Building More Flexible & Efficient Interiors

A New Power Distribution Standard for Commercial Buildings
What is the EMerge Alliance?

An open industry association...

- Formed in 2008 by industry leaders in power, lighting, construction, energy, sustainability, technology and building products
- Promoting the rapid adoption of safe, low voltage direct-current (DC) power distribution and use in commercial interiors
- Professionally managed and based in California
- Developing a new standard focused on US first, with Canada, Europe and other global markets in the future
What is EMerge about?

A DC-powered platform for commercial interiors.

- Safe, low voltage DC power distributed within a building – “changing power use from the inside out”
- Enabling plug-and-play device flexibility and increased energy savings
- Facilitating optional use of direct DC-power integration with alternative energy sources

The EMerge Alliance

The Alliance is creating and promoting a new, open industry standard.
a hybrid approach to building power
a hybrid approach to building power

EMerge Alliance Technical Standard
4 Key Component Areas

1. Power
   - Multi-Source Power to 24 VDC

2. Infrastructure
   - Structured Cabling (Includes Connectors)
     - Powered Bus Bar Components (i.e., Ceiling Grid)

3. Devices
   - Special Connectors
     - Loads: Lights, Sensors, Motors, HVAC, etc
Safe, Efficient Plug and Play

Ceiling-Based EMerge System Schematic:

- DC Energy Source
- AC Energy Source
- HVAC Actuator
- Power Server
- Occ & Daylight Sensors
- AV/Sound Masking Speaker
- Security Camera
- DC Ceiling Grid
- IT Wireless Access Device
- Lights
- Room Controls

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Applications of the EMerge Standard
Using DC Power in its Native Form

**LEDs are inherent users of DC power**

- Eliminates 120Vac to 24Vdc power conversion
  - No need for power supplies and enclosures if remote mounting
  - Higher reliability
- Lighter weight
  - Smaller/lower profile fixtures
  - Fewer finished fixture components
- Higher efficacy (light output per watt)
  - Power supply efficiency depends upon maximum loading
  - AC-DC conversion which typically results in 10-15% losses on fully loaded power supplies; losses will increase as load decreases
Using DC Power in its Native Form

AC & DC Energy Sources connected to DC Loads.

- Options to use on-site renewable energy sources like solar or wind directly, rather than building AC
  - Can be backed-up by battery and/or tied back to AC grid

- Maximize efficiency
  - Improve power utilization significantly by eliminating DC to AC inversion
  - Directly use native DC energy generated onsite

Sample topology shown ©Nextek Power Systems
EMerge Advantages

Enabling the buildings of today to adapt to the needs of tomorrow.

- Flexibility
- Sustainability
- Savings

Open and compatible systems

Taking building functionality and interior space performance to new levels.

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Flexibility

Unprecedented design and space flexibility.

- Allow direct access to safe power wherever it’s needed
- Make it easier to install light fixtures, sensors, actuators and other devices
- Plug and play mobility and simplicity
- Enable easy moves, adds and changes without rewiring
- Help future-proof a space for new technologies like LEDs
Sustainability

Meet needs for today and tomorrow.

- Simpler devices with less materials (no AC-DC conversions)
- Enable re-use of system devices
- Reduce energy consumption through advanced controls and solid-state lighting
- Facilitate the direct connection to alternative energy sources like wind, solar and fuel cells
- Improve energy efficiency through integrated load and source management
Savings

Reap rewards for decades to come.

- Lower reconfiguration costs with plug and play devices to get back in operation sooner
- Allow facility teams to quickly and safely move or re-install devices
- Reduce technology upgrade costs with this future-ready DC platform
- Optimize various types of electrical energy use for better control, metering and demand reduction
a hybrid approach to building power

US Green Building Council Headquarters

» Medium conference rooms in renovated downtown commercial office

» Continuous – high light reflectivity acoustical ceiling with powered grid mains

» DC multi-channel power servers – utility AC Primary – Solar supplemental planned

» Fluorescent lighting fixtures – with DC ballasts

» Daylight, occupancy and dimming functions

» Wired controls, touch-panel interface

“Solar-Ready Ceiling” in place – Demo in Washington DC
Learn More

Visit www.EMergeAlliance.org