



Standby power

> Case History

UMCi Pte Ltd, Singapore

Our energy working for you.™



**Power
Generation**

Where:

UMCi, Singapore's first 300 mm Fab project at the Pasir Ris Wafer Fab Park

What:

Three 1500DQKB gensets, powered by QSK60G3 engines, and one 1005DFLC genset, powered by a KTA50G3 engine, from Cummins Power Generation, together with transfer switches, PowerCommand® network and PowerCommand digital paralleling equipment

Purpose:

Standby power for the 5,500 kW power requirement at UMCi

Primary choice factors:

Product reliability; proven track record at UMC's Fab 12A in Taiwan; PowerCommand network, including Automatic Transfer Switches for safe, seamless load crossover

Cummins Power Generation on standby for Southeast Asia's first 300 mm fab plant

SINGAPORE — UMCi is the first 300 mm wafer fabrication plant in Southeast Asia. Located on a 13-hectare site at the Pasir Ris Wafer Fab Park in Singapore, UMCi is a joint venture between Taiwan's United Micro-electronics Corp (UMC), the second largest maker of custom-built chips worldwide (85 percent) and EDB Investments, the investment arm of Singapore's Economic Development Board (15 percent).

The total planned capacity for the production facility is 40,000 wafers per month, with the overall financial outlay estimated to hit US \$3.6 billion. Total investment is expected to reach US \$1.2 billion by the end of 2004, with production crossing 10,000 300 mm wafers a month.

The plant on the 7-hectare site is being built in two phases. Under phase one, civil works and critical clean room facilities were completed. Back-end copper equipment was installed for production of 300 mm wafers with yields and defect densities that rival those of UMC's other 300 mm facility, Fab 12A in Tainan, Taiwan. The second phase involves the installation of front-end-of-line (FEOL) equipment.



Cummins Power Generation high voltage generator system installed in UMCi.

Standby Power

Three 1500DQKB gensets, powered by QSK60G3 engines, and one 1005DFLC genset, powered by a KTA50G3 engine, from Cummins Power Generation, provide complete backup to the grid supply for the present 5,500 kW power requirement at the UMCi facility. Additional space has been provided for the installation of more standby sets to meet increased production in the future.

“We chose Cummins for the standby application not only because of its reputation for reliability, but also on account of their proven track record at our Fab 12A in Taiwan,” said Mr. Jason Huang, senior engineer, Electrical Engineering Dept., Plant Operation Division, UMCi.

“In Taiwan, the overhead power lines are subjected to typhoons and lightning strikes, significantly increasing the possibility of power outages and, therefore, placing greater reliance on the standby system from Cummins,” Mr. Huang added.

At the UMCi facility in Singapore, in case of a failure in the grid power supply, Automatic Transfer Switches within the advanced PowerCommand Control will ensure safe, seamless, load crossover to the standby generators in a matter of 20 seconds (which is covered by the DC-based UPS). The three standby gensets currently cater to the power requirements for production activities, including for process cooling water, air conditioning and mechanical ventilation, supply of deionized water, gas supply and chemical supply, as well as emergency lighting. A separate standby system takes care of the needs of the administration and parking areas.

PowerCommand for Control

Only Cummins gensets are available with the industry-leading, microprocessor-based PowerCommand Control. This field-proven control system offers several attractive features, including: integrated digital governing and



Cummins Power Generation advanced PowerCommand Control and ATS ensure load crossover within 20 seconds.

voltage regulation; analog and digital metering; digital engine monitoring systems; smart-starting systems that regulate the fuel system based on engine temperature to improve stability and starting time and limit smoke; battery monitoring systems that test the genset batteries; AmpSentry true alternator protection; and more.

“We chose Cummins for the standby application not only because of its reputation for reliability, but also on account of their proven track record at our Fab 12A in Taiwan,” said Mr. Jason Huang, senior engineer, Electrical Engineering Dept., Plant Operation Division, UMCi.

Integrated Digital Paralleling

Paralleling is an integrated function of PowerCommand. In addition to all monitoring, protection, governing and voltage regulation functions, PowerCommand provides all paralleling control functions, including synchronizing, load sharing and paralleling protection. The PowerCommand control even provides utility (mains) paralleling functions. Microprocessor controls built into the PowerCommand system allow the genset and transfer switch to access critical performance data and communicate that data to each other, as well as to other building management systems. The control capabilities include diagnostics, testing, feedback functions and corrective actions for enhancing system reliability and maximizing building operations. The controls run continuously, which means PowerCommand can detect failures even when not in use. Cummins Power Generation designs and builds its PowerCommand gensets and transfer switches to meet LONMARK specifications for open systems or interoperability.

For more information about integrated standby power systems, contact your local Cummins Power Generation distributor or visit www.cumminspower.com.

Our energy working for you.™

www.cumminspower.com

© 2008 Cummins Power Generation Inc. All rights reserved. Cummins Power Generation and Cummins are registered trademarks of Cummins Inc. PowerCommand is a registered trademark of Cummins Power Generation Inc. “Our energy working for you.” is a trademark of Cummins Power Generation. F-2005 Rev. 4/08 (2003)

