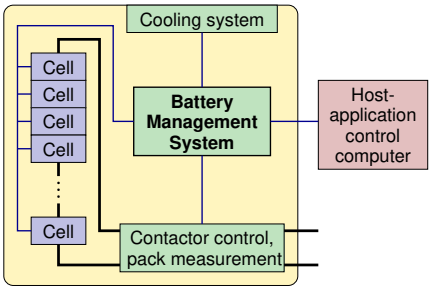
Summary of this week

- This past week, we concluded our overview look at major BMS functions
  - Requirement 2: Protection
  - Requirement 3: Interface
  - Requirement 4: Performance management
    - Special emphasis on understanding meaning of SOC, SOH, total energy and available power
  - Requirement 5: Diagnostics



Decision point

- This brings us to the end of the non-honors version of course 1 in the BMS algorithms specialization
- Decision point:
  - Honors track has one more week in course 1, looking into how Li-ion cells are manufactured, how they age and fail
  - Remaining courses focus on how to estimate battery internal state, and how to control battery operation

Where from here?

- All future discussion moves towards learning how to design and implement BMS monitoring and controls algorithms
- To be able to do so, we need a way to describe mathematically how battery cells behave
- So, course 2 “How to create and simulate equivalent-circuit models” introduces
  - Some helpful battery models
  - How to find parameter values for models
  - Methods and example code to simulate battery cells and battery packs
  - Example of how to simulate a battery load

Important note

- Note also that many/most of the methods we talk about are patented and owned by battery-application companies
  - This is true even of methods commonly found in the literature—most have been developed by companies for their own use
  - Strongly motivates research to develop methods that are sufficiently different from those that have been patented, so that they may be implemented freely (or, so that you may patent them!)
  - But, it also means that you may not use these methods commercially without license from the patent owner

Credits

Credits for photos in this lesson

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