



# Benchmarking and Partner Identification of Lithium-ion Batteries

Case Study

<b>Client</b>	Leading home automation company in Europe
<b>Industry</b>	Home automation
<b>Products</b>	Actuators and batteries

## Engagement Scope

**1 Technology Analysis and Benchmarking**

- Mapping of technical performance specifications for battery technologies, such as LFP, NMC, LCO, NCA, and LTO
  - Cycle life
  - Operating temperature
  - Self discharge
  - Current requirements
- Benchmarking of battery technologies based on the following parameters:
  - Capacity retention vs. cycle life at different temperatures
  - Impact on self discharge rate at different temperatures
  - Permissible charging current

**2 Partner Identification**

- The product portfolio of key battery cell suppliers was provided to shortlist significant battery technologies
- Pricing details for battery cells was procured directly from suppliers based on the annual quantity requirements of the client
- Regulatory policies and norms for transportation of battery cells, individually and as part of an entire equipment, were analyzed

**3 Key Findings and Conclusions**

- Analysis on impact of battery performance under different operating conditions
- Best-fit lithium-ion technology for the client
- Identification of best-fit battery supplier taking into account both technical performance and specifications, in addition to pricing of cells

## Context

- The client wanted to identify the best-fit lithium-ion battery technology for use in actuators and gather information regarding suppliers for the procurement of batteries.

## Key Business Questions

- What are the technical performance specifications of lithium-ion batteries, such as LFP, NMC, NCA, and LTO?
- How is the technical performance of batteries impacted under specific operating conditions due to temperature, charge, and discharge rate?

# Research Methodology

## Secondary Research

- Conducted desk research, analyzed scientific literature on performance of various lithium-ion battery technologies, and evaluated product portfolios of key competitors of batteries to generate key insights tailored to study objectives

## Primary Research

- Conducted telephonic discussions directly with battery cell suppliers to gather data related to their products and respective pricing details

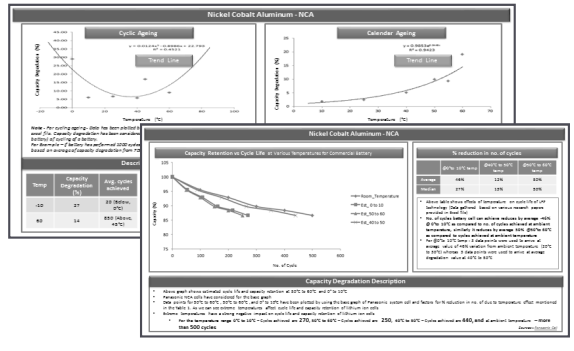
# Benefits to Client

- The client was able to acquire information regarding the best-fit lithium-ion battery technology suited for its products.
- Based on the shortlisted cell suppliers, the client directly procured sample cells from manufacturers for in-house testing.

# Sample Analysis

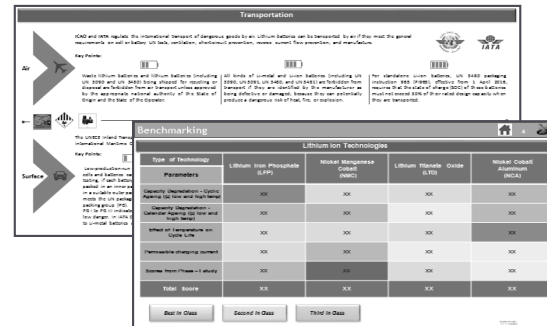
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## Technology Analysis and Benchmarking



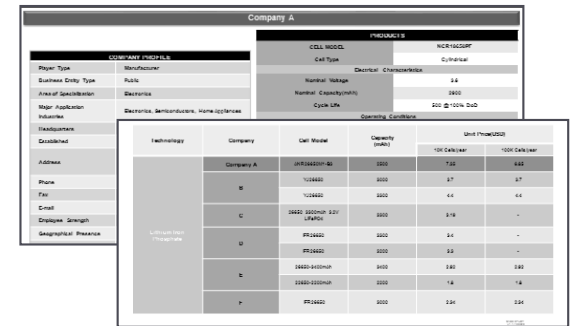
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## Partner Identification



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## Key Findings and Conclusions



# Thank you

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