



Alliance for Batteries Technology, Training and Skills

2019-2023

Quality Technician

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## Quality Technician

A battery quality technician is responsible for ensuring the quality of batteries and battery systems during the development and production phases. They work with a team of engineers and scientists to establish and maintain quality standards and procedures for the design, development, and production of batteries and battery systems. They are responsible for identifying, analyzing, and preventing defects in the batteries and systems, and for implementing quality control measures to ensure that the products meet the required specifications.

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

| ID       | NAME                    | Concept URI                                                                                                                                                         |
|----------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7543.3   | battery test technician | <a href="https://ec.europa.eu/esco/occupation/43eb6228-8241-47d6-875e-7ccc214291d5">battery test technician   Esco (europa.eu)</a>                                  |
| 7543.3   | battery test technician | <a href="http://data.europa.eu/esco/occupation/43eb6228-8241-47d6-875e-7ccc214291d5">http://data.europa.eu/esco/occupation/43eb6228-8241-47d6-875e-7ccc214291d5</a> |
| 2151.1   | electrical engineer     | <a href="https://ec.europa.eu/esco/occupation/43eb6228-8241-47d6-875e-7ccc214291d5">electrical engineer   Esco (europa.eu)</a>                                      |
| 3113.1.1 | calibration technician  | <a href="https://ec.europa.eu/esco/occupation/43eb6228-8241-47d6-875e-7ccc214291d5">calibration technician   Esco (europa.eu)</a>                                   |

## Context

|                        |                                                                                                                                                                                      |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Minimum EQF</b>     | 4/5/6                                                                                                                                                                                |
| <b>Value Chain</b>     | Raw Materials and Processing<br>Cell and Components Manufacturing<br>Modules and Packs<br>Battery Integration<br>Operation, Repair & Maintenance<br>Second Life<br>Recycling         |
| <b>Departments</b>     | Production and Maintenance<br>Quality                                                                                                                                                |
| <b>Specialisations</b> | quality technician<br>Technician - specialist<br>Technician - generalist<br>Sr. Quality Technician (Receiving/Final Inspection)<br>Battery Test Technician<br>Calibration Technician |

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|  | Cell Inspection Technician<br>Technician for Battery Analysis<br>Electronic Motor Bench Test Technician<br>Development Engineer / Technician - Battery System Testing<br>Reliability Technician |
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## Cross-sectoral Specific Competence

| Name                                  | Type (S/K) | Description/Context                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Level  | ESCO                                    |
|---------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------|
| Audits                                | S          | <ul style="list-style-type: none"> <li>- support to cell manufacturing process auditing on materials to assure production quality</li> <li>- execute product audits as part of the quality plan</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | expert | conduct workplace audits                |
| Inspect Quality of Product / Sampling | S          | <ul style="list-style-type: none"> <li>- Conduct inspection work for incoming materials incl. cell parts, battery active materials, chemical materials for battery safety and performance.</li> <li>- Perform inspections and tests on completed product to ensure product quality specifications are met</li> <li>- Conduct and implement quality control system for battery manufacturing processes and perform calibration and material control</li> <li>- Use the relevant quality tools/systems to analyse data and deal with non-conformances</li> <li>- Alert production management, machine operators, and supervisors about quality problems, discovered in the analysis of batteries or product audits</li> <li>- Knowledge of quality standards, such as ISO 9001</li> </ul> | expert | inspect quality of product              |
| Analysis Methods                      | K          | <ul style="list-style-type: none"> <li>- analysis and evaluation of materials input/output data</li> <li>- Create analyses on quality issues of batteries.</li> <li>- define test data capture protocols</li> <li>- Train staff to use test equipment and methods.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | expert | analysis methods                        |
| Remove Defective Product              | S          | <ul style="list-style-type: none"> <li>- Conducting incoming materials quality control and inspection work</li> <li>- Analyse HV batteries with defects out of a battery assembly process</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Expert | remove defective product                |
| Data Analysis/Science                 | K          | <ul style="list-style-type: none"> <li>- Helping analysis and evaluation of materials input/output data</li> <li>- Create analyses and report to management on quality issues and root causes of batteries</li> <li>- Conducts disassembly analysis of rejected Li-ion cells while adhering to safety regulation in manufacturing and laboratory environment</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                 | Expert | gather data; inspect data; process data |

|                              |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |              |                              |
|------------------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------------|
|                              |   | <ul style="list-style-type: none"> <li>- Conducting inspection work for incoming materials including cell parts, battery active materials, and chemical materials for battery safety and performance</li> <li>- Data collection to assist in root cause analysis in labs (microscope, SEM/EDAX, CT); summarize and communicate data and results from analytical equipment and other investigations</li> <li>- Lead root cause analysis, defining measures for failure avoiding and create analysis reports</li> <li>- Understand data and report results accordingly</li> </ul> |              |                              |
| (Automated) Product Testing  | S | <ul style="list-style-type: none"> <li>- use positive and negative wired plugs to test battery's resistance capacity. They also test rejected batteries to determine their flaws.</li> <li>- Devise test data capture protocols and document test results</li> <li>- Train production technicians (operators) in the use of testing equipment and methods.</li> <li>- Perform all required inspections and tests on completed product in a timely manner.</li> <li>- Follow the protocols during the product testing</li> </ul>                                                 | expert       | Product Testing              |
| Equipment and Tools Handling | S | <ul style="list-style-type: none"> <li>- Good knowledge and safe handling of measurement technology and test technology as well as handling tools and equipment</li> <li>- Performing precise calibrations on multiple instruments</li> </ul>                                                                                                                                                                                                                                                                                                                                   | Practitioner | equipment and tools handling |
| Production Processes         | K | <ul style="list-style-type: none"> <li>- Participation and provision of feedback of results to production and quality control teams</li> <li>- Understanding the production processes to create analyses and reports</li> </ul>                                                                                                                                                                                                                                                                                                                                                 | Practitioner | production process           |
| Safety Procedures            | K | <ul style="list-style-type: none"> <li>- Adhere to all company policies and procedures and environmental health and safety rules</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                     | Practitioner | safety engineering           |
| Audits                       | S | <ul style="list-style-type: none"> <li>- Execute product audits as part of the quality plan</li> <li>- Audit work performed by site technicians that reasonably impacts the reliability of assets</li> </ul>                                                                                                                                                                                                                                                                                                                                                                    | Practitioner | conduct workplace audits     |

### Sector Specific Competence

| Name            | Type (S/K) | Description/Context                                                                                                                                                                                                                                                                                 | Level  | ESCO            |
|-----------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------|
| Battery Testers | K          | <ul style="list-style-type: none"> <li>- Battery test technicians use positive and negative wired plugs to test battery's resistance capacity. They also test rejected batteries to determine their flaws.</li> <li>- Perform all required inspections and tests on completed product in</li> </ul> | expert | battery testers |

|  |  |                  |  |  |
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|  |  | a timely manner. |  |  |
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## Soft Competence

| Name                            | Type (S/K) | Description/Context                                                                                                                                                                                                                                                                           | Level        | ESCO                           |
|---------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------------|
| Problem Solving/Troubleshooting | S          | <ul style="list-style-type: none"> <li>- Lead root cause analysis, defining measures for failure avoiding</li> <li>- Create analyses and report to management on quality issues and root causes</li> <li>- Perform inspections and troubleshoot cause of physical testing failures</li> </ul> | Practitioner | problem solving & troubleshoot |
| Teamwork                        | K          | <ul style="list-style-type: none"> <li>- Works as part of a team and/or in consultation with all staff</li> <li>- Exchange experiences with other teams and departments</li> </ul>                                                                                                            | Practitioner | teamwork principles            |

## General Transversal Competence

| Name          | Type (S/K) | Description/Context                                                                                                                                                                                                                                                                                                                                                                                                       | Level        | ESCO                                           |
|---------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------------------------------|
| Reporting     | S          | <ul style="list-style-type: none"> <li>- Create analyzes and report to management on quality issues and root causes</li> <li>- Analyze customer returns and report findings</li> <li>- Report accomplishments and roadblocks to appropriate teams</li> <li>- Carry out the tests, analyse and check the results and draw up the intermediate reports</li> <li>- Report problems and risks with product quality</li> </ul> | Practitioner | follow reporting procedures                    |
| Documentation | S          | <ul style="list-style-type: none"> <li>- Read and understand assigned documentation</li> <li>- Correctly fill in the documents provided</li> <li>- Create documentation on assigned tasks</li> </ul>                                                                                                                                                                                                                      | Practitioner | use technical documentation; observe documents |

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

| Name        | Type (S/K) | Description/Context                                                       | Level        | ESCO                   |
|-------------|------------|---------------------------------------------------------------------------|--------------|------------------------|
| Engineering | K          | <ul style="list-style-type: none"> <li>- Chemistry engineering</li> </ul> | Practitioner | Engineering principles |