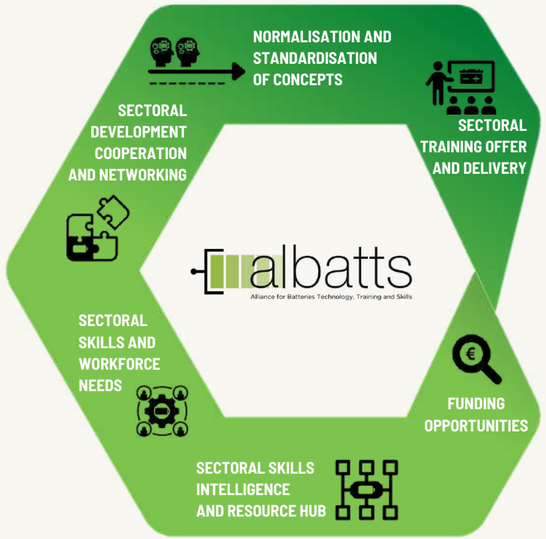
SECTORAL SKILLS INTELLIGENCE & STRATEGY FOR THE EUROPEAN BATTERY SECTOR

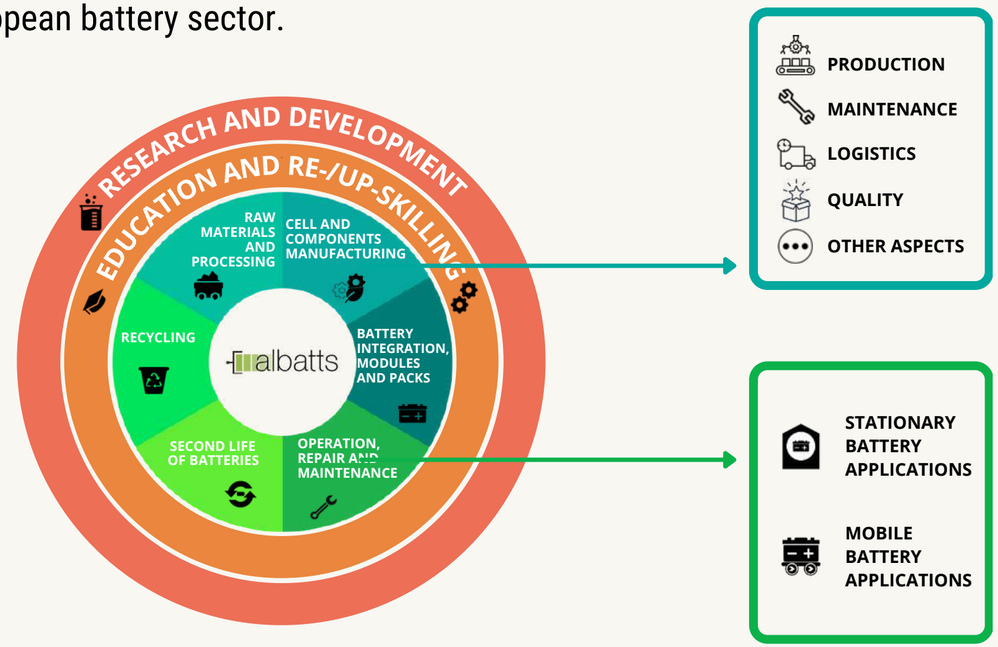
D3.10 – Sectoral Skills Intelligence and Strategy – Release 2

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 **operation, repair and maintenance of stationary battery applications**.

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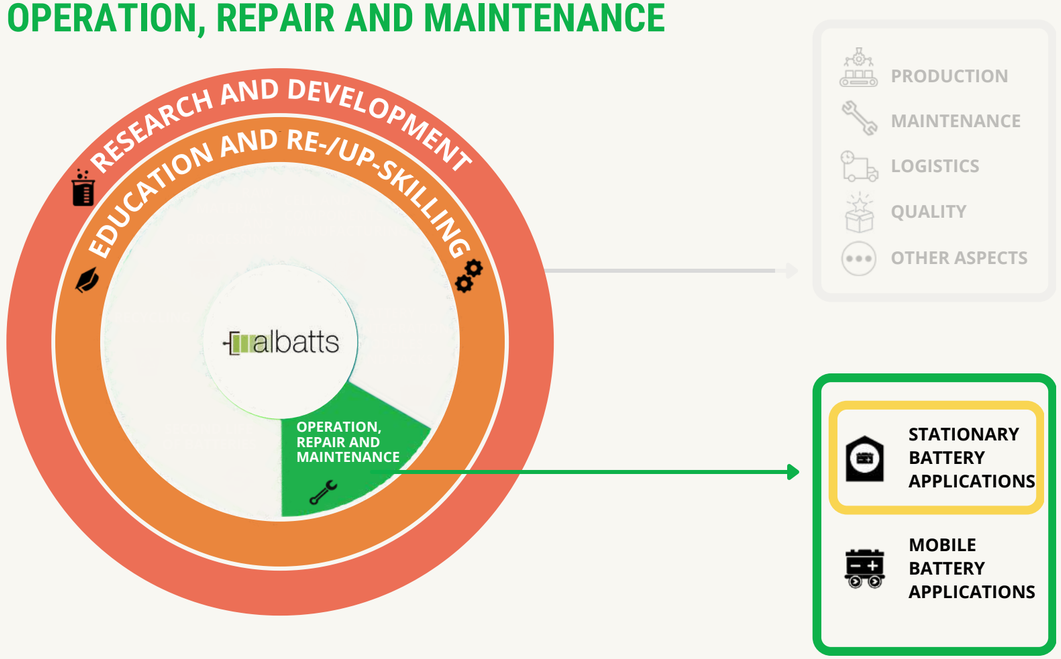
OPERATION, REPAIR AND MAINTENANCE



- PRODUCTION
- MAINTENANCE
- LOGISTICS
- QUALITY
- OTHER ASPECTS

- **STATIONARY BATTERY APPLICATIONS**
- **MOBILE BATTERY APPLICATIONS**

STAKEHOLDERS/COMPANIES

INDUSTRIAL AND STATIONARY BATTERY APPLICATIONS

Main areas of interest and trends identified for stationary applications of batteries are the following:

- **General Stationary Applications**
- **Cost-efficiency**
- **Safety**
- **Resiliency and/or Self-sufficiency**
- **Sustainability**
- **Other Stationary and Industrial Applications of Batteries**

TARGET GROUPS: energy utilities, industrial and commercial entities, residential customers, governments and municipalities, battery manufacturers and suppliers, system integrators and EPC contractors, monitoring and services providers

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GENERAL STATIONARY APPLICATIONS

Trends that are related to the use of battery energy storage systems (BESS). Based on them we recommend further actions.

Various needs as well as the provided benefits in heavy-duty, grid/off-grid, and telecom applications are increasing the use of BESS. These include for example:

- supporting the process of reaching sustainability goals by combining BESS with variable renewable energy (VRE) systems and
- bringing resiliency and reliability with backup systems.

What we recommend is further training on understanding:

- the battery energy storage technologies,
- the areas of applications,
- system integration and
- management skills.

The heavy-duty use areas of applications position the reliability of a power supply as an area of high importance. Consequently, the need for skills related to maintenance and repair is highlighted. The main job roles supported by the trends include for example:

- application engineers,
- energy storage project engineers and
- maintenance positions such as field service engineers, etc.

SUB-TRENDS:

- **Increased need for energy storage with heavy-duty applications**
- **The proliferation of battery energy storages commercially in public places**
- **Growing competition in the energy storage market**
- **5G cellular network deployment, batteries in telecommunications**
- **Commoditisation of base stations**
- **Grid and off-grid systems and applications**
- **Smart grid**

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COST-EFFICIENCY

Cost-efficiency is a common driver of development with battery energy storage.

The application of stationary battery systems to decrease electricity costs is a driving force for the increasing use of stationary batteries. Solar and wind power systems are intermittent. Consequently, they need to be supported with integrated batteries to provide electricity also at night and in less windy conditions. Additionally, the periods when electricity prices are lower, for example at night, can be exploited with batteries.

Those working with BESS with the aim of cost efficiency, in various ways, include:

- technical staff
- personnel for enabling managing the business side and smooth customer interaction from consultants to sales-related roles

recommendations on education and training include:

- understanding battery systems
- electrical engineering
- project planning
- ability to build models along with performing energy-related cost calculations

SUB-TRENDS:

Decrease electricity costs by placing stationary battery systems

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SAFETY

As Safety is always paramount, there is high importance in creating regulations and legislation that cover it in the context of batteries. There are risks related to battery fires as we have identified in our previous research.

In the context of batteries and safety we have identified for example the following job roles:

- safety managers and
- safety specialists
- knowledge and skills on safety for installation/service technicians

There are also other significant roles that supporting safety:

- test engineers,
- inspection technicians,
- auditors, and beyond.

We recommend gaining an understanding of the battery-related safety issues and existing regulations and legislation. In this context, we emphasize the need to create and update electrical equipment regulations and legislation accordingly to ensure the safety of users. We also recommend the training that is needed when disaster strikes: ensuring that firefighters possess adequate skills.

SUB-TRENDS:

Create regulation and legislation on the topic of battery safety

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RESILIENCY AND SELF-SUFFICIENCY

Resiliency and self-sufficiency are important qualities with systems that have a critical role and of which functionality must be consequently ensured and troubleshoot. With battery energy storage it means availability of power in any conditions and circumstances. The areas in which availability of electricity is paramount include for example military applications, offshore oil, and gas operations as well as telecom systems. Batteries act as backup power systems for blackout situations. Integrated with VRE, BESS provides an intermittent power source.

The job roles in this context include various engineer positions that are needed in consultant roles. They include for example:

- battery system engineers,
- energy engineers and
- application engineers.

Maintenance roles are important due to the critical nature of batteries in this context. Therefore, we recommend training on maintenance and repair-related skills in addition to the battery technology-related skills that are needed with integrating BESS with renewable systems.

SUB-TRENDS:

- **Increasing BESS use in military applications**
- **Increasing use in offshore oil and gas applications + vessels**
- **Base stations need batteries to support their power requirements**
- **Provide electricity in remote places where centralised electricity is not sustainable**
- **Transfer from lead-acid batteries to Li-ion batteries in cellular network base stations**

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SUSTAINABILITY

The Sustainability element of batteries is realised with second life application, integration of battery systems with renewable energy sources, the need for sustainable resilient base stations, and beyond. While batteries support sustainability the sustainability of the batteries themselves is important as well.

With second life application, we have discovered such job roles as cell test engineers and various other engineer positions. The recommended skills include testing, quality inspection and repairing.
The integration of renewable energy systems needs engineers with various skills from battery systems to algorithms.

With the base stations, sustainability and resiliency are being realised, for example, by moving from using diesel generators to the application of batteries as backup systems. There are several job roles in this context such as battery maintenance-related, inspectors, business developers, safety specialists, and beyond. With related skills, we identified for example project management, skills related to the sustainability of base stations, and engineering competencies related to batteries and their integration.

SUB-TRENDS:

- **Second life applications**
- **Integration of battery systems with renewable energy sources, with the goal of decarbonisation**
- **The need for sustainable and resilient base stations**

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GO TO REPORT

OTHER INDUSTRIAL AND STATIONARY BATTERY APPLICATION

Data Centres: Usage of batteries and UPS systems as a backup power source. The chapter discusses the criticality and essentiality of these battery applications and related issues of carbon footprint, renewable energy applications and various trends of shifting towards batteries from diesel generators as a backup solution

Renewable Power Farms: Application of Battery Energy Storage (BESS) in the context of renewable energy and connected trends such as the war in Ukraine, policy, energy diversification, and compliance with the Green Deal. The most significant renewable energy sources are covered: 1) wind power farms, 2) hydroelectric power, and 3) solar plants

Heavy Work Machines: Entering the border between the stationary and mobile applications of batteries, namely in 1) mining equipment; 2) forest machines; 3) cargo handling, and 4) heavy construction equipment.
Mainly the trend of replacement of diesel-powered machines with electrified or hybrid solutions is discussed

BESS in Residential Applications: Reasons and trends causing BESS solutions and renewable energy demand in residential areas and facilities are discussed

JOB ROLES AND SKILLS NEEDS

Job roles and skills needs within this domain were analysed and categorised by the production lifecycle. The following categories were identified, and needed skills and job roles based on the job advertisements were outlined:

- Design and Development;
- Manufacturing;
- Maintenance;
- Sales, Services, and Support or Technical Project Management.

LINKS & RESOURCES

- Sectoral Skills Intelligence and Strategy - Stationary and Industrial Battery Applications

ALBATTS Defined Skills Cards

- See the list of Skills Cards

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LINKS & RESOURCES

- Sectoral Skills Intelligence and Strategy - Stationary and Industrial Battery Applications

- See the list of the ALBATTS **SKILLS CARDS**

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