Market Segment: Manufacturing

POWER PROFILE

Customer: Alberta Newsprint Company

Location:
Whitecourt, Alberta, Canada

Customer Business Issue:
Produce affordable power and reduce dependency on local grid

Solution:
10 Cat® G16CM34 generator sets

Featuring the largest and fastest newsprint paper machine in North America, Alberta Newsprint Company produces an average of 750 metric tonnes of newsprint daily.

POWER NEED

Alberta Newsprint Company (ANC) is the first and only paper mill dedicated to newsprint in Alberta, Canada. Featuring the largest and fastest newsprint paper machine in North America, ANC produces an average of 750 metric tonnes of newsprint daily that is then shipped all over Canada and the United States. The paper machine, called Wild Rose, is four stories high and a block long, and is renowned for its print quality and brightness.

However, operating a paper mill of this size comes at a cost. The Province of Alberta is phasing out all coal-fired power generation. During this transition, the price of power from the grid can get pricey, and the plant typically uses about 125 MW of power. In order to further decrease the use of coal, the province encourages the adoption of gas-fueled generation as well as other alternative sources of energy, such as wind and solar, for both base and peak loads.

"The price of power from the grid does get very high at times," said Surendra Singh, ANC's director of energy and technology. "One of the reasons we wanted to build an on-site power plant was to generate our own power during those times and to help us meet sustainability goals."

In order to meet these requirements, ANC needed a flexible power generation solution that would supplement its power from the grid and help power its large facility without sacrificing uptime and efficiency.

SOLUTION

ANC commissioned an on-site 65 MW natural-gas-fired power plant with 10 Cat G16CM34 generator sets. Once Caterpillar was selected as the solution provider, the entire process — from equipment selection to engineering the project — took three months to complete.

"Caterpillar worked well with us for the scope of what we wanted," said Bill Newcombe, an engineering consultant for ANC. "The generator sets were already tested for 24 hours in Germany, and it took Cat technicians five days per engine to do all the testing onsite. They went through all the steps, and then put them online quickly."

The plant was designed in a modular fashion to provide greater power generation flexibility for ANC. In this setup, if one unit goes offline it has little impact on the output of the remaining generator sets, allowing ANC to perform scheduled maintenance and still produce its own power.

"There's a lot of flexibility in whether we run five, six, or nine of the units at a time," said Newcombe. "It suits the mill well because we have three lines of refiners that require 25 MW each, so we can run as many or as few as we need."

RESULTS

The 65 MW capacity of the power plant is more than half of ANC's overall power consumption, the largest portion of which goes to the paper mill operation.

Since the plant could potentially be taken on and off the grid several times a day, it was also imperative that the power solution could come online, synchronize and follow the load quickly. The generator sets installed at ANC are able to do just that in about seven minutes, according to plant managers.

"These Cat engines can start very fast, and the ramp time is also very fast," Singh said. "So when grid prices are high, it needs to run fairly quickly when we get a dispatch from the power pool."

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The Cat G16CM34 reciprocating engines can ramp up and down continuously with little effect on heat rate, while requiring relatively little maintenance and support compared to more complex gas turbine-based plants, according to Claudio Martino, regional director of sales for Caterpillar Energy Solutions.

"We haven't had a lot of downtime on any of the 10 engines," Newcombe said. "We count on availability, and these engines are available 98 percent of the time."

Natural-gas-fired reciprocating power plants are becoming a more popular solution as the use of coal and other fossil fuels decrease. Between gas compression projects and power generation Caterpillar has installed more than 100 of the GCM34 generator sets in North America, according to Martino.

"They are very well suited for an industrial site like ours," Singh said. "And I'm sure you'll see more plants like this coming online here in Alberta, and beyond."

For more information, please visit cat.com/powergeneration

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LEXE1204-01 January 2017