Title	Speaker	Abstract	Presentation link	Recording link
General sessions				
Battery cost savings for variable load applications	Yevgen Barsukov	Robotic vacuums, drones, electric lawn mowers and other self-propelled devices require their exact remaining run time in order to be able to return to their charging port. Predicting run time is complicated, however, by highly variable load patterns that can cover a wide power-consumption range. It's important to account for peak current, not only to calculate total energy consumption but also to detect discharge termination, which can cause significant voltage drops. Basic gauging methods are highly inaccurate under such conditions, forcing designers to leave as much as 30% of capacity in reserve on arrival to recharge, which goes unused. A gauging method that correctly models usage patterns makes it possible to save 30% of battery costs. This presentation covers the main principles of this gauging method using a case study of a vacuum robot.	Download	Will not be shared
Battery energy storage application overview and solutions	Ryan Tan and Henrik Mannesson	As energy storage systems (ESSs) become more popular worldwide, the market is eager for good system solutions. This session offers an overview of the battery ESS market, the popular system architectures, system challenges and requirements, and TI reference designs. One new reference design is a system-level battery ESS platform solution that contains three boards: a battery monitoring unit, a high-voltage monitoring unit and a battery control unit.	Download	Will be shared soon
Charger sessions				
Charger fundamentals – battery charging troubleshooting, tips and tricks	Bill Johns	Battery chargers are an excellent solution for portable devices with small batteries. They are highly integrated devices that incorporate many components and features to enhance the user experience, with protections to keep users safe. Isolating and resolving problems can sometimes be difficult and time-consuming. This presentation discusses common real-world problems and solutions and offers a troubleshooting checklist to help expedite your charger development.	Download	Will be shared soon
Going a step beyond the hardware to make the most out of low-power chargers	Anthony Pham	With everyday devices becoming smarter and having more functionality, it's only right that chargers (even low-power chargers) will follow suit. Engineers can adapt to varying use cases without compromising their systems through software or a simple bill-of-materials change. This presentation takes a deep look into low-power design considerations, and how to make the most out of your charger.	Download	Will be shared soon
Advanced charger features for single cell applications	Khalid Bairuti	With advancements in portable applications, requirements continue to expand in the areas of wide input voltage, high power density and long run times. This presentation discusses these requirements, and how TI charger features such as increased power density and charge efficiency, low quiescent current, flexible temperature profiles, reduced electromagnetic interference, and a wide input voltage enable the best user experience.	Download	Will be shared soon
Enabling USB Type-C® Power Delivery and Extended Power Range applications with high-power-density battery chargers	Shishuo Zhao	This presentation discusses the challenges of USB Power Delivery (PD) Extended Power Range (EPR) 28-, 36- and 48-V battery charging. It covers EPR source docking and introduces an EPR sink notebook architecture. Features include bypass mode, peak power mode, buck-only mode, a TI-patented quasi dual-phase buck-boost converter and TI-patented dual random spread-spectrum technology to help reduce electromagnetic interference (EMI) noise and EMI filter size.	Download	Will be shared soon
Battery-charging solutions for high-input-voltage and high-cell-count applications	Mike Emanuel	With the evolution of input sources for battery chargers now including the USB Power Delivery (PD) Extended Power Range (EPR) specification and solar inputs, there is a clear need for higher-cell-count battery charge controllers. This presentation highlights a 70-V rated input and output voltage charge controller with a flexible buck-boost topology, using a design example for a 10 cells in series lithium-ion e-bike. Features include USB PD EPR charging and a solar maximum power point tracking algorithm that performs not just a full panel sweep of the solar panel but also includes a perturb-and-observe feature.	Download	Will be shared soon
Gauges				
Gauge fundamentals – beginners	Wyatt Keller	Are you a battery engineer new to gauge concepts? Do you want to learn how gauges work? The humble battery cell is a complex dynamic electrochemical component that requires advanced algorithms to determine the remaining capacity available at any given time for the specific conditions present in your system. Join this session if you are a new engineer working with gauges, or if you are looking for a refresher on gauge fundamentals.	Download	Will be shared soon
Gauge fundamentals – advanced	Dominik Hartl	Have you mastered gauge fundamentals and are ready to get deeper into the concepts? This module will explain in detail how different TI gauging algorithms work based on battery cell characteristics. We will also cover the pros and cons between each of these algorithms, and how you can get to market faster.	Download	Will be shared soon

Title	Speaker	Abstract	Presentation link	Recording link
Gauges continued				
How will the new European Parliament regulations affect your battery design?	Kipp Hayes	In March 2022, the European Parliament passed bill 2020/0353/COD, now COM(2020)798 regulation of the European Parliament and of the Council concerning batteries and waste batteries. This presentation highlights how this regulation affects battery management system architectures, such as the requirement for removable or replaceable battery packs, battery authentication, and labeling requirements specific to those battery packs. TI battery gauges can help you comply with these requirements, to open or service the European market for your device.	Download	Will be shared soon
How does gauge accuracy affect battery pack longevity?	Summer Huang	With batteries becoming the primary energy storage and power supply in many applications, their efficient use and run time, performance and longevity are important aspects. A field gauge can not only report battery operational status such as voltage, current and temperature, but can also perform safety diagnostics and protection. The measured conditions of battery cells are then used to calculate state of charge to ensure the safe charge and discharge of the battery. New innovations in hardware, combined with TI's Impedance Track™ algorithm, enable high-accuracy gauging under different conditions. This presentation covers the hardware and algorithm features that help you prolong battery life and get the most out of your battery system designs.	Download	Will be shared soon
Battery gauging technology for lithium-iron-phosphate battery chemistries	Charles Sestok & Chen Li	Lithium-iron-phosphate (LiFeP04) battery chemistries are becoming more popular in automotive and industrial applications because of their low material cost, long lifetimes and excellent temperature stability. These benefits are offset, however, by properties that complicate the accurate determination of state of charge, such as very low variation in open-circuit voltages. This presentation discusses techniques to optimize the accuracy of gauging results for LiFeP04 chemistries using TI's Impedance Track™ technology.	Download	Will be shared soon
Monitors and protectors				
Monitoring and protection fundamentals – system considerations for monitoring high-cell-count industrial applications	Andria McIntyre	When designing for high-cell-count applications, determining the best system architecture can be time-consuming. This presentation examines the pros and cons of basic system configurations, including stackable and non-stackable monitors and primary or secondary protectors, while offering examples of different battery types.	Download	Will be shared soon
Understanding functional safety for automotive applications	Felipe Garza	TI Functional Safety-Compliant products leverage South Technical Inspection Association (TÜV SÜD)-certified functional safety hardware and software development processes to help customers achieve the highest Automotive Safety Integrity Level (ASIL) and Safety Integrity Levels in their designs. This presentation offers a general introduction to functional safety TI and the automotive industry's relationship to International Organization for Standardization 26262, along with specific examples of TI products designed for use in ASIL-compliant systems.	Download	Will be shared soon
Cell balancing for optimizing the lifetime of multicell battery management systems	Luis Hernandez Salomon	Effective cell balancing will extend battery lifetimes, optimize performance, and improve the safety of multicell battery management systems. Applications with a high cell count need appropriate considerations when implementing balancing techniques for optimal life cycles. This presentation covers cell-balancing fundamentals, different solution types, design challenges, and real application examples for automotive and industrial systems.	Download	Will be shared soon
How to reliably stack and communicate with multiple monitors in high-voltage applications	Chase Fagen	High-voltage applications such electric vehicles, e-mobility and energy storage systems require stacking multiple monitors and communicating with them reliably and safely. This presentation discusses system-, component- and layout-level considerations for building a stacked monitor solution, ranging from a handful of monitors on a single printed circuit board to a multiple-module pack architecture.	Download	Will be shared soon

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