



Alliance for Batteries Technology, Training and Skills

2019-2023

Battery Manufacturing Technician

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## Battery Manufacturing Technician

A battery manufacturing technician is responsible for the production of batteries in a manufacturing facility. They work with a team of engineers and scientists to assemble, test, and package batteries for various applications such as electric vehicles, consumer electronics, and grid storage. They are responsible for the assembly, testing and packaging of the battery cells, packs, and systems, ensuring that they meet the required quality standards and performance specifications.

### ESCO Occupations - [ESCO - Occupations - European Commission \(europa.eu\)](https://european-commission.europa.eu)

| ID                     | NAME | Concept URI |
|------------------------|------|-------------|
| No relevant occupation |      |             |

### Context

|                        |                                                                                                                         |
|------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Minimum EQF</b>     | 4/5                                                                                                                     |
| <b>Value Chain</b>     | Raw Materials and Processing<br>Components and Cells Manufacturing<br>Modules and Packs<br>Integration                  |
| <b>Departments</b>     | Production and Maintenance                                                                                              |
| <b>Specialisations</b> | Engineering Technician<br>Cell Assembly Technician<br>Battery Pack Production Employee<br>Battery Production Technician |

### Cross-sectoral Specific Competence

| Name                                         | Type (S/K) | Description/Context                                                                                                                                                                                                                                                                       | Level        | ESCO                       |
|----------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------------|
| <b>Inspect Quality of Product / Sampling</b> | S          | <ul style="list-style-type: none"> <li>- Perform quality checks as specified</li> <li>- Follow a strict standardised procedures (in battery fabrication) to produce batteries of consistent excellent quality</li> <li>- Ensure quality of production at specific workstations</li> </ul> | Practitioner | inspect quality of product |
| <b>Process</b>                               | S          | <ul style="list-style-type: none"> <li>- Work with continuous Improvement (CI) for shift team</li> </ul>                                                                                                                                                                                  | Practitioner | identify process           |

|                                                         |   |                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |                              |
|---------------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------------|
| <b>Improvement</b>                                      |   | <ul style="list-style-type: none"> <li>- Interact with different team members to understand and communicate improvements that need to be done and has been done</li> <li>- Assist in proposing improvements to enhance department efficiency and reliability</li> </ul>                                                                                                                                                                  |              | improvement                  |
| <b>Production Processes</b>                             | K | <ul style="list-style-type: none"> <li>- Can work within a mix of manual and automated production processes.</li> <li>- Follow process that include documented procedures.</li> <li>- Perform production process checks as specified.</li> <li>- Ensure the efficiency of running production processes</li> <li>- Expertise on specific workstation</li> </ul>                                                                           | Practitioner | production process           |
| <b>Equipment Maintenance</b>                            | S | <ul style="list-style-type: none"> <li>- Coordinating and executing equipment maintenance per manufacturer's guidelines.</li> <li>- Install, maintain, and repair instrument devices.</li> <li>- Repair and replace equipment.</li> <li>- Evaluation of needed spare parts for the equipment.</li> <li>- Control the equipment and process materials used in production.</li> <li>- Conduct preventive maintenance.</li> </ul>           | Expert       | ensure equipment maintenance |
| <b>Safety Procedures</b>                                | K | <ul style="list-style-type: none"> <li>- Perform all work in accordance with established safety procedures and adhere to all safety and environmental policies set forth by the company.</li> </ul>                                                                                                                                                                                                                                      | Practitioner | safety engineering           |
| <b>Equipment and Tools Handling</b>                     | S | <ul style="list-style-type: none"> <li>- Installation, commissioning and maintenance of electrical installations, machinery, and equipment.</li> <li>- Control the equipment and process materials used in our production</li> <li>- Coordinating and executing equipment maintenance</li> <li>- Evaluation of needed spare parts of the equipment</li> <li>- Track measurements and equipment performance</li> </ul>                    | Practitioner | equipment and tools handling |
| <b>(Automated) Product Testing</b>                      | S | <ul style="list-style-type: none"> <li>- Creating and testing conversions and extensions according to plans</li> <li>- Testing and repairing components</li> <li>- Development and testing of system batteries</li> </ul>                                                                                                                                                                                                                | Practitioner | perform product testing      |
| <b>Maintenance Processes (Repair, Replace, Inspect)</b> | K | <ul style="list-style-type: none"> <li>- Conduct preventive maintenance</li> <li>- Coordinating and executing equipment maintenance per manufacturer's guidelines</li> <li>- Contribute in maintenance program optimization</li> <li>- Installation, commissioning and maintenance of electrical installations, machinery and equipment</li> <li>- Repair, maintenance and inspection of machinery and production environment</li> </ul> | Practitioner | maintenance and repair       |

|                                         |   |                                                                                       |              |                                     |
|-----------------------------------------|---|---------------------------------------------------------------------------------------|--------------|-------------------------------------|
| <b>Analyse Test Data</b>                | S | - Interpret the data from the production and take necessary actions based on the data | Awareness    | analyse test data                   |
| <b>Analysis Methods</b>                 | K | - Perform root cause analysis                                                         | Practitioner |                                     |
| <b>Remove Defective Product</b>         | S | - Methods for removing defective products                                             | Practitioner | remove defective product            |
| <b>Automation</b>                       | K | - Automated production systems                                                        | Awareness    | operate automated process control   |
| <b>Operate Machines</b>                 | S | - Operate battery manufacturing machines                                              | Practitioner | work safely with machines           |
| <b>Material Operations and Handling</b> | S | - Apply material and manipulation handling principles                                 | Practitioner | operate material handling equipment |

### Sector Specific Competence

| Name                      | Type (S/K) | Description/Context                                                                                                                                                                          | Level        | ESCO               |
|---------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------|
| <b>Assemble Batteries</b> | S          | - Understand the characteristics of the battery assembly and methods<br>- Apply the methods for battery assembly and manufacturing                                                           | Practitioner | assemble batteries |
| <b>Battery Components</b> | K          | - Understand components for battery manufacturing<br>- Lithium-ion battery components<br>- Limits of battery components<br>- Understand battery parameters                                   | Practitioner | battery components |
| <b>Battery Material</b>   | K          | - Materials for battery and battery cell manufacturing and their characteristics                                                                                                             | Awareness    |                    |
| <b>Battery Chemistry</b>  | K          | - Understand chemical processes within the battery cells and battery storage<br>- Understand synthesis methods for energy storage materials<br>- Understand battery degradation mechanisms   | Awareness    | battery chemistry  |
| <b>Battery Testing</b>    | K          | - Perform quality checks during the battery manufacturing<br>- Monitor the battery manufacturing processes in the context of quality<br>- Apply battery testing after the battery completion | Practitioner | battery testers    |
| <b>Battery System</b>     | K          | - Understand the development of battery systems<br>- Understand the battery systems in connection to the battery manufacturing (BMS)                                                         | Awareness    |                    |
| <b>Battery Formation</b>  | S          | - Formation of battery cells                                                                                                                                                                 | Practitioner |                    |

## Soft Competence

| Name                                   | Type<br>(S/K) | Description/Context                                                                                                                                                                                                                                                                            | Level        | ESCO                           |
|----------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------------|
| <b>Communication</b>                   | K             | <ul style="list-style-type: none"> <li>- Good communication</li> <li>- Communicate with team members and other departments on production status and issues</li> </ul>                                                                                                                          | Practitioner | communication                  |
| <b>Problem Solving/Troubleshooting</b> | S             | <ul style="list-style-type: none"> <li>- Take proper action when having failures and deviations affecting the production, report these as well as doing root cause analysis to solve the issues</li> </ul>                                                                                     | Expert       | problem solving & troubleshoot |
| <b>Teamwork</b>                        | K             | <ul style="list-style-type: none"> <li>- Ability to work independently and in a team is necessary</li> <li>- Together with the rest of the team, being a key player to develop and maintain a safe work environment</li> <li>- Work proactively together with the maintenance team.</li> </ul> | Practitioner | teamwork principles            |

## General Transversal Competence

| Name                               | Type<br>(S/K) | Description/Context                                                                                                                                                                                                                                                                    | Level                                                  | ESCO                                           |
|------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|------------------------------------------------|
| <b>Health and Safety Standards</b> | K             | <ul style="list-style-type: none"> <li>- Work in accordance with established safety procedures and adhere to all safety and environmental policies set forth by the company</li> </ul>                                                                                                 | Practitioner                                           | health and safety in the workplace             |
| <b>English</b>                     | K             | <ul style="list-style-type: none"> <li>- Follow written and verbal instructions in a multicultural/international environment</li> </ul>                                                                                                                                                | Awareness or Practitioner depending on the environment | English                                        |
| <b>Computer Literacy / Office</b>  | S             | <ul style="list-style-type: none"> <li>- Interfacing with computer systems to enter and retrieve data and analyze basic operational information</li> <li>- Ability to understand and use appropriate tools</li> <li>- Knowledge of MS Office environment</li> </ul>                    | Practitioner                                           | have computer literacy                         |
| <b>Documentation</b>               | S             | <ul style="list-style-type: none"> <li>- Operating production tools and equipment per training and documentation</li> <li>- Record build information on computer log sheets and other documentation</li> <li>- Create detailed documentation on equipment and tools quality</li> </ul> | Practitioner                                           | use technical documentation; observe documents |

|                  |   |                                  |              |                             |
|------------------|---|----------------------------------|--------------|-----------------------------|
| <b>Reporting</b> | S | - Carry out reporting activities | Practitioner | follow reporting procedures |
|------------------|---|----------------------------------|--------------|-----------------------------|

### Academic Competence (can be taken from University programme)

| Name                          | Type (S/K) | Description/Context                                                                                                                                                                                                                               | Level        | ESCO                   |
|-------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------|
| <b>Electrical Engineering</b> | K          | <ul style="list-style-type: none"> <li>- Understand electrical engineering, a field of engineering that deals with the study and application of electricity, electronics, and electromagnetism.</li> <li>- Mechatronics and automation</li> </ul> | Practitioner | electrical engineering |
| <b>Chemical Engineering</b>   | K          | <ul style="list-style-type: none"> <li>- Basics of organic and inorganic chemistry</li> <li>- Basics of chemical technology</li> </ul>                                                                                                            | Practitioner | Chemistry              |