



Technical and Commercial Due Diligence

CES assisted a large energy provider and developer with technical and commercial due diligence services for an energy storage project

Client Needs

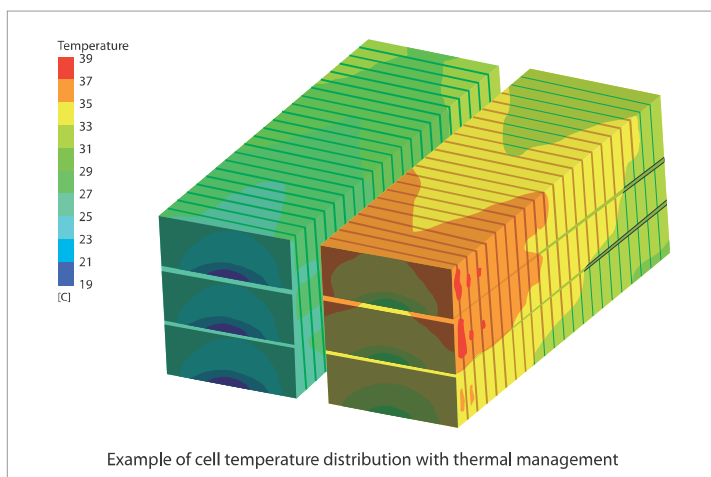
- Provide due-diligence for a large grid scale storage project in California as a target acquisition
- Perform technical due-diligence of Li-ion cells and overall system design
- Forecast revenue potential for the project beyond the contracted term
- Perform commercial due-diligence of offered warranties, guarantees and liquidated damages

Analysis Highlights

- Reviewed technical specifications and documentation provided by ESS vendor
- Analyzed cell performance and testing data
- Provided commentary on cell safety, thermal management system
- Performed detailed analysis of system design – container design, BMS capabilities, system level safety measures and power electronics
- Analyzed asset warranties and other services contracts
- Performed commercial due-diligence of capacity guarantees, degradation and augmentation schedule, LTSA, capex and opex
- Model the expected dispatch and performance of the asset and provided revenue forecasts for 30 years with risk analysis

Outcomes

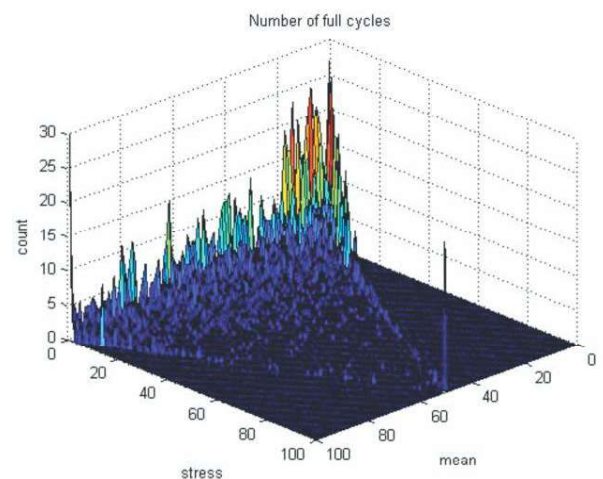
- CES performed technical due diligence of the proposed equipment and provided expert analysis
- CES provided long term project revenue forecasts including risk analysis and associated commercial due diligence



The Rainflow algorithm converts complex stress patterns into simple counts of discrete stress levels



Using that, ESS degradation curves are used to calculate overall capacity degradation to determine useful life of the asset



Projections of 3D ESS Stress Chart give histograms of Cycles Vs DoD swings