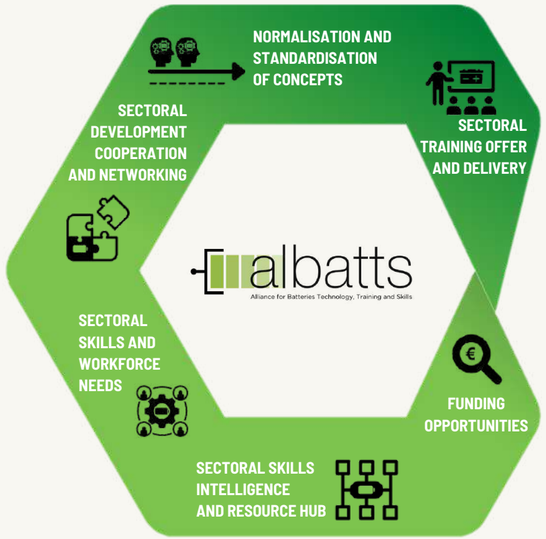
SECTORAL SKILLS INTELLIGENCE & STRATEGY FOR THE EUROPEAN BATTERY SECTOR

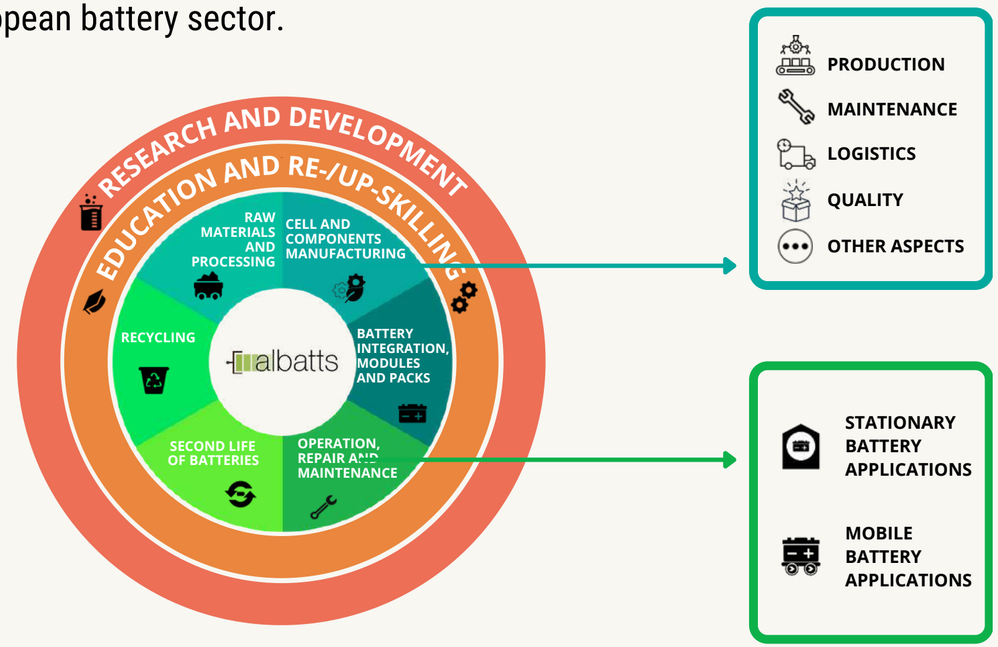
D3.10 – Sectoral Skills Intelligence and Strategy – Release 2

This is the **second** release of the sectoral skills intelligence and strategy **covering the whole European battery value chain from raw materials to recycling of batteries in terms of skills needs, job roles needs and recommendations**.



Readers will find designated actions needed in the sector to boost the overall re-/up-skilling activities as well as cooperation, information sharing and provision and many more.

The report also provides quantitative and qualitative overviews of the skills and the job roles needs per identified areas of interest consisting of the battery value chain steps, as well as specific aspects of production, quality or safety tailored to the battery production or other processes that are happening within the European battery sector.



This factsheet provides a summary of the report in what regards **QUALITY of cell and components manufacturing.**

INFORMATION
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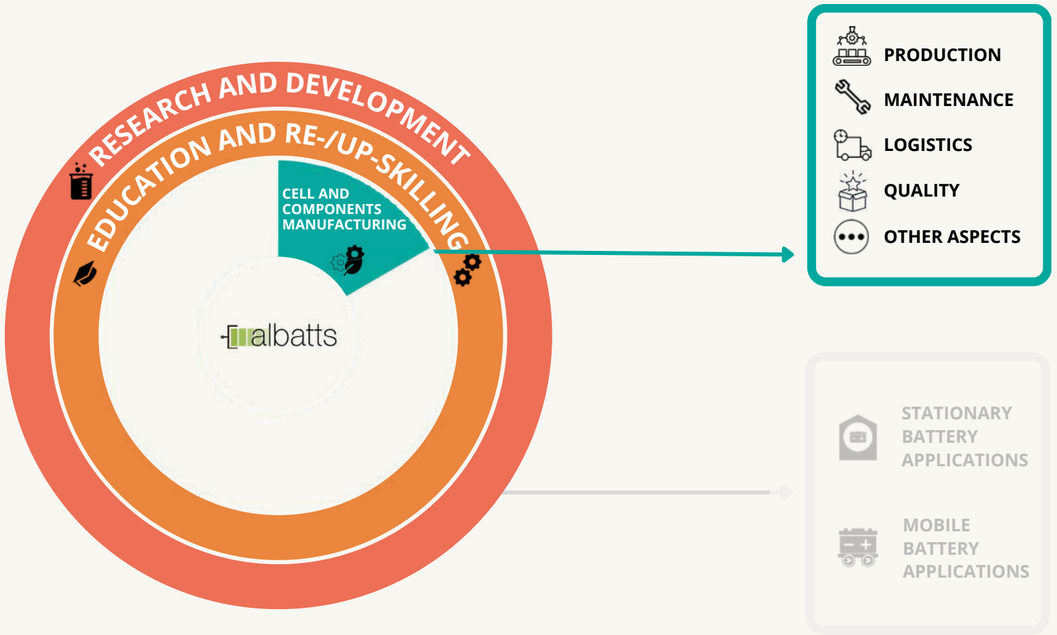
CELL AND COMPONENTS MANUFACTURING



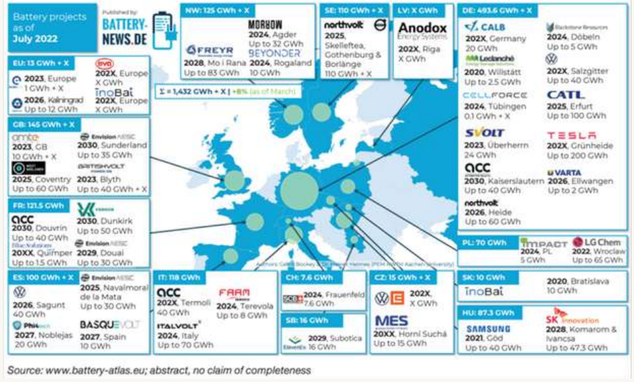
COMPONENTS & CELL MANUFACTURING step follows the raw materials and processing value chain step and concerns the manufacturing and development of different components for battery cells and the production of cells.

This factsheet describes the Gigafactory perspective. Different departments and their roles are described further below. Areas of interest covered are as follows:

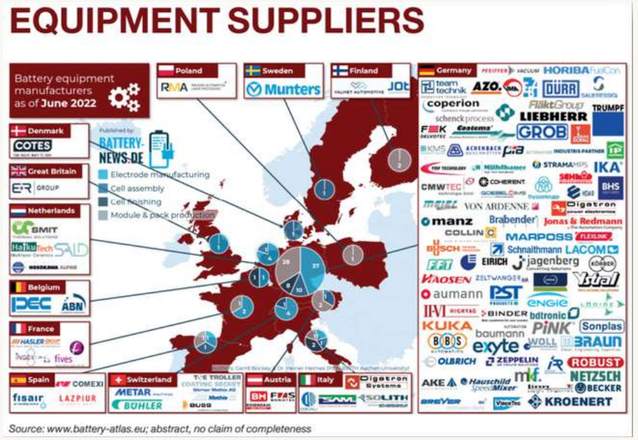
- Production and Maintenance
- Logistics
- Quality
- Other departments and Aspects, specifically: purchasing, HR, finance, sales and digitalisation

STAKEHOLDERS/COMPANIES

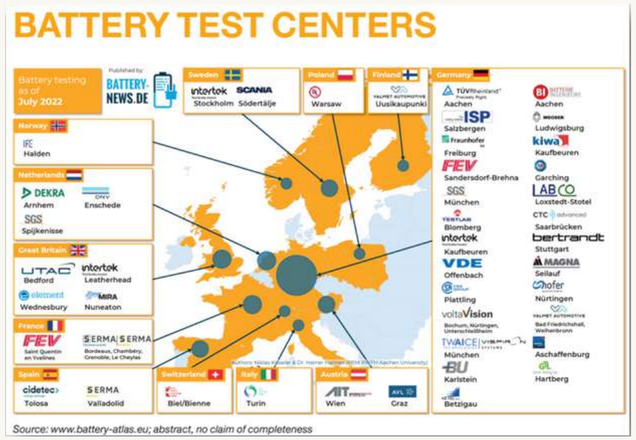
BATTERY CELL MANUFACTURERS



EQUIPMENT SUPPLIERS



BATTERY TEST CENTERS



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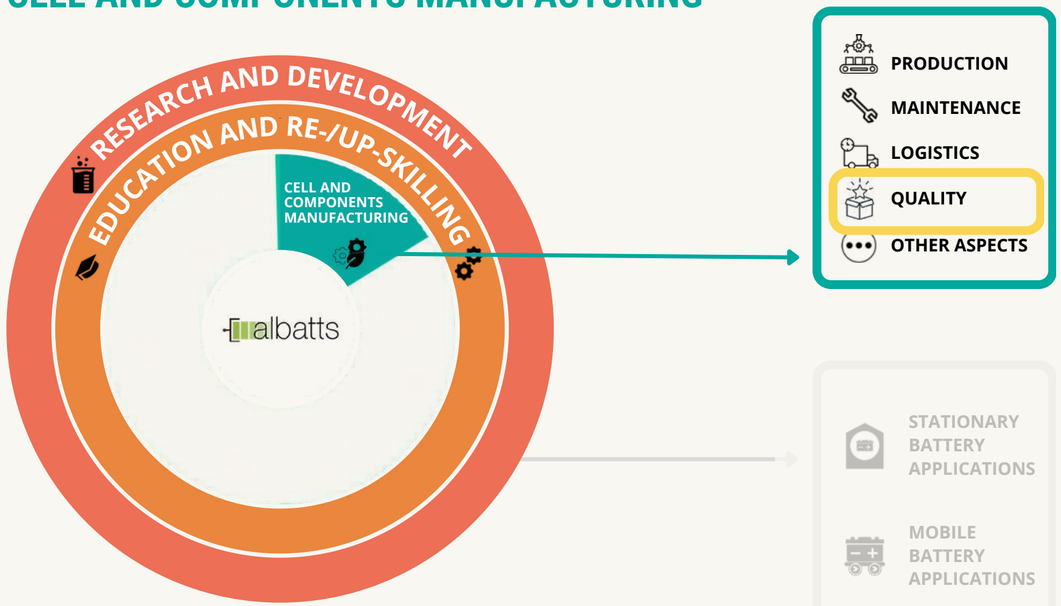
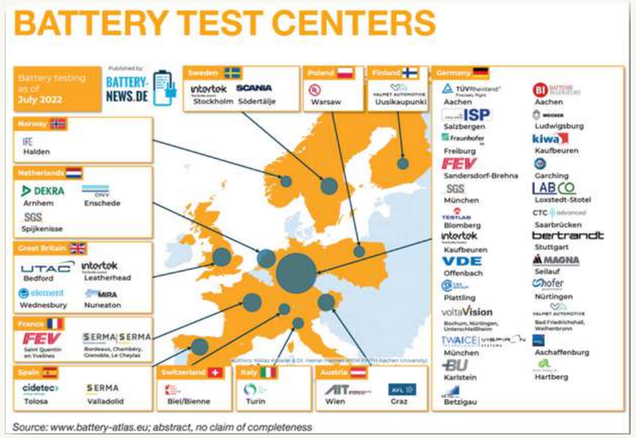
CELL AND COMPONENTS MANUFACTURING



- PRODUCTION
- MAINTENANCE
- LOGISTICS
- QUALITY
- OTHER ASPECTS

- STATIONARY BATTERY APPLICATIONS
- MOBILE BATTERY APPLICATIONS

STAKEHOLDERS/COMPANIES



QUALITY

Quality is **monitored** throughout the entire manufacturing process in a Gigafactory. This can be executed, for example, by several teams that function for various purposes. These teams may include Quality Control, Construction Quality, Quality Postproduction, Customer Quality, Continuous Improvement Team.

The Quality Management Systems, QMS, in a Gigafactory require many specialists who have responsibilities that might involve:

- development and improvement of a Quality Control Plan for Li-Ion batteries production
- execution of PFMEA-Process Failure Mode Effects Analysis and high-risk areas elimination
- monitoring of quality data using statistical process control to identify gaps in the assembly process
- creation and updating of Pareto charts to identify and quantify quality issues
- troubleshooting and root causing (e.g., 8D)
- providing support for successful implementation of standards and continuous certification

Continuous Improvement Methodologies - The goal of an internal audit is to ensure that records are in place to confirm compliance with the processes and to find problems and weaknesses that would otherwise stay hidden. Many Gigafactories use several types of QMS such as the following ones: TQM (Total Quality Management), Kaizen, PDSA (Plan, Do, Study, Act), Six Sigma (measurable metrics), Lean Manufacturing (minimizing waste with simultaneous maximization of productivity)

TARGET GROUPS: Educational institutions, battery producers, recruitment companies, talent acquisition experts, consultants.

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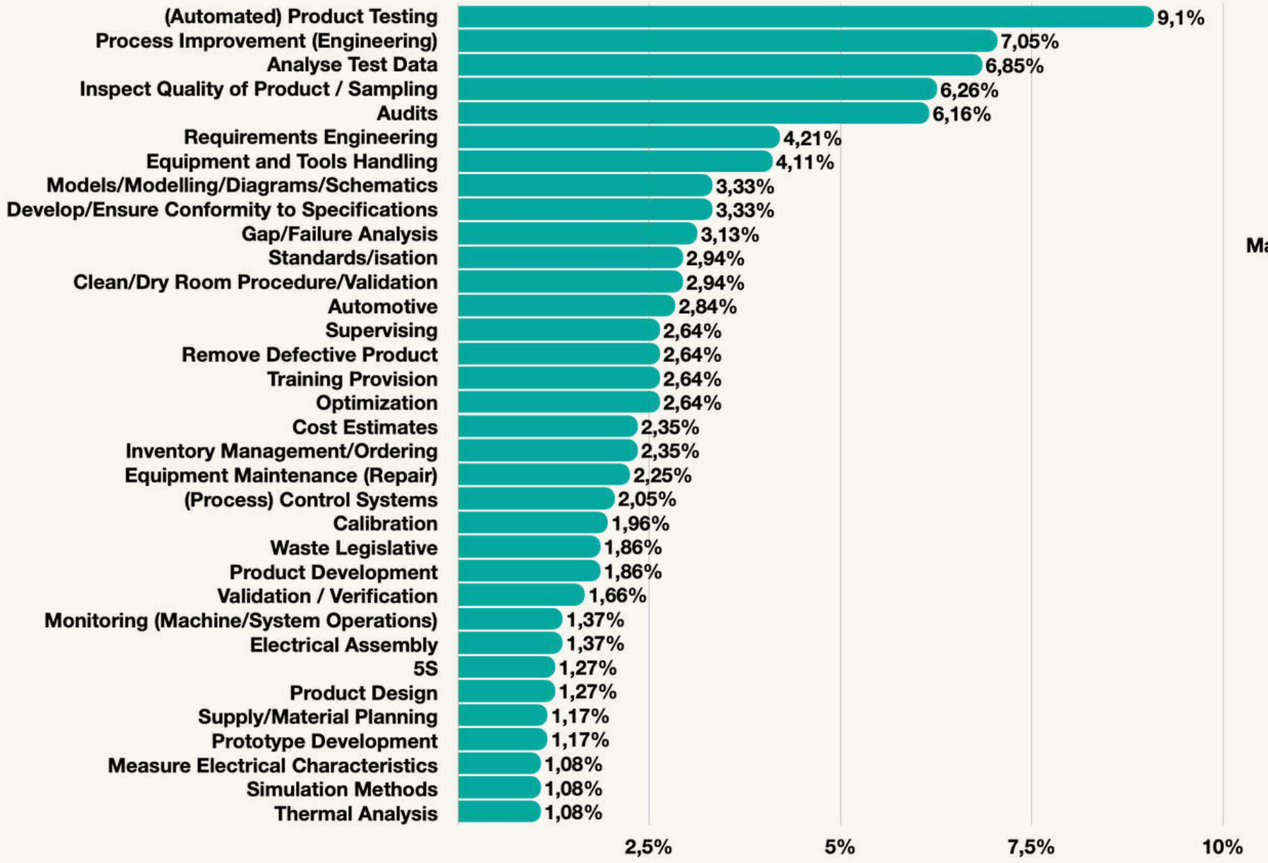
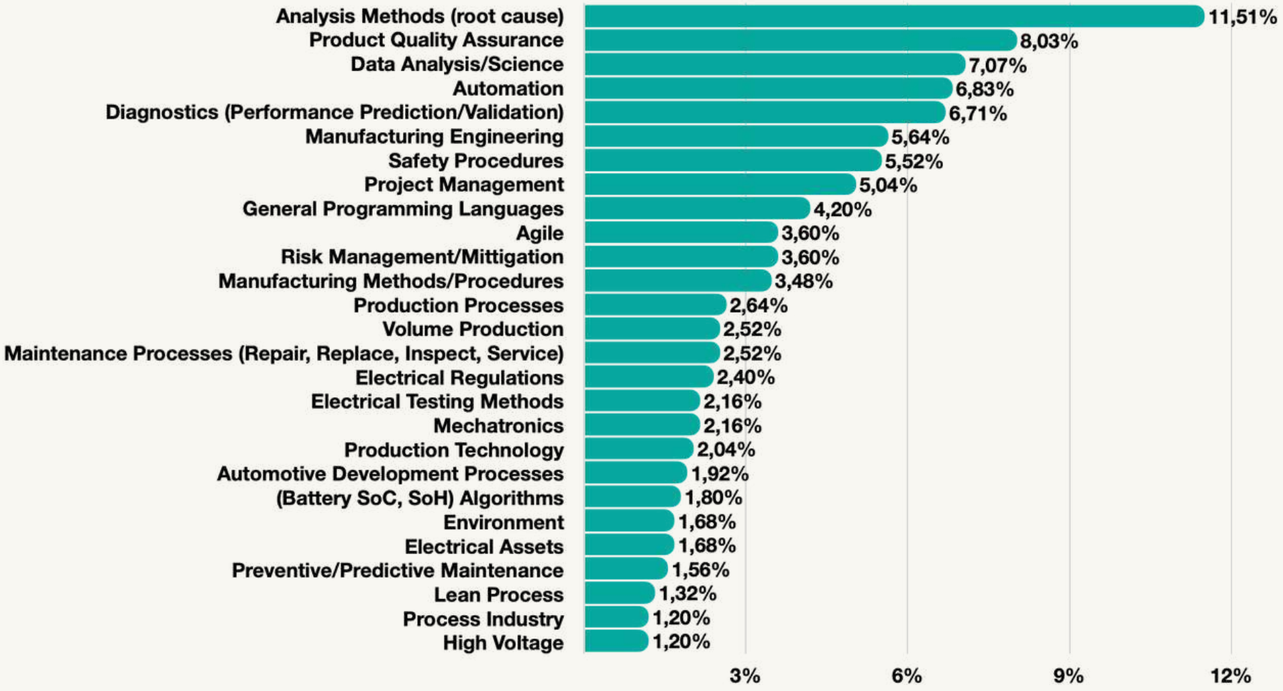
SKILLS, COMPETENCES & KNOWLEDGE NEEDS

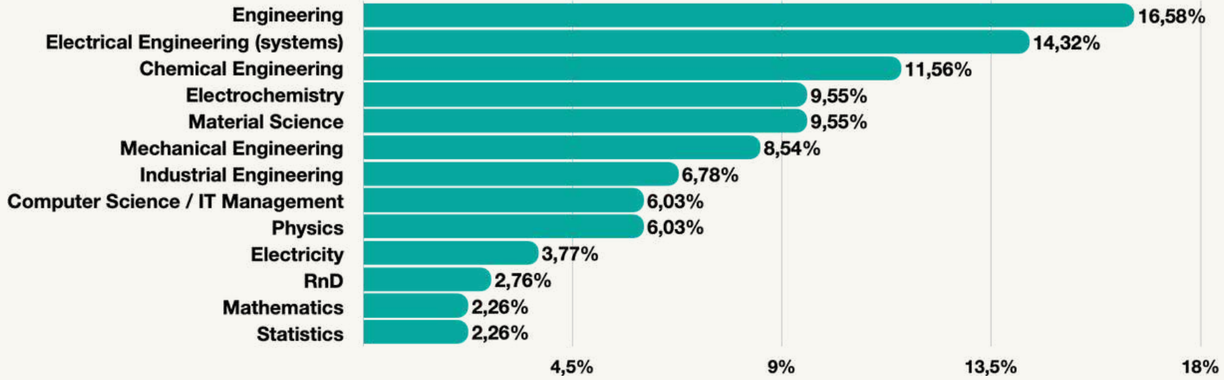
CROSS-SECTORAL SPECIFIC SKILLS



CROSS-SECTORAL SPECIFIC KNOWLEDGE



ACADEMIC COMPETENCE



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JOB ROLES

BLUE-COLLAR

QUALITY TECHNICIAN
RELIABILITY TECHNICIAN
AUTOMATION/PROCESS OPERATOR
CALIBRATION TECHNICIAN
LITHIUM MAINTENANCE TECHNICIAN
INDUSTRIAL CLEANER
SHIFT LEAD
METROLOGIST

WHITE-COLLAR

QUALITY ENGINEERS – GENERAL
BATTERY MATERIALS ENGINEER
QUALITY ENGINEER
BATTERY MATERIALS ENGINEER HIGH DENSITY ANODES
BATTERY CELL CONDITIONING PROCESS DEVELOPMENT EXPERT
CLEANROOM SPECIALIST
SAFETY SPECIALIST
AUTOMATION ENGINEER
BATTERY TEST ENGINEER
EQUIPMENT ENGINEER
PERFORMANCE ENGINEER
PROCESS QUALITY ENGINEER
MANAGER OF BATTERY MAINTENANCE
DOCUMENT CONTROL SPECIALIST
CELL TEST ENGINEER
BATTERY CELL SIMULATION ENGINEER
SHIFT LEADS MATERIALS MANAGER
PROCESS ENGINEER
TEST ENGINEER
RESEARCHER
QUALITY CONTROL ENGINEER
THERMAL HYBRID BATTERY SIMULATION MASTERAND
PRODUCTION ENGINEER
PROCESS & TEST ENGINEER – BATTERY TECHNOLOGY
ISO INTERNAL AUDITOR
ELECTRICAL TEST ENGINEER
ADHESIVE & LEAK TESTING ENGINEER
SAFETY MANAGER
SUPPLIER QUALITY ENGINEER
CLEANROOM MANAGER
ANALYTICAL CHEMIST

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CONSIDERATIONS / RECOMMENDATIONS

It is vital to have skills and knowledge on battery technologies and related manufacturing processes and associated standards and legislation, such as:

- **battery technologies, systems related development**
- **battery production processes**
- **electrode production, cell assembly, and pack formation**
- **battery system components**
- **automated systems**
- **high-volume production**
- **raw materials (analysis)**
- **material flows and inventory**
- **battery testing and quality control**
- **risk and safety procedures**

Quality management systems and methods: Although universal and not specifically battery specific only, we recommend strengthening skills and knowledge related to quality management systems, such as: standards, legislation, QMS, sampling, training provision, quality control, testing standards and methods.

LINKS & RESOURCES

- Sectoral Skills Intelligence and Strategy - Quality
- See the list of the ALBATTS **SKILLS CARDS**

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