# Battery Management System with Distributed Wireless Sensors

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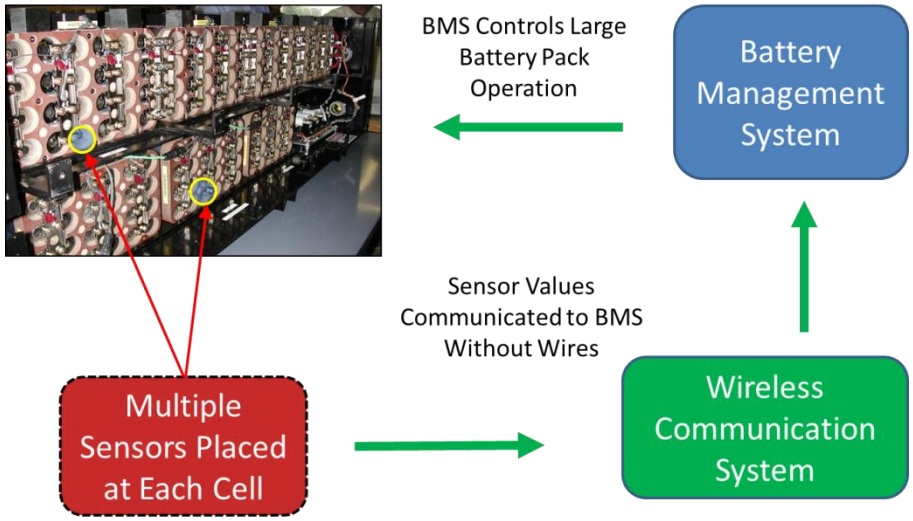
## Technology

LLNL and Yardney are partnering to develop and demonstrate a battery management system (BMS) that utilizes distributed addressable wireless sensors to directly measure several key operating parameters of lithium ion cells within large battery packs that can serve as early indicators of the onset of thermal runaway and be used to control their operation.




## Advantage and Differentiation

A wireless sensor communication system will allow multiple sensors to be applied to each cell. The team will utilize its combined expertise in battery, sensor, and wireless communication technology to develop a system that offers the following distinct advantages:

- Eliminates cumbersome wiring harnesses, reducing cost and improving safety
- Enables increased number of sensors improving operational control and detection of cell thermal runaway
- Facilitates incorporation of novel sensors
- Wireless technology can operate in metallic environments

## Performance Targets

| Metrics | State-of-Art | LLNL-YTP System |
|---|---|---|
| Failure detection speed | 1x | ≥9x |
| Sensors per cell | 0.3 | ≥3 |
| Wire-caused failures | 1x | 0 |
| Sensor comm. protocol | wired | wireless |

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Please contact regarding: R&D Collaboration, Funding