

This document includes two AI prompts that help you prepare a complete and structured request.

Prompt #1

I am preparing a request for Power Electronics & Battery Systems development by the EnCata team and want to make sure my input contains enough information to start the work without delays or major redesign later.

Here is my current input:

"<<<INSERT INITIAL INPUT HERE>>>"

At EnCata, a request for Power Electronics & Battery Systems development should clarify the following areas:

1. Product overview

- What type of product or device is being developed
- What stage the product is currently at: concept, prototype, validation prototype, or pre-production
- Whether any power electronics or battery systems already exist

2. Power architecture requirements

- Input voltage range
- Required output voltages and power rails
- Maximum current and power consumption
- Whether the system includes DC/DC conversion, isolated power, inverters, motor drivers, or multi-channel power distribution
- Power sequencing or startup requirements for processor-based systems

3. Battery system requirements

- Battery chemistry: Li-Ion, LiFePO₄, NiMH, or other
- Battery configuration: 1S, multi-cell, removable or integrated pack
- Expected runtime and charging time
- Battery capacity targets or physical limitations

4. Charging requirements

- Charging method and expected charging speed
- USB-PD, Programmable Power Supply, wireless charging, docking station, or custom charging interface requirements
- Whether the product must operate while charging
- Any restrictions related to charging temperature or safety

5. Thermal requirements

- Known heat sources inside the product
- Expected operating conditions and load scenarios
- Whether overheating has already appeared during testing
- Any enclosure-related thermal limitations

6. Protection and safety requirements

- Protection against overcurrent, short circuit, overheating, reverse polarity, overvoltage, undervoltage, or fault conditions
- Whether hardware and firmware redundancy are required
- Whether the product has medical, industrial, or safety-critical requirements

7. EMC and certification requirements

- Whether the product must pass CE, TÜV, IEC 62133, IEC 60601-1, EMC, or other certification standards
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- Known EMC or electrical noise concerns
- Grounding, isolation, or filtering requirements, if known

8. PCB and integration constraints

- PCB size limitations
- Connector requirements
- Interaction with enclosure design, antennas, displays, motors, or other subsystems
- Known routing or layout constraints

9. Firmware and communication requirements

- Whether the system includes firmware-controlled charging or protection behavior
- Communication interfaces: I2C, SPI, CAN, UART, SMBus, or others
- Sleep modes, startup logic, or low-power requirements

10. Production and manufacturing constraints

- Expected production volume
- Target unit cost or cost limitations
- Preferred components or restricted suppliers
- Manufacturing or sourcing concerns

11. Testing and validation expectations

- What should be validated: thermal behavior, charging, EMC, protection logic, battery life, efficiency, or fault handling
- Whether prototypes are required
- Whether external laboratory testing may be needed

12. Existing materials and project inputs

- Available schematics, PCB files, block diagrams, enclosure CAD, BOMs, firmware, test reports, or prototype photos
- Known design decisions that should not be changed

13. Risks and open questions

- What is still unclear or undecided
- Known concerns related to thermal performance, EMC, charging behavior, battery safety, certification, enclosure integration, or manufacturability

Your task:

- Identify missing, unclear, or weakly defined areas in my input.
- Structure your answer by the categories above.
- For each gap, briefly explain why it is important for Power Electronics & Battery Systems development.

Do not rewrite my request. Focus only on identifying gaps.

Important instructions for your response:

- When describing missing information, use clear and non-technical language whenever possible.
- Avoid unexplained engineering abbreviations or specialist terminology.
- Keep each clarification request short and practical.
- Focus on helping a non-engineering person understand what information is needed and why.
- If a technical term is necessary, briefly explain it in simple language.

Prompt #2

I am continuing preparation of my Power Electronics & Battery Systems development request based on your previous analysis.

Here is my initial input:

"<<<INSERT INITIAL INPUT HERE>>>"

Here is the additional information I have provided to fill the gaps:

"<<<INSERT ADDITIONAL INFORMATION HERE>>>"

At EnCata, Power Electronics & Battery Systems development requires clarity in the following areas:

1. Product overview
2. Power architecture requirements
3. Battery system requirements
4. Charging requirements
5. Thermal requirements
6. Protection and safety requirements
7. EMC and certification requirements
8. PCB and integration constraints
9. Firmware and communication requirements
10. Production and manufacturing constraints
11. Testing and validation expectations
12. Existing materials and project inputs
13. Risks and open questions

Your task:

1. Re-evaluate the combined input (initial + additional information)
2. Identify what is still missing, unclear, or weakly defined
3. Structure your answer by the categories above
4. Based on the available information, compile a structured Power Electronics & Battery Systems development request for EnCata

If some information is missing, make reasonable assumptions and clearly mark them as assumptions.

Structure the final request as follows:

1. Project overview
2. Product stage and current hardware status
3. Power architecture requirements
4. Battery system and charging requirements
5. Thermal, protection, and EMC requirements
6. PCB and system integration constraints
7. Firmware and communication requirements
8. Testing and validation expectations
9. Production and certification considerations
10. Existing materials and project inputs
11. Risks and open questions
12. Expected development outcome

Output requirements:

- A structured draft request for EnCata
- Clearly mark assumptions or missing data
- Keep the response clear and structured
- Do not include explanations outside of this output