

PoE + DC MicroGrid - Net-Zero Initiatives

ENERGY EFFICIENCY - New energy conservation and sustainability mandates require consideration of Direct Current (DC [battery power]) power-producing photovoltaic and wind. 85% of building system endpoints are likewise DC at their core. However, traditional plug loads and light loads are fed from universally Alternate Current (AC [the grid – mostly fossil fuel]). Locally produced DC power performs an entirely unnecessary round trip from DC to AC and then back to DC inside the fixture. This wastes 15-30% of the locally produced DC power.

By relying on IP/PoE and other DC-coupling technologies we open up the opportunity to power and control traditionally siloed disparate building-systems on a manageable network fabric. Switch ports can now deliver 72W

to endpoint within 300 feet of a PoE port; other technologies such as VoltServer can efficiently and safely transmit high-voltage DC greater distances.

If PV energy production is introduced at a future date, the process of DC-coupling the local energy production with the building infrastructure is a simple matter of swapping out PoE-switch power supplies in the IT Closet. This is a major benefit of PoE lighting and IoT integration and provides a demand-side strategy in support of Net-Zero initiatives.

The amount of physical material associated with PoE infrastructure is substantially less than AC. Selective implementation of a DC microgrid create the opportunity to eliminate this waste.

IP network that is "data-normalized" by design for easier analytics and use-case management. PoE lighting with integrated controls can be delivered over the converged IP network. Centralized monitoring and control of elevators, HVAC, and facilities help ensure that the building meets performance standards. With knowledge and control of energy usage patterns, building managers can respond to proactively switch off or reduce unneeded systems. This enables building managers to reduce carbon footprint and build a sustainable and more energy-efficient environment.

PoE lighting establishes the switched fabric that can support other building systems. By converging multiple functions we reduce the amount of IT equipment and infrastructure needed, use systems that consume less power, and make more efficient use of equipment. Moving away from traditional AC power means moving toward sustainability and efficiency. One of the greatest benefits of direct current power is the ability to eliminate the energy waste inherent in power conversion. DC power also allows for a shift toward renewable energy sources. For example, solar panels generate DC energy. When electrical energy is stored in batteries, it's typically stored as DC power.

DC power is growing in popularity, and many developers are starting to invest in new buildings with a focus on converged IP connected energy and data platforms that enable renewable energy, sustainable electricity and efficient power storage.

