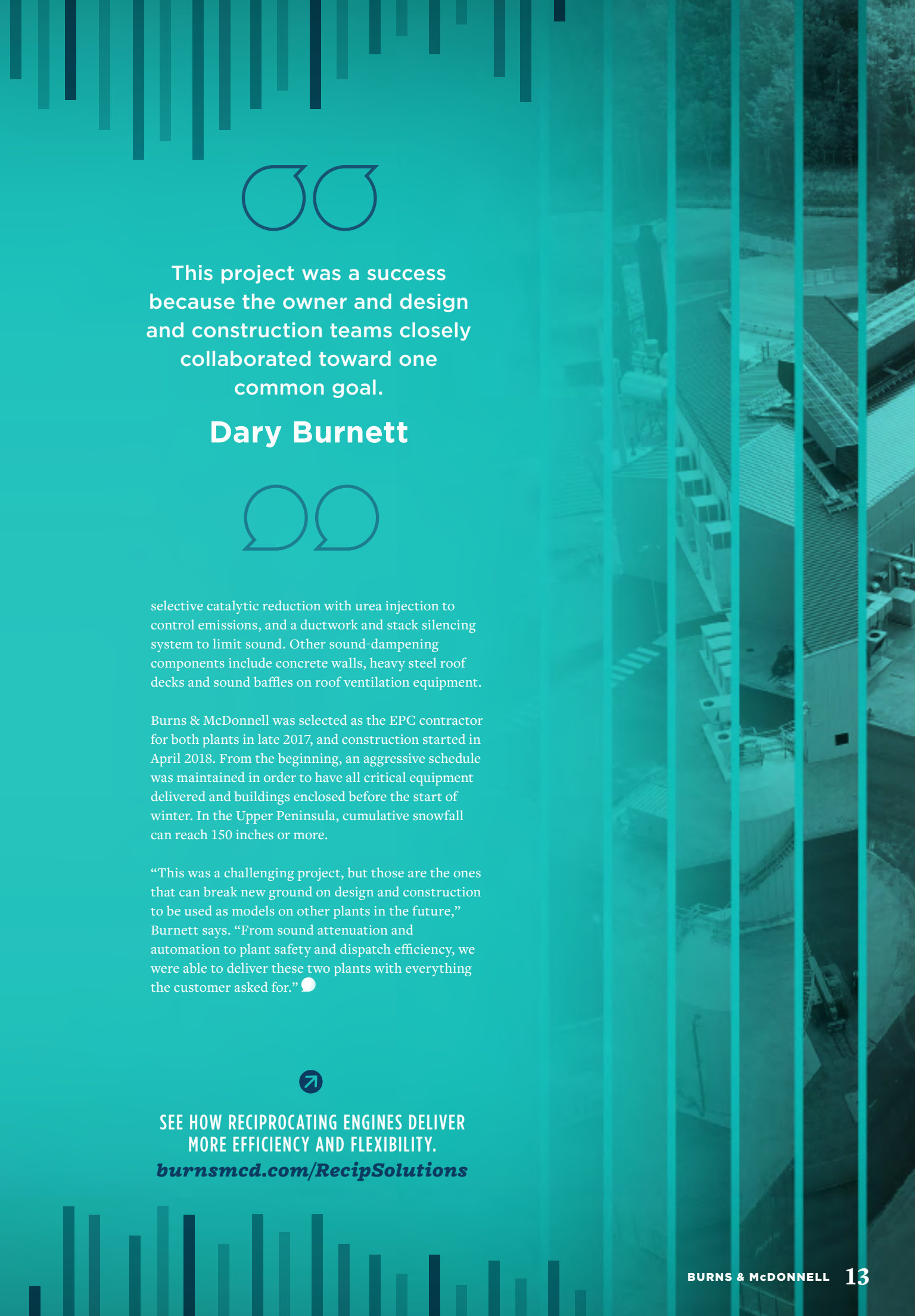
The 126-megawatt (MW) Kuester plant is in Marquette County, while the 54-MW Mihm plant is about 50 miles away in Baraga County. Each of the plants' 18-MW Wartsila reciprocating engines can be dispatched separately, ramping up to full output within six minutes to provide much-needed grid stability, plus flexibility to meet fluctuating load demands.

UMERC expects the reciprocating engines to save consumers around $600 million over the next 30 years. The two plants replace capacity from the now-retired Presque Isle coal-fired power facility.

"The new generating stations are good for our customers, good for business and good for electric reliability throughout the U.P.," says Kevin Fletcher, president and CEO of UMERC parent WEC Energy Group.

With automation critical to long-term operations of the two facilities, redundancy was a key feature of plant design. All equipment and systems have backups in place, meaning plant availability would be unaffected should any single piece of equipment fail during unmanned hours.

In addition to setting new standards for automated controls, the facilities are among the cleanest and quietest in the industry. The exhaust systems include



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>
> **Dary Burnett**

selective catalytic reduction with urea injection to control emissions, and a ductwork and stack silencing system to limit sound. Other sound-dampening components include concrete walls, heavy steel roof decks and sound baffles on roof ventilation equipment.

Burns & McDonnell was selected as the EPC contractor for both plants in late 2017, and construction started in April 2018. From the beginning, an aggressive schedule was maintained in order to have all critical equipment delivered and buildings enclosed before the start of winter. In the Upper Peninsula, cumulative snowfall can reach 150 inches or more.

"This was a challenging project, but those are the ones that can break new ground on design and construction to be used as models on other plants in the future," Burnett says. "From sound attenuation and automation to plant safety and dispatch efficiency, we were able to deliver these two plants with everything the customer asked for."

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