

POWER GENERATION



Inland Power Group has upgraded a telecommunications and data storage facility near Chicago, Ill., with four 1000 kW diesel-driven generator sets from MTU Onsite Energy.

AN ONSITE POWER UPGRADE

Inland Power installs 4000 kW data center with new MTU gen-sets, Basler communication network

A reliable backup power system and communication network is crucial, especially in the telecommunications and data storage industries, which rely on these systems both to conduct day-to-day operations and to ensure continuous operation during power outages.

Midwest distributor Inland Power Group recently upgraded the on-site power generation facilities at a large telecommunications and data storage facility near Chicago, Ill., with new gen-sets and paralleling technologies that are intended to provide the site with more reliable backup power and communication systems.

Inland Power is an authorized distributor in Wisconsin, upper Michigan, Northwest Indiana and Illinois for MTU Onsite Energy generator sets; Detroit Diesel and Mercedes-Benz on-highway engines; Detroit Diesel, MTU and Mercedes-Benz off-highway engines; and Allison Transmissions. The company is also a distributor for Electromotive and Jenbacher in several Midwestern states. In addition, Inland Power provides repowering/regearing of older

equipment, emergency repair, parts and technical support as well as preventive maintenance.

The data center was operating on four older 750 kW turbine-driven generator sets. According to Inland Power, the increased power demand of the facility, as well as the age of the existing power generation equipment, required the replacement of the existing generator sets and the installation of all-new power generation equipment at the location.

The facility was upgraded with four



The MTU Onsite Energy gen-sets installed at the data center facility are powered by a 31.8 L, 16V 2000 MTU engine rated at 1495 hp coupled to a Marathon Electric alternator.

1000 kW MTU Onsite Energy diesel-driven generator sets supplied by Inland Power Group, taking the total power of the facility to 4000 kW. The MTU Onsite gen-sets are powered by a 31.8 L, 16V 2000 MTU engine rated at 1495 hp coupled to a Marathon Electric alternator.

At this facility, the total building demand can approach 3000 kW during peak usage. With the four 1000 kW units installed, the user could have N+1 generation capacity at the facility, allowing for additional capacity and growth.

The system was designed to detect when a power disturbance or outage occurs — opening the mains breaker and starting all of the generators. The first generator that operates at rated voltage and frequency is closed onto the system to energize the bus. The other generators then synchronize to the bus, and the load is picked up and equally shared by the other gen-sets.

Traditionally, this would be accomplished by a suite of paralleling controls, but for the data center, Inland Power equipped the gen-sets with MTU Onsite Energy's controls exclusively designed and manufactured by Basler Electric. The DGC-2020 control system is designed to perform all of these functions as required by the application.

Utilizing the DGC-2020 digital gen-set controller in combination with the LSM-2020 load share module, Inland Power Group was able to perform all of the engine control, synchronizing, load



Remote control panels with unit operation selector switches and LCD text readout and LED indicator lights for generator and engine system status are provided via Modbus communications from the DGC-2020 control system designed and manufactured for MTU Onsite Energy by Basler Electric to perform all of the engine controls, synchronizing, load sharing and breaker controls.

sharing and breaker control without the need for additional controls to perform each of those functions, it said.

The DGC-2020 provides all of the engine and generator monitoring and protection of the engine and generator set. The DGC-2020's dead bus feature with "first up, first on" breaker arbitration allows the first stable, operating generator to energize the bus while communicating with the other DGC-2020s on the network to begin synchronizing of the other gen-sets. This ensures two machines will not attempt to parallel to the bus at the same time and potentially out of phase.

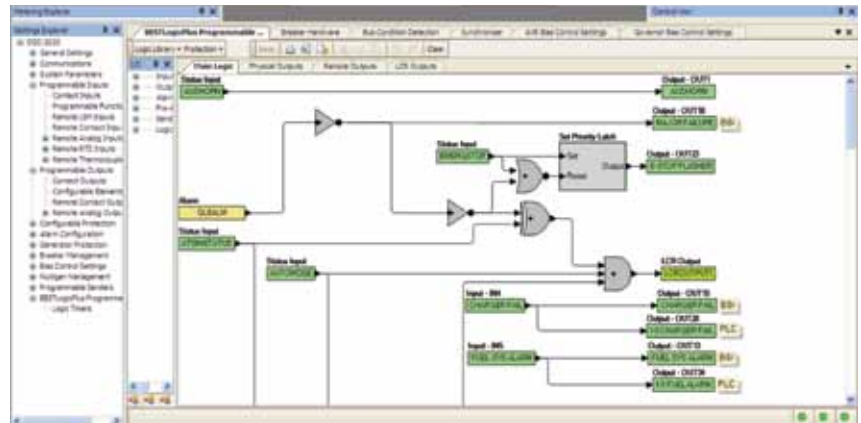
The integrated automatic synchronizer of the DGC-2020 controller, along with the analog outputs of the LSM-2020, is able to adjust the automatic voltage regulator and the speed governor of the generator set to synchronize to the network. Once paralleled to the network, the LSM-2020 controls the load sharing between the gen-sets to ensure each gen-set assumes equal amounts of the facility load.

The combination of the DGC-2020 controller and the LSM-2020 module also provides communication capabilities to the gen-set system. Equipped with the ability to communicate with the engine control unit, which allows various engine parameters to be used and monitored by the DGC-2020, it also provides communication of all monitored parameters and remote controls

via RS485 (Modbus) and Ethernet.

In addition to the DGC-2020 and the LSM-2020, a CEM-2020 contact expansion module is utilized in this system. The CEM-2020 can expand the number of inputs and outputs for the gen-set control system. For this application, the CEM-2020 is used to increase the amount of engine protection, alarms and system status conditions of the generator sets. The CEM-2020 also enables easier integration of remote indicators throughout the facility.

To set up the communication system, Basler Electric's BESTCOMSPiUS PC software program was provided. The software program also utilizes metering and monitoring of each of the generator sets, and integrated within the BESTCOMSPiUS is Basler Electric's BESTlogicPiUS. The BESTlogicPiUS utilizes a graphical drag and drop format for programming all logic, I/O and breaker control. The programming method allows for flexible application of the DGC-2020 and its additional modules. **dp**



Basler Electric's BESTCOMSPiUS PC software program provides metering and monitoring of each of the generator sets and is integrated within its BESTlogicPiUS system, which uses a graphical drag and drop format for programming all logic, I/O and breaker control.

REPRINTED FROM NOVEMBER 2011 DIESEL PROGRESS North American Edition

Copyright Diesel & Gas Turbine Publications
Printed in U.S.A.



For more information or to request a quote, contact:

Inland Power Group
13015 W. Custer Ave.
Butler, WI 53007
800-236-6667

or

Inland Power Group
210 Alexandra Way
Carol Stream, IL 60188
800-236-9559

www.inlandpowergroup.com

www.inlandpowergroup.com