

Market Segment: Industrial Biogas

POWER PROFILE

Guangzhou Zhujiang Brewery Group Co. Ltd.

POWER NEED

Established in 1985, Guangzhou Zhujiang Brewery Group Co. Ltd. (GZBC) is a state-owned enterprise that brews, bottles and packages beer. With an annual production capacity of 15 million hectoliters, GZBC is the second largest brewery in China.

GZBC also prides itself on adopting innovative technologies and production techniques to enhance efficiency. For example, GZBC was the first Chinese brewery to adopt low-temperature membrane filtration technology and sterilization and antibacterial equipment in its bottling and packaging processes.

Since 2002, when GZBC collaborated with Belgium-based InBev (formerly Interbrew S.A.) to establish Guangzhou Zhujiang Brewery Joint Stock Co., Ltd., the company has continued to employ the most advanced brewing technologies from abroad to ensure GZBC's continued role as a leader in developing and manufacturing premium beer with highly efficient and environmentally responsible production processes.

In pursuit of such environmental responsibility, in 2005 GZBC began looking for a combined cooling, heating and power (CCHP) generator set system to enhance its current power capabilities. Because the production of biogas from grain and yeast byproducts at the brewery is seasonal, the design of the power system would need to accommodate variable load conditions.

GZBC turned to The China Engineers, Ltd. (CEL), and CEL sales manager Lin Wen Sheng, to provide a comprehensive CCHP system. CEL has more than 40 years of experience providing Caterpillar products and services to thousands of customers in Southern China. "CEL strives to offer excellent and timely services to customers," said Sheng. "And its enduring partnership with Caterpillar helps both Caterpillar and CEL deliver exceptional quality and support."

Another benefit CEL was able to offer GZBC was proximity: the distance between the brewery and CEL's maintenance workshop is only 6 kilometers. "It only takes 15 minutes to get to the site from CEL's repair center in Guangzhou, so we can respond very rapidly if GZBC needs us," said Sheng.

SOLUTION

CEL began by presenting a comprehensive cost analysis to GZBC, including initial investment and operating costs, estimating that up to 95% of GZBC's biofuel methane could be used by the new system. The new generator sets would make use of the plant's recovered biogas to generate power and would transfer waste heat (produced from the cooling and exhaust systems of the engine) into a cooling source.

To compensate for the variable biogas supply at the brewery, CEL provided generator sets of different output ratings: one Cat® G3508 gas generator set with a 460 kW, 380 V output rating and one Cat G3516 gas generator set with a 960 kW, 380 V output rating. Currently, the overall efficiency of the generator sets is up to 80%.

RESULTS

GZBC has completed testing of the Cat generator sets and is in the process of completing their phased integration into the power supply of the brewery.

Caterpillar and CEL were able to design the CCHP system and its installation to meet the customer's unique demand that the power generation capacity be scalable to take advantage of the variable gas supply. The custom system has been a success—GZBC's current cost savings from the system is an estimated RMB400,000 (over USD58,000) per month.

For more information, please visit www.cat-electricpower.com/pr.



CUSTOMER

Guangzhou Zhujiang Brewery Group Co. Ltd.

LOCATION

Guangzhou, People's Republic of China

CUSTOMER BUSINESS ISSUE

Power generation for the cooling, fuel and waste-heat recycling systems for a brewery in the People's Republic of China.

SOLUTION

- One Cat® G3508 460 kW gas generator set
- One Cat G3516 960 kW gas generator set

Design and economic analysis

CAT DEALER

Lin Wen Sheng, Sales Manager,
The China Engineers, Ltd. (CEL)