



Sensors
Converge

Lightning Talks: Low Power Design

Cutting the Cords and Batteries from Sensor Networks Strengthens AI

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#SensorsConverge

Feed your AI!

- AI decision-making requires data and lots of it
- Sensors, sensors, sensors!
- A big challenge: wiring all the sensors is not realistic
- Batteries must last the life of the system to avoid maintenance
- Low power design enables:
 - a. Battery-free energy harvesting sensors
 - b. Lifetime Power® battery-powered sensors

Battery-Free Sensor Example

PCT100 RFID Sensor Tag
Or BLE Sensor Tag

Battery-Free
Temp, Humidity,
Light, and
Accelerometer
Sensor



- **How it works**

- Powered by an RFID reader or other transmitter
- Charge and fire – capacitor based
- Max distance 120ft

25-Year Lifetime Power Battery Example

- **HVAC and Lighting Control**

- Light, Motion, Security, Heating & Cooling Sensors
- Warehouses, Offices, Stadiums
- Easy to implement and retrofit
- Can harvest energy from the environment – RF, Solar, etc.



Temp
Humidity



Light



Motion



Switches



Contact
Closure



Sensors that last for 25 Years?

Design considerations:

- Stable battery chemistry
- Soldered in batteries
- Minimize leakage currents
- Conformal coating on PCBA to avoid leakage paths from future contaminants



Can be integrated with building systems and AI to optimize energy conservation automatically.

Enabled by Wireless Power and Energy Harvesting

The upcoming AI revolution will need more data than is currently available. Next-generation sensors will have to be:

- Low/No Maintenance
- Ultra low power
- Sustainable and Reliable
- “Always-on” and Ubiquitous; able to be placed on, or in places easily without wires or battery maintenance