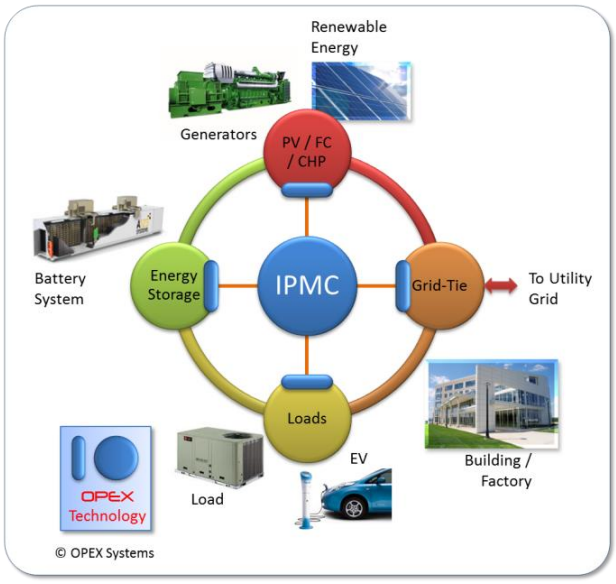
APPLICATION STORY

Intelligent Distributed Power Management System

Background

OPEX Systems LLC is a Power & Energy technology development firm based in Atlanta, Georgia (USA). OPEX has developed an innovative power management technology using ICP DAS USA (ICPDAS) automation products. OPEX is a solution developer using ICPDAS products.

OPEX's technology can be used for real-time monitoring, controlling and optimizing several generators, energy storage units and electrical loads integrated to form micro grids. It has applications in industrial, utility and military Power and Energy applications. This technology can integrate different types of generators including renewable energy (solar, bio-mass, fuel-cell, etc.) and conventional (Diesel, Gasoline or Natural Gas) generators. Similarly, it can integrate a variety of energy storage technologies such as Li-Ion, Advance Lead Acid or Flow batteries to form highly fuel-efficient microgrids. It can integrate variety of industrial or commercial loads such as HVAC units, chillers and boilers and electric vehicle chargers.

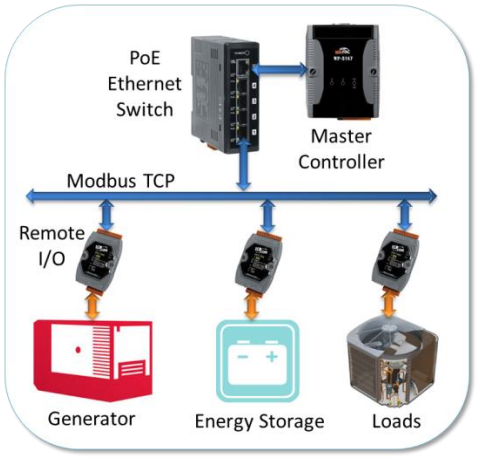


Solution

OPEX's technology is called Intelligent Power Management Control System (IPMCS). It has a scalable distributed architecture with one or more supervisory controllers managing potentially hundreds of distributed remote I/O (input/output) nodes. All communications are based on industry standard real-time communications protocols. The IPMCS includes advanced algorithms such as Fuzzy Logic and Artificial Neural Network algorithms for optimization of the integrated power and energy system to deliver significant economic benefits to energy consumers.

Technology

OPEX has used several products from ICPDAS to create IPMCS. The main components used in this technology are: WP-5147-EN, an IEC-61131 compatible programmable controller and PET-7026 remote I/O modules with Power-over-Ethernet (PoE), Modbus TCP protocol. The PoE network enables remote OEM equipment (e.g., generator, battery, HVAC unit, etc.) to be interfaced to IPMCS without a separate power supply and hence simplifying the overall technology. Modbus TCP is used because it is a popular de-facto standard and it can easily integrate any OEM equipment with existing Modbus TCP support. For OEM equipment without digital data interfaces, ICP-DAS's PET-7026 module is used to easily implement real-time interface with such equipment.



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Benefits

OPEX chose ICPDAS products for development of their IPMCS technology due to the following benefits.

- Compact footprint of ICPDAS products that allows IPMCS to be embedded inside space-constrained OEM equipment.
- The ability of ICPDAS controller to support IEC-61131 programming languages, making it easy for OPEX to develop specialized custom function blocks and execute these function blocks from user-friendly ladder logic programs by end-user's field engineers.
- Support for a wide variety of industrial standards-based protocols and easy interoperability among various ICPDAS products and third-party industrial automation products for scalability.
- OPEX also found ICPDAS's pricing and prompt support attractive, which was important to OPEX to develop this innovative technology quickly and cost-effectively.

Contact

For more information on OPEX's Power & Energy automation technologies and ICPDAS related products please contact:

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Web Links to ICP DAS USA Products:

- WP-5147-EN: http://www.icpdas-usa.com/wp_5147.html
- PET-7026: http://www.icpdas-usa.com/pet_7026.html

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