

Magnet Design Considerations for Compact NMR



Why Develop a Modular, Sensor-Rich Battery System?

- Supports Next-Generation Energy Storage
 - Enables research on distributed energy systems and high-performance battery management
 - Facilitates scalability for a wide range of power applications
- Enhances Digital Twin Development
 - Real-time, high-fidelity data streams enable dynamic model validation and predictive analytics
 - Integrated sensors allow continuous updates to electrochemical, thermal, and mechanical models
- Enables Flexible and Configurable Testing
 - Modular 42V (10S1P) design allows for series/parallel stacking to replicate different battery pack architectures
 - Supports multiple cell sizes and chemistries (e.g., 18650, 21700, NMC, LFP) for diverse application studies
- Improves Advanced Battery Control and Monitoring
 - High-resolution BMS with CompactDAQ integration enables real-time state estimation and anomaly detection
 - Adaptive energy management through advanced control strategies



Magnet Simulations



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Magnet Type A



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Magnet Type B

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Thank You for Your Time



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