BATTERY POWERED

TOUR FOR SKILLS

Enabling a prepared education network for the battery ecosystem in Europe

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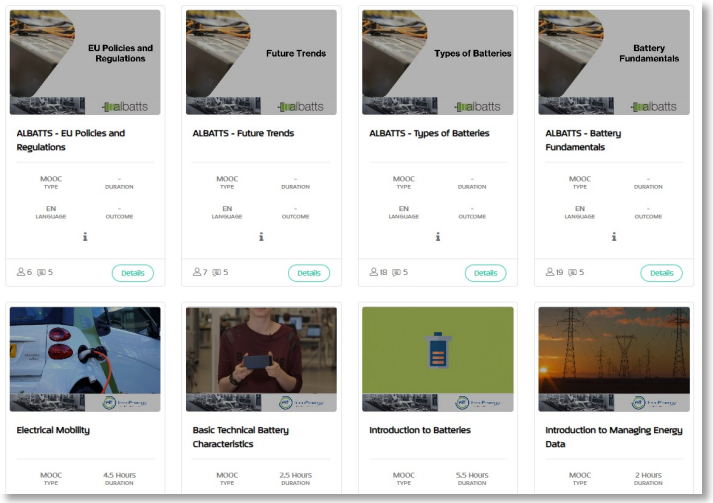
ALBATTS Tackles Two Main Questions

Learning Platform



2 HOW CAN WE ADDRESS CURRENT CHALLENGES?

EDUCATION & TRAINING

- **FOCUSING ON** Vocational Education and Training (**VET**) & Higher Education (**HE**) **AIMED AT initial training and re-skilling and up-skilling of workforce**

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Courses

11 Courses already available

Examples of available courses

Available through the Automotive Skills Alliance (ASA), an association created through the bridging of the projects ALBATTS and DRIVES activities and to sustain project results

ALBATTS COURSES

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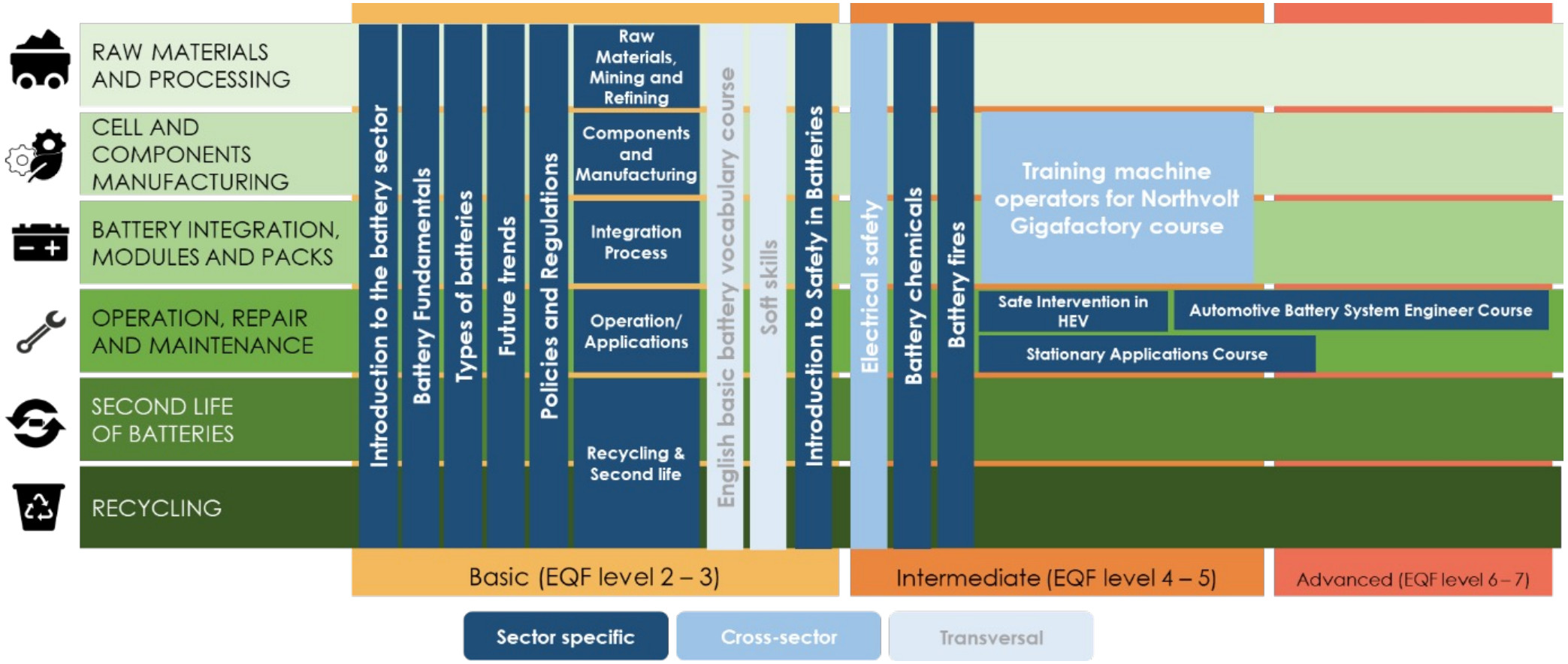
Albatts courses



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Training for VET Teachers

COLLABORATION

BEST PRACTICES & FUNDRAISING

Support of Knowledge Sharing

About BaTT Forum

- **The Batteries Teachers & Trainers Forum (BaTT Forum) is an initiative launched by ALBATTS**
- **Upskilling and sharing of the best practices among VET teachers to support Batteries education and training (especially EQF 3-5)**

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Handbook for

TRAINING IN THE BATTERY INDUSTRY

Why? What? To whom? Where? How?

Will be published in March 2024

Will be found on Albatts homepage https://www.project-albatts.eu/en/home

Target group: VET schools, teachers, companies

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Recommendations

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Vocational Education

Support FLEXIBILITY & COLLABORATION => SPEED UP REACTION TO THE CHANGES

EU-level:

- Encourage flexible modular approach
- Encourage cross-disciplinary content
- Promote cooperation between VET & HE
- Funding for labs, on- and offline

Regional/National level:

- Green skills in curriculum
- Flexible modular approach – easy to update and adapt, cross-disciplinary content
- Training in English and soft skills
- Funding for labs, on- and offline, teacher training
- Funding encouraging education providers to cooperate

VET provider level:

- Cooperate – universities - industry, - other VET providers, municipality, authorities
- Be proactive! Don't wait!

Industry /Working life:

- Communicate with VET providers!
- Help with training material and content
- Offer on-site experience for teachers and trainers!

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Recommendations /University Education!

Challenge:

- ***Universities teach only what they research***…but few universities have eg. battery research

- **Incentives** for European universities to cooperate not only in research, but also in education offerings, also on Bachelor level

Recommendations:

- **Subcontract** a research-specialised university for the needed course!

- **Wrap** a MOOC course from a good university!

- **Introduce Elective green-skills courses! In all relevant programmes, now!**…while program development speeds up…

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Thank you!

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JOIN OUR NETWORK THROUGH OUR WEBSITE AND GET FIRST-HAND INFORMATION ABOUT OUR WORK & BATTERY SECTOR SKILLS AGENDA!

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BATTERY POWERED

TOUR FOR SKILLS

Enabling a prepared education network for the battery ecosystem in Europe

Skills intelligence and identified job roles in the battery value chain

Ing. Simona Jursová, Ph.D. (VSB-TUO)

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What is the European Battery Sector?

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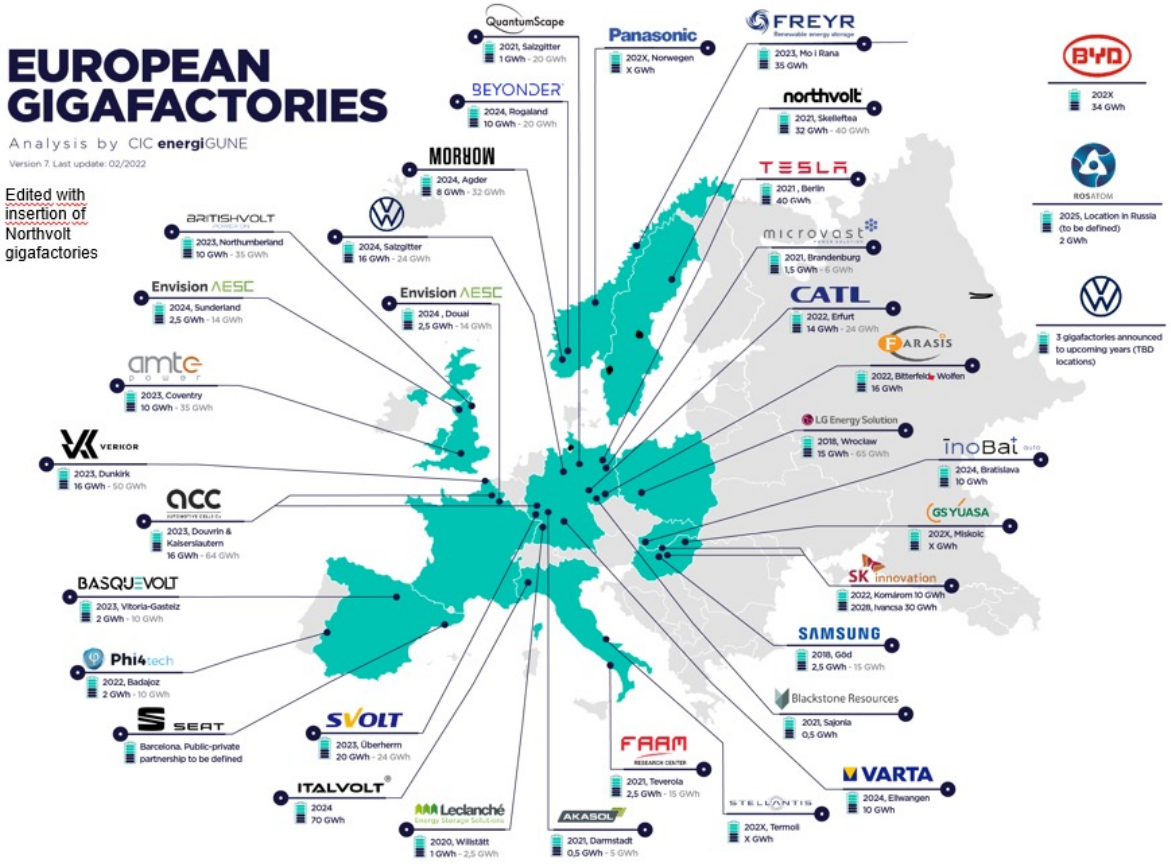
European Battery Sector



- Highly **emerging and rising** sector in Europe
- **Electromobility** is pushing **the European battery sector**

- This needs to be supported by the **workforce with the right skills**
- Change of needed skills/competences or knowledge during the individuals' career – **the change is constant.**

- High demand for workers "The industry estimates that by 2025, this growing ***skills shortage*** could amount to some ***800,000 jobs*** across the entire battery value chain." - EC Vice-President Šefčovič March 12th, 2021

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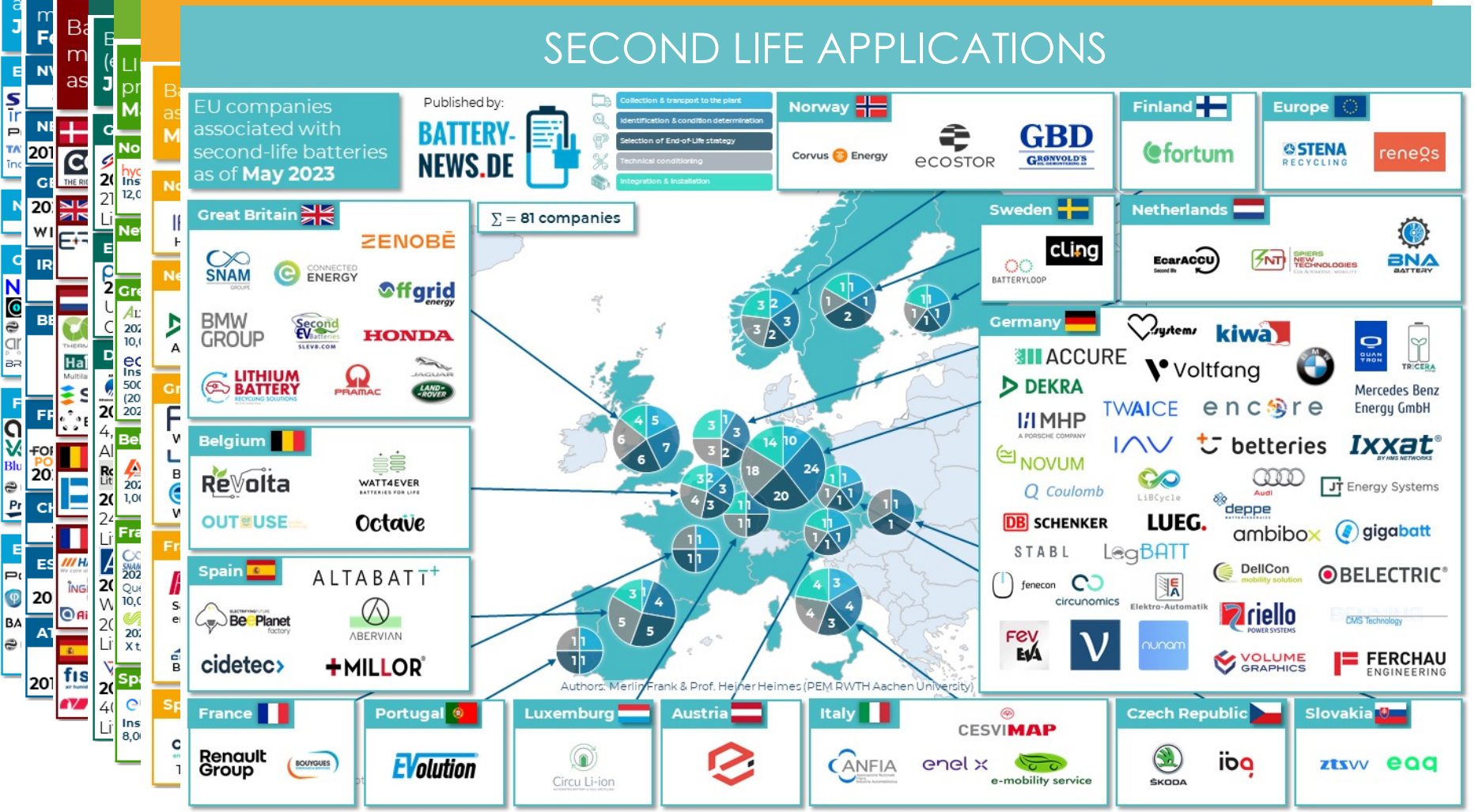
SECOND LIFE APPLICATIONS



Source:
Battery Atlas Europe

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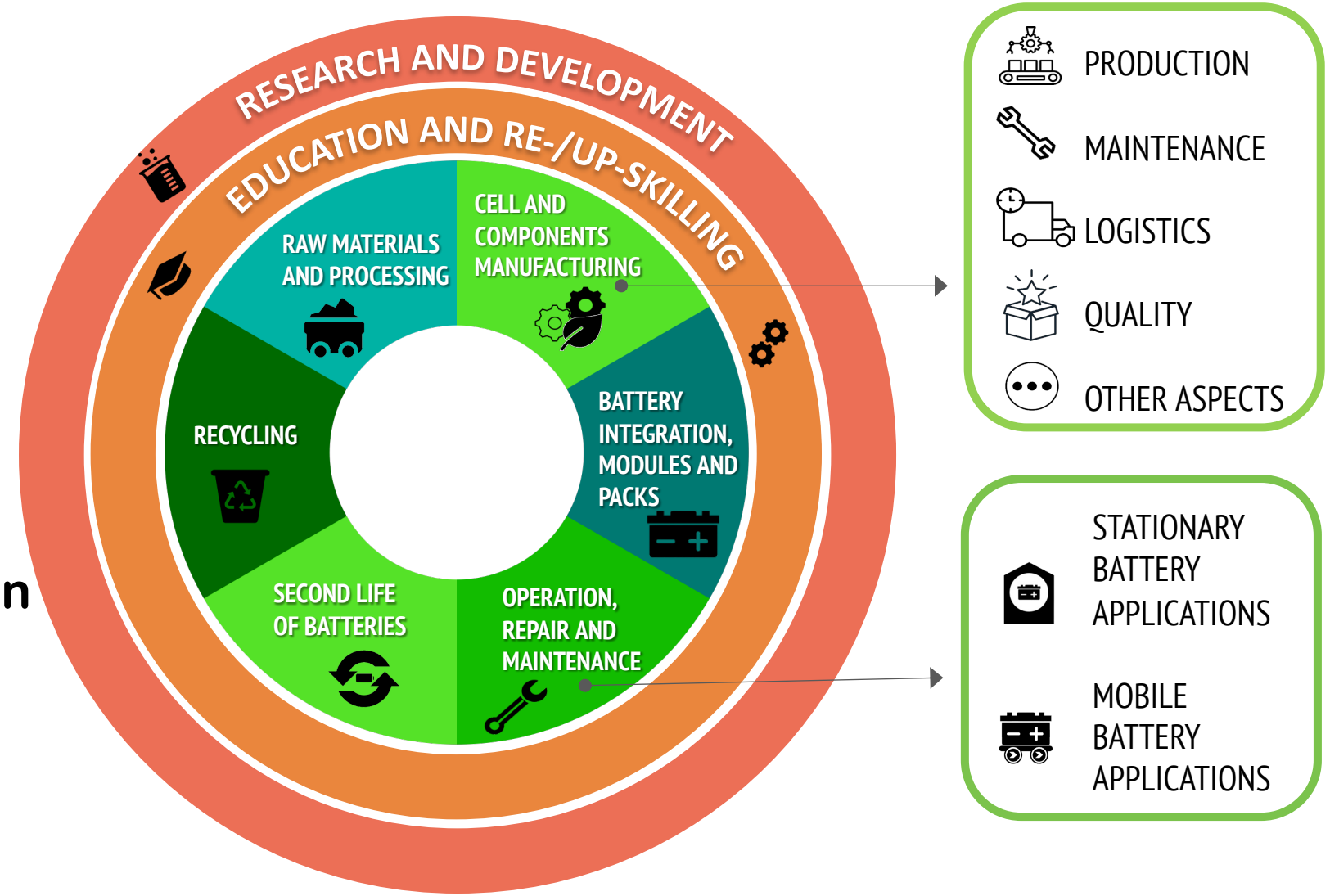
Battery Value Chain

- There is a **lack of information** on needed **skills and job roles**
- We need **more collaboration**
- **Needed skills impact on each phase of the production cycle**



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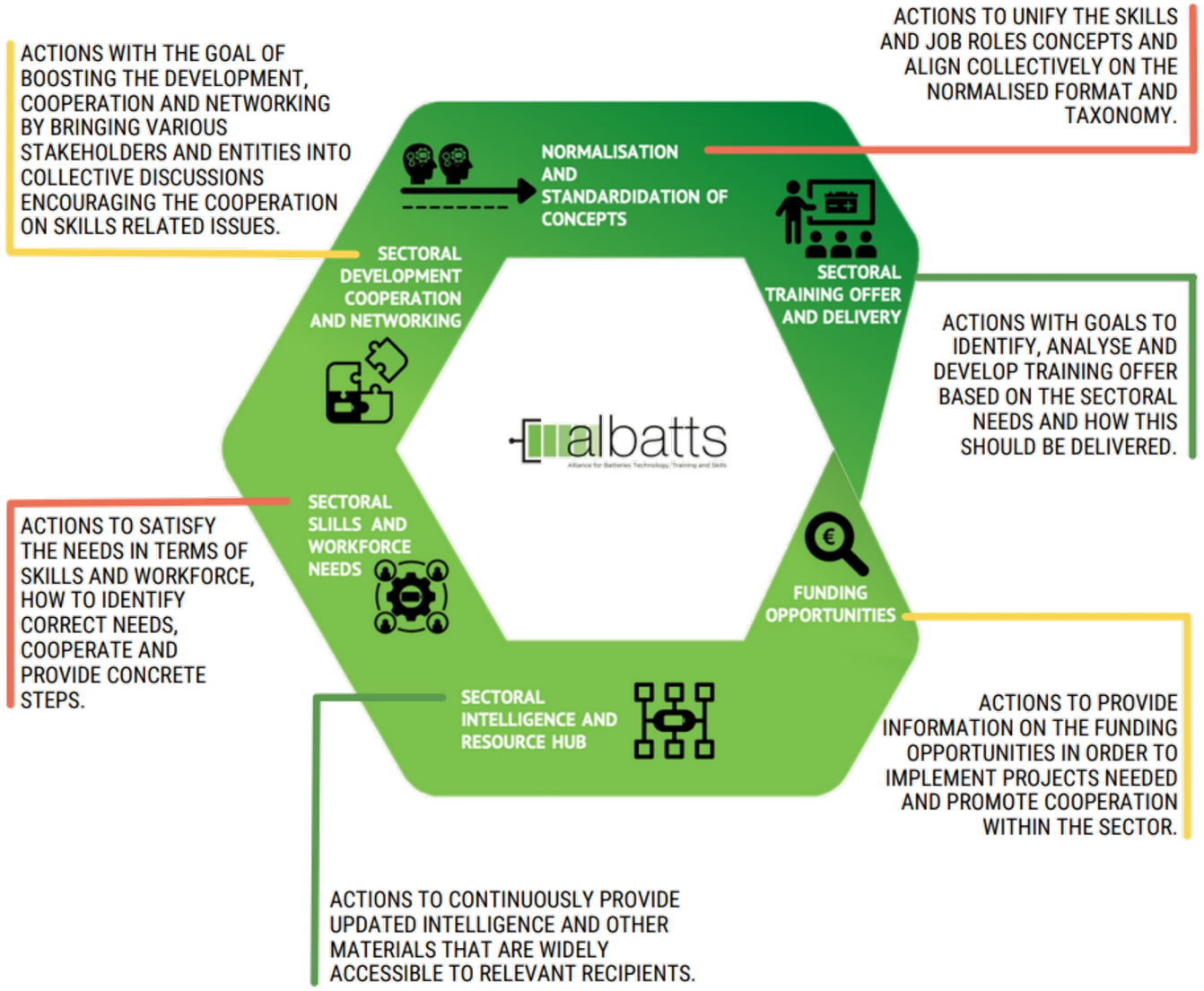
Skills Agenda and Strategy

- The overall assessment is supported by a strategy
- The whole value chain and all levels of education need to be addressed
- Competences can be sector specific and cross-sectoral



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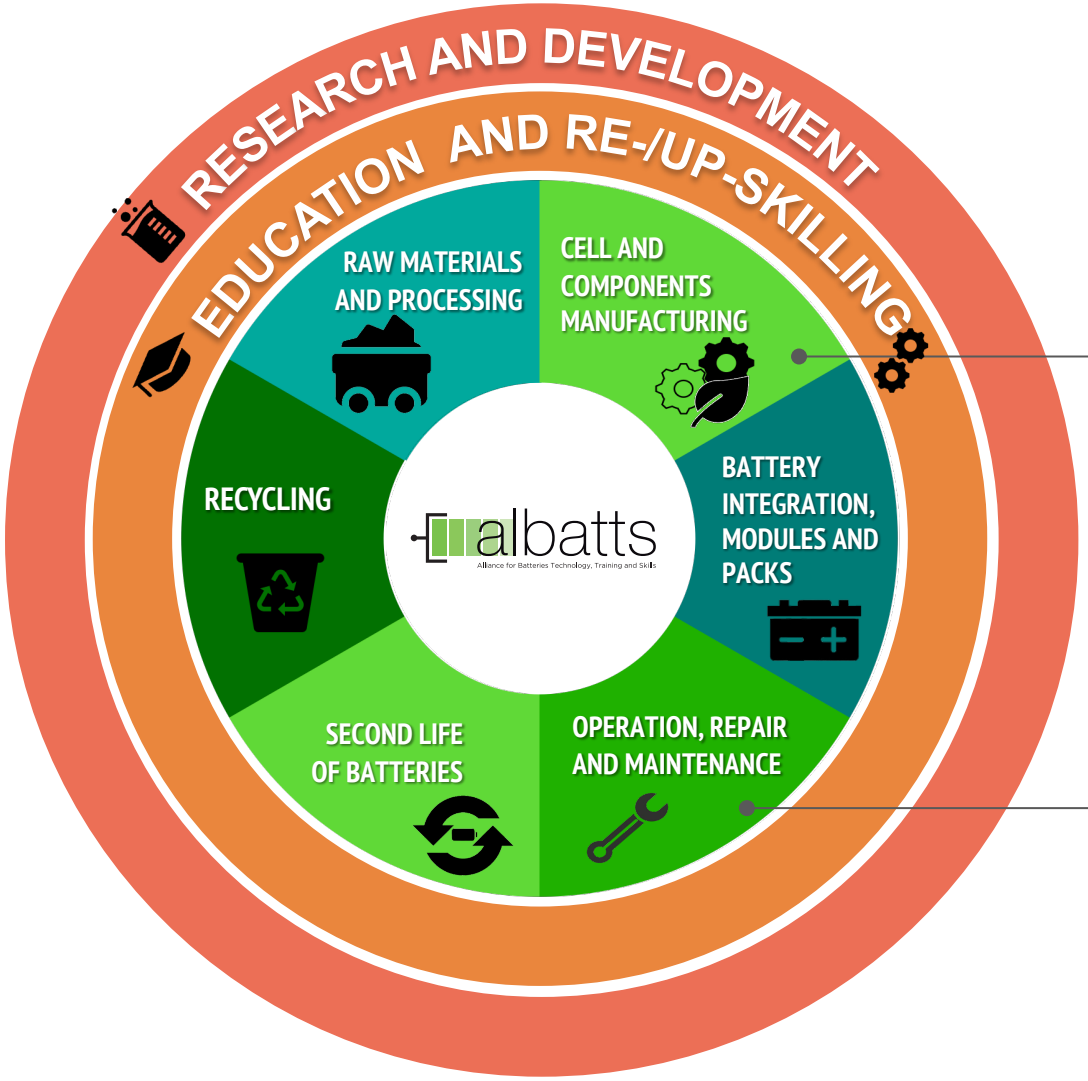
Glance on Needed Skills

RAW MATERIALS AND PROCESSING



- PRODUCTION
- MAINTENANCE
- LOGISTICS
- QUALITY
- OTHER ASPECTS

- STATIONARY BATTERY APPLICATIONS
- MOBILE BATTERY APPLICATIONS

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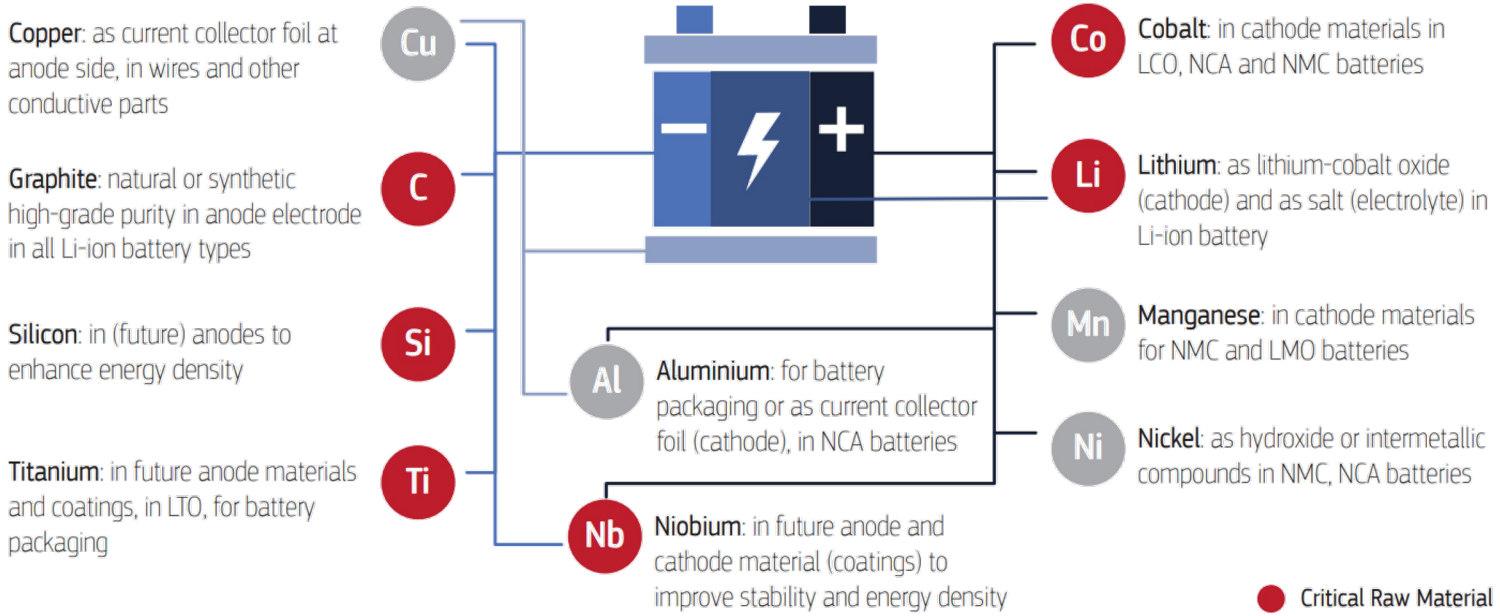
Raw Materials and Processing

- Strengthening the **awareness** on the **critical raw materials** questions for Europe and connected emerging trends and issues;
- Development of new skills needs for **mining and refining** of **raw materials** relevant for the battery production (and relevant training material)
- Cooperation on the skills agenda and organization of education events with relevant stakeholders within the sector



Critical Raw Materials for Europe - DocsRoom - European Commission (europa.eu)

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Raw Materials and Processing – Job Roles

→ What Industry Demands

<u>Blue-collar workers</u> expertise domains: **process and machine operation; material planning; calibration and instruments/ equipment;** and other.
<u>White-collar workers</u> expertise domains: **material engineering (electrode, cathode, electrolytes and other); production control; inspection and quality; supply chain management; production; process and methodology improvement;**

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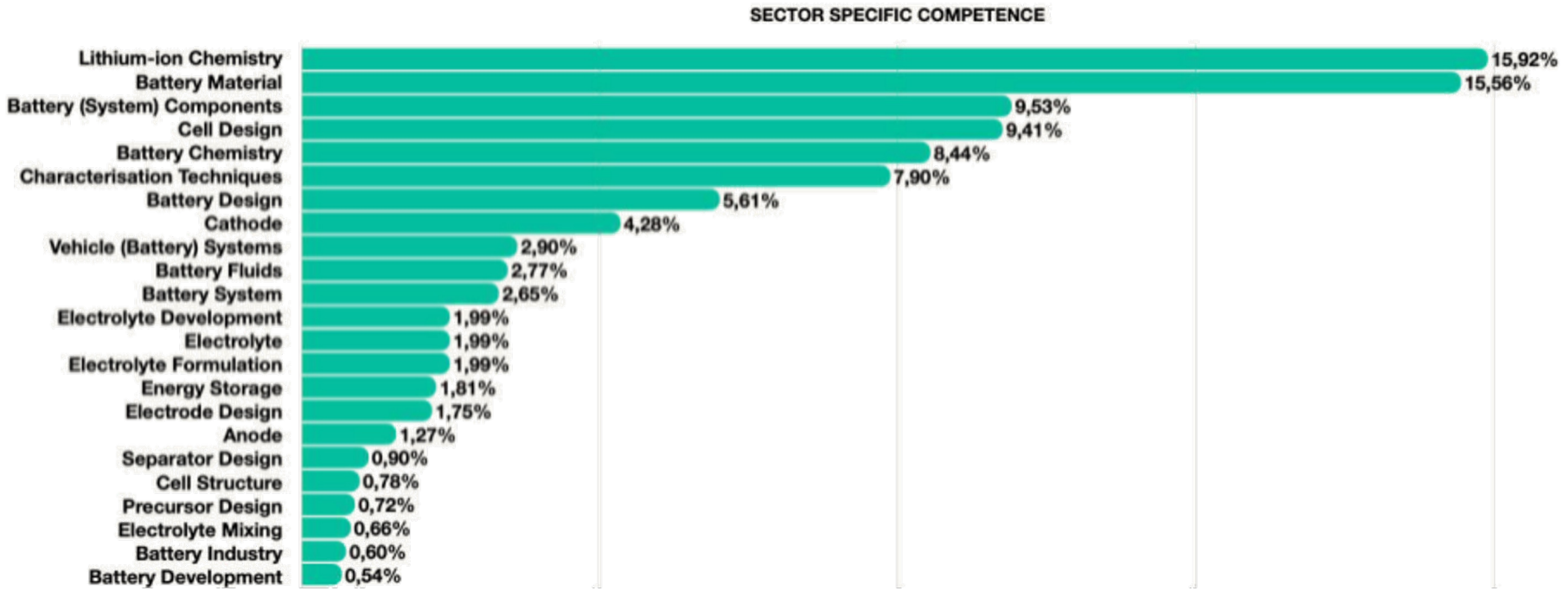
Raw Materials and Processing – Skills and Competences

→ What Industry Demands



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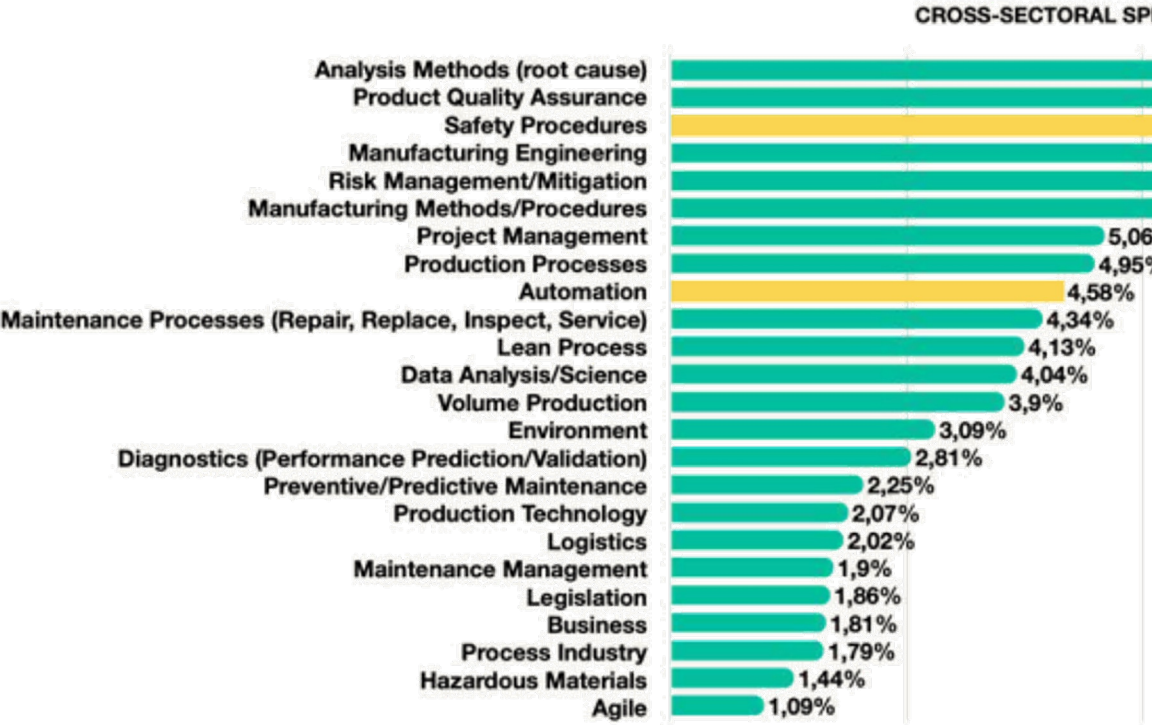
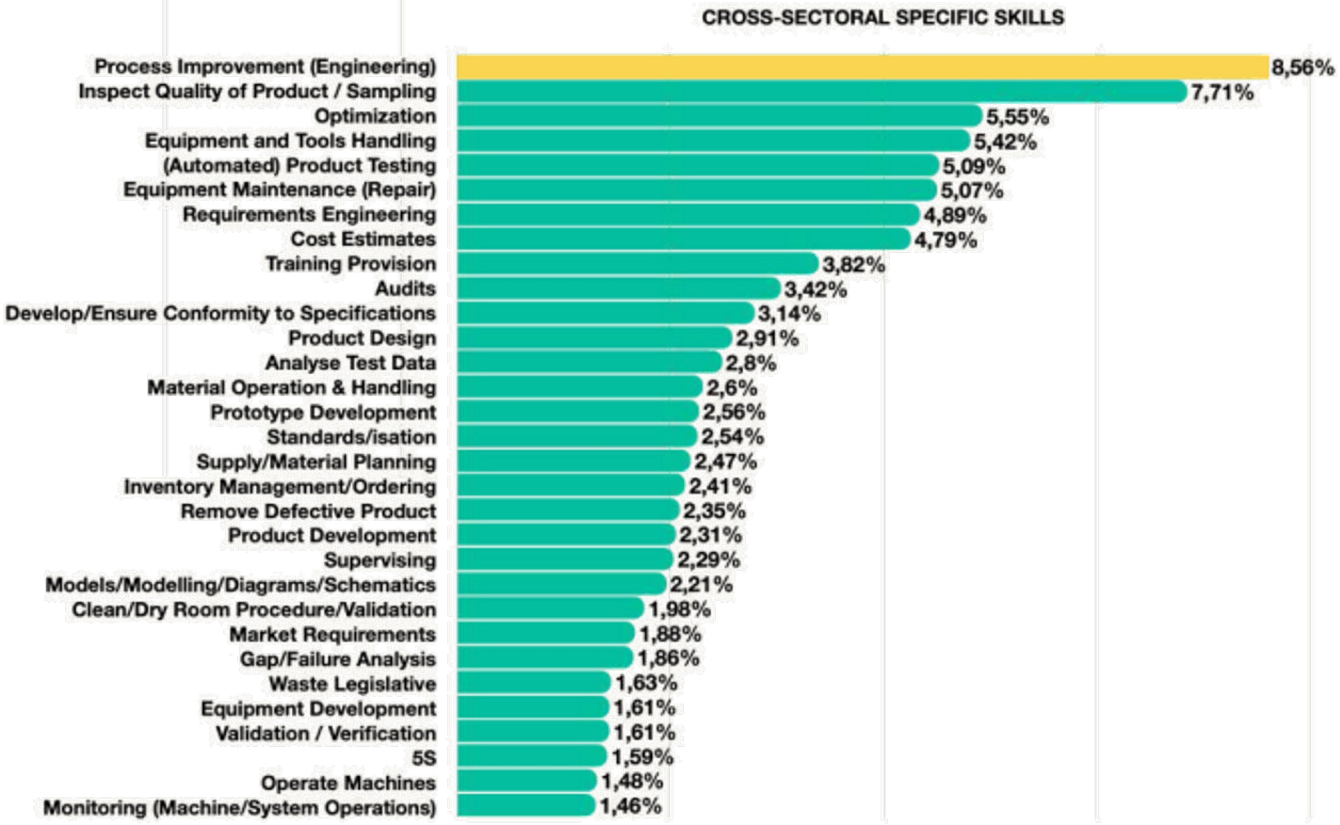
Raw Materials and Processing – Skills and Competences

→ What Industry Demands





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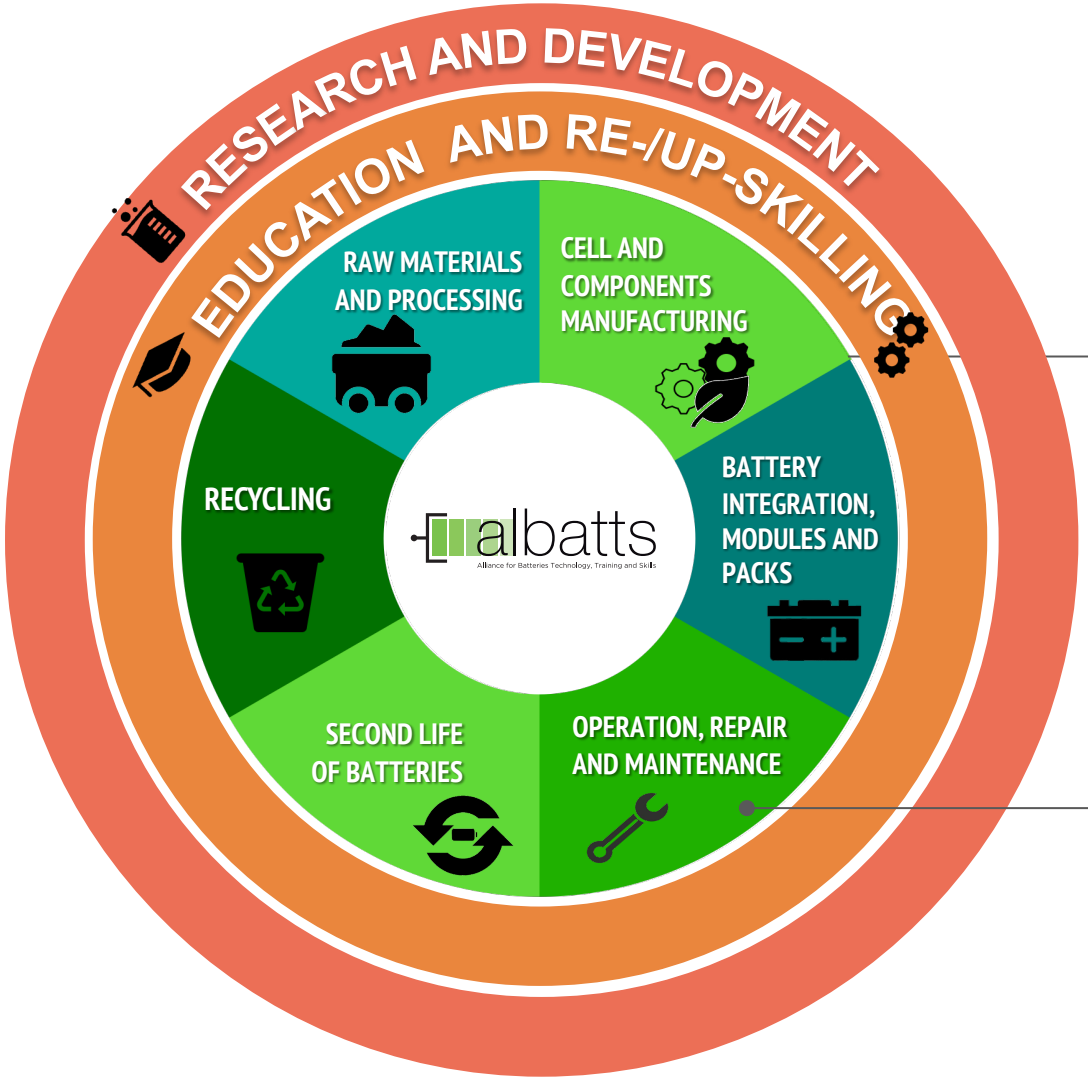
Glance on Needed Skills

CELLS PRODUCTION & CELLS MAINTENANCE



- PRODUCTION
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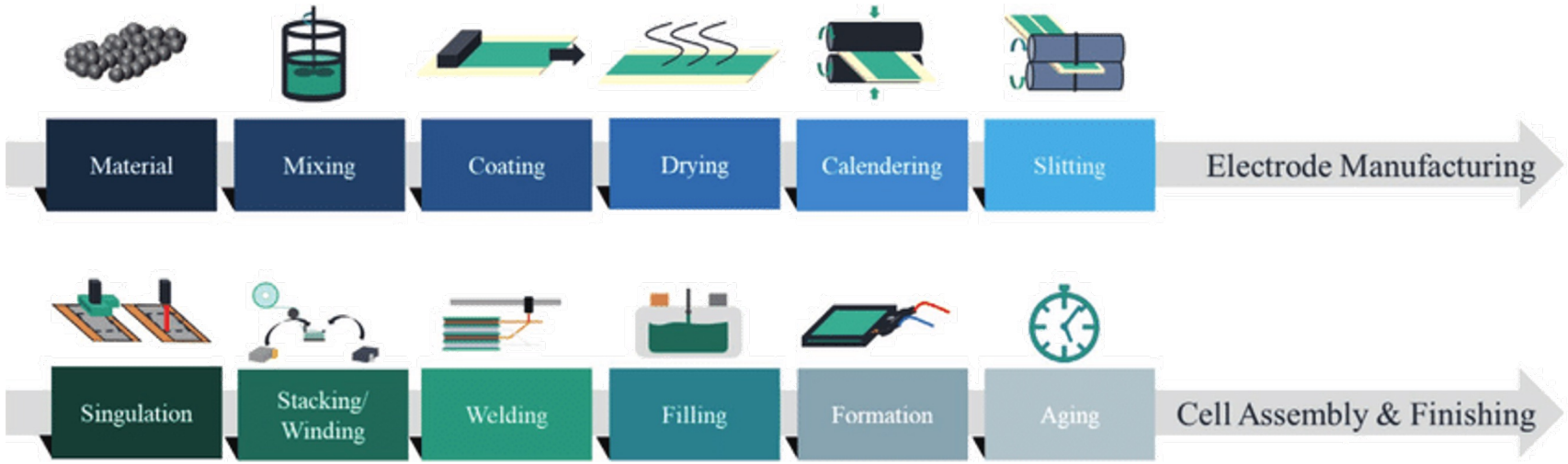
Cell Production

- Understanding in fields **electrochemistry, electronics, mechanical engineering, process engineering, manufacturing technology, automation** and **digitalization in manufacturing** (data analytics, maintenance and product process optimisation)
- In general, to speak and understand foreign languages, mainly English in working environment



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Cell Production and Maintenance – Specific Needs

→ What Industry Demands

PRODUCTION

- **Apart from the general battery-related education, strengthening the skills and competencies to ensure understanding of setting up the production, preparing the related structures, commissioning the machines, chemical, and mechanical assembly, automation experience, and mechanical understanding of the automated systems combined with understanding the related software and calibration.**
- **Strengthening general IT and data analysis skills to cover future needs.**
- **Battery skills (also mentioned in the context of Production)**
- **"Dry and clean room" maintenance (including room contamination measurement)**
- **Predictive and preventive maintenance**
- **Diagnostics**

WHITE-COLLAR SPECIFIC NEEDS

- Increasing competencies in **production and material engineering, production planning, production management, shift management, process engineering, cell design, machine learning and optimisation, modelling and simulation;**
- Strengthening the focus on **large-scale manufacturing,** understanding of **chemical processes** and **quality, risk and safety management;**
- **Battery industry-related knowledge skills:** battery material, battery chemistry, battery fluids, battery components, battery testing, defective products removal

BLUE-COLLAR SPECIFIC NEEDS

- "Upstream" production - increasing knowledge to understand the **risks, envision the safety issues**, and how **chemicals** behave;
- "Downstream" production - increase **machine understanding, 5S skills**, and the ability to **troubleshoot**;
- Overall production system understanding;
- Knowledge/skills: **material handling, Clean/Dry Room Procedure/Validation, Inspect Quality of Product / Sampling, material pressing, electrode process, fine mechanics, HMI (Human Machine Interface)**

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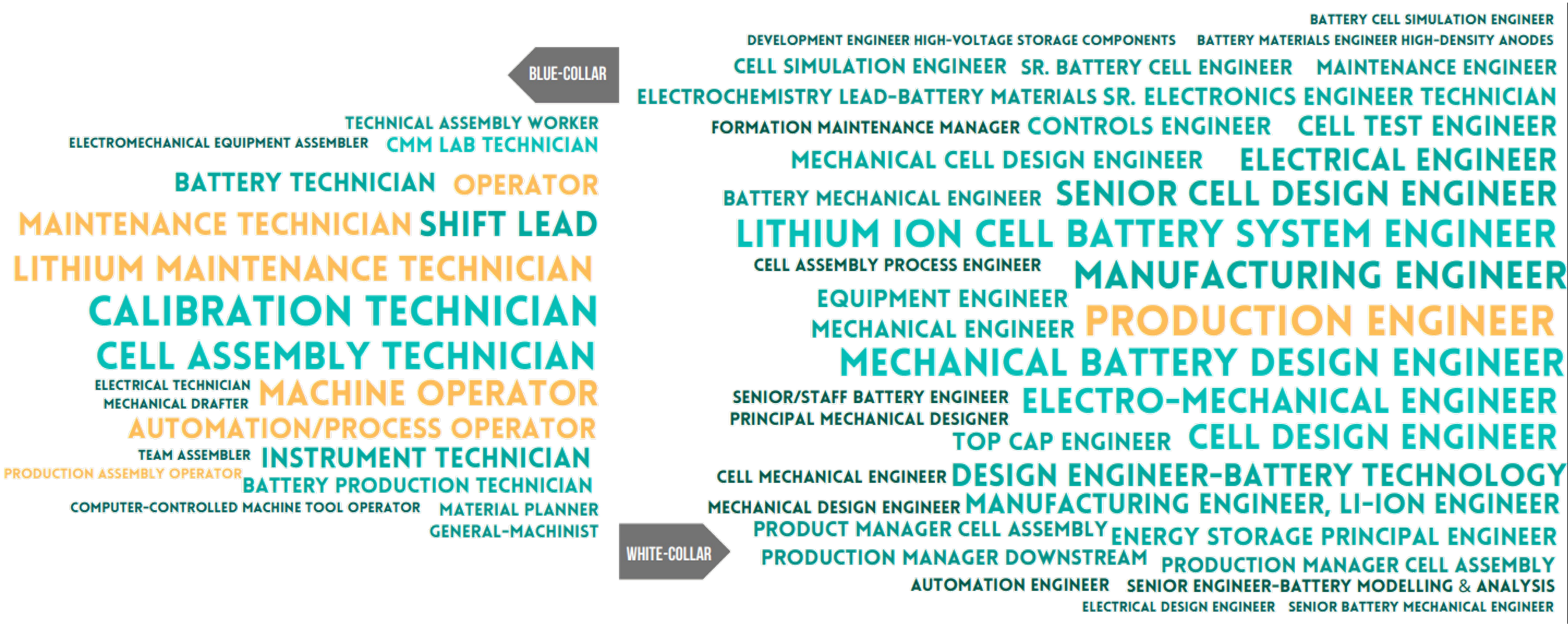
Production and Maintenance

→ What Industry Demands



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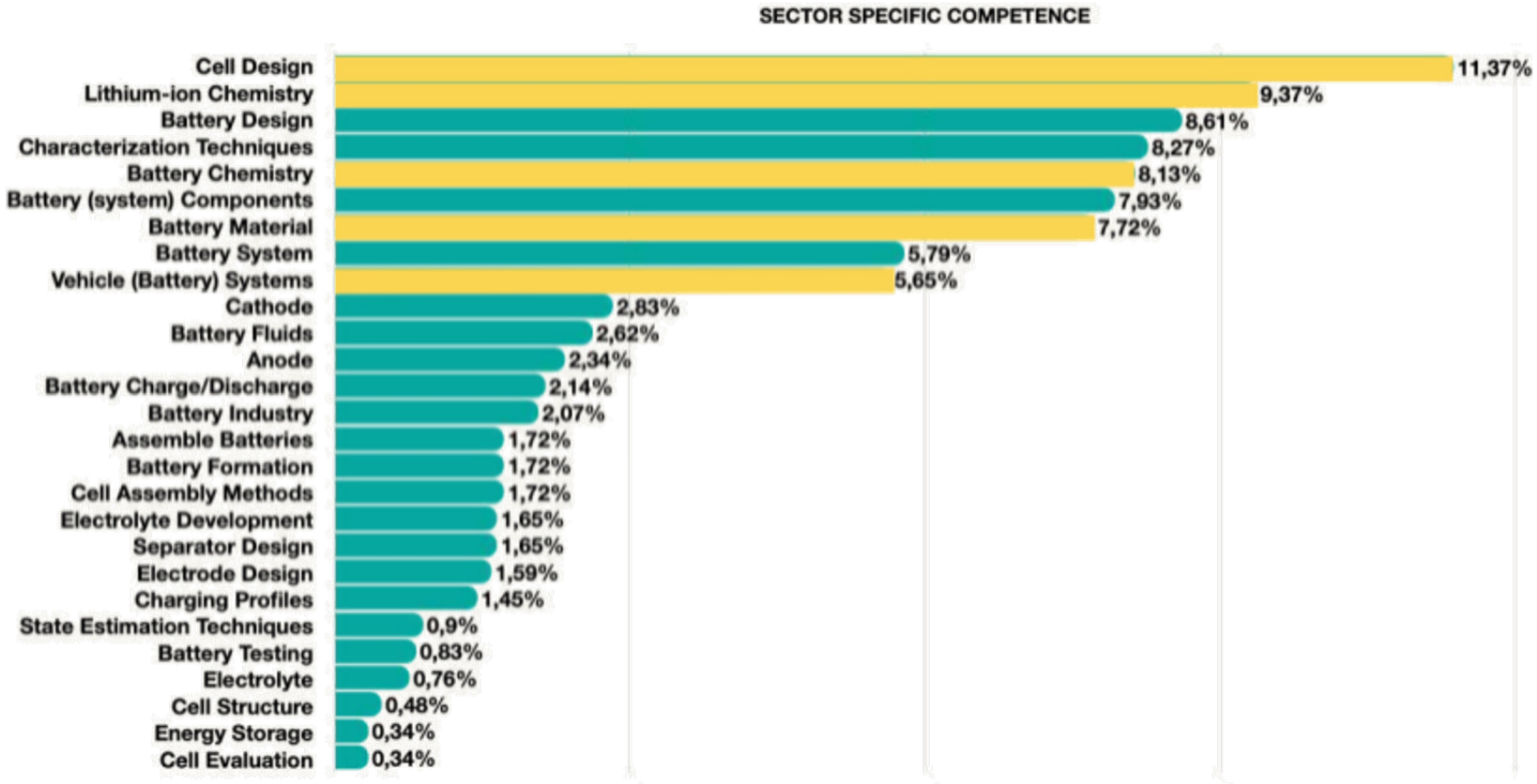
Production and Maintenance– Skills and Competence

→ What Industry Demands



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Production and Maintenance– Skills and Competence

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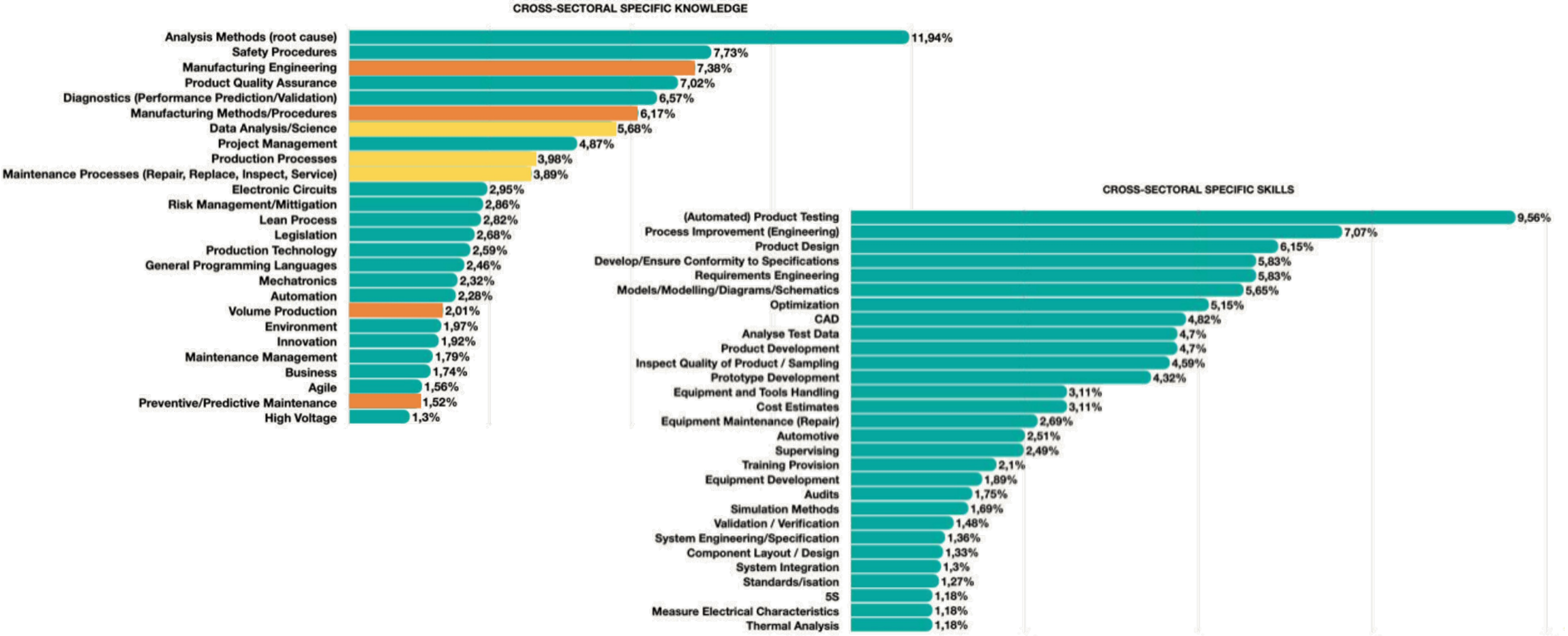

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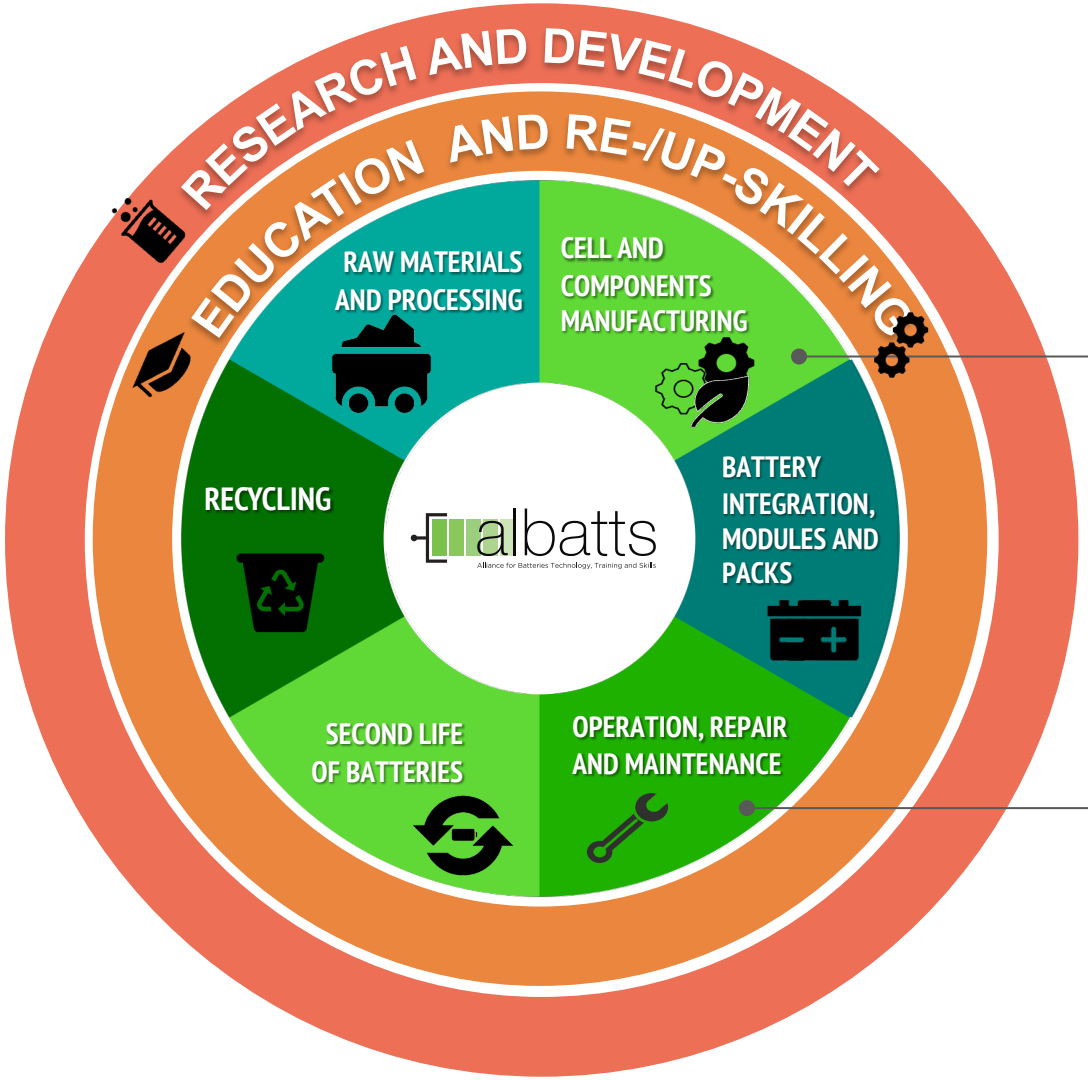
Glance on Needed Skills

BATTERY INTEGRATION, MODULES & PACKS



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Battery Integration, Modules, and Packs

→ What Industry Demands

- Strengthening competence in BMS development to achieve development in efficiency, predictable behaviour, and risk mitigation – concern is a battery system safety
- Development of competence within the standardization and frameworks for integration process and procedures of battery modules and whole systems
- Understanding the battery systems topologies and components
- Development and improvement of a framework for quality assessment and assurance
- Research and development within the BMS – concern is a battery system safety; efficiency and more advanced features of the system
- Battery integration & control - testing of integrated battery system within the application
- Development of more efficient SoC & SoH algorithms
- Strengthening of cooperation between integrators, manufacturers, and BMS suppliers
- Overall digital skills
- Development and research on BTMS - thermal management issues and other aspects – (1) safety; (2) physical or mechanical performance; (3) durability; (4) ripple current; (5) accuracy of measuring instruments; (6) materials for fire resistance and electronics packaging;

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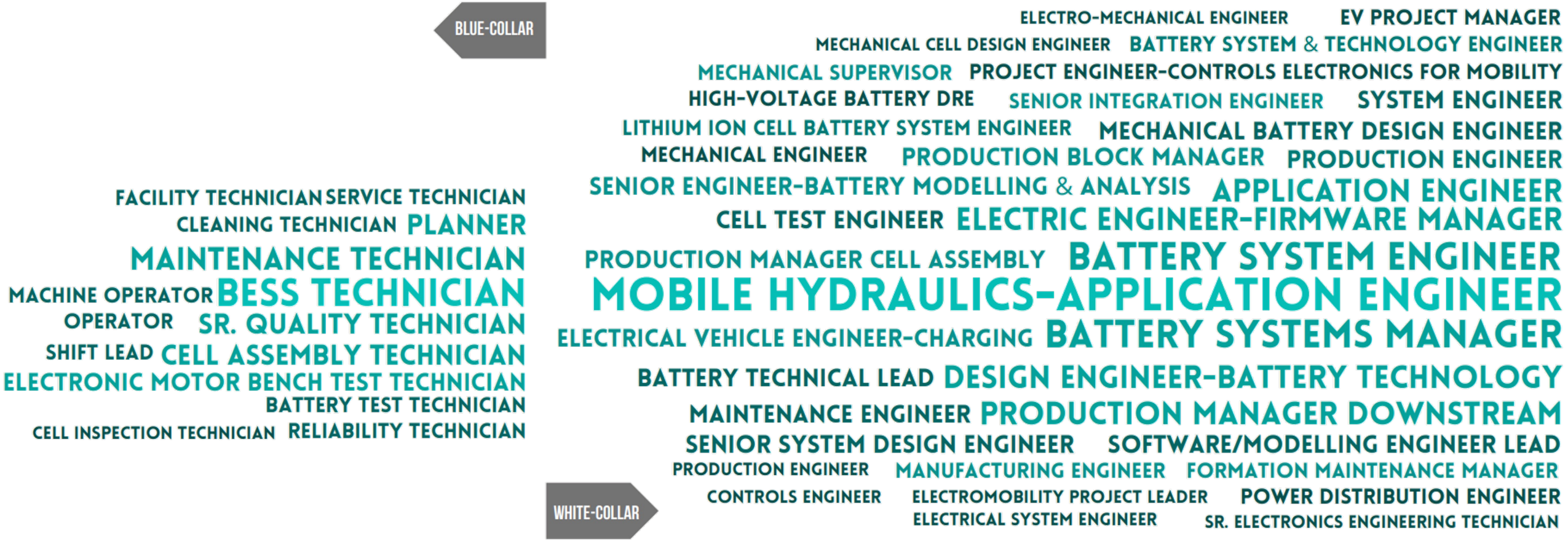
Battery Integration, Modules, and Packs

→ What Industry Demands



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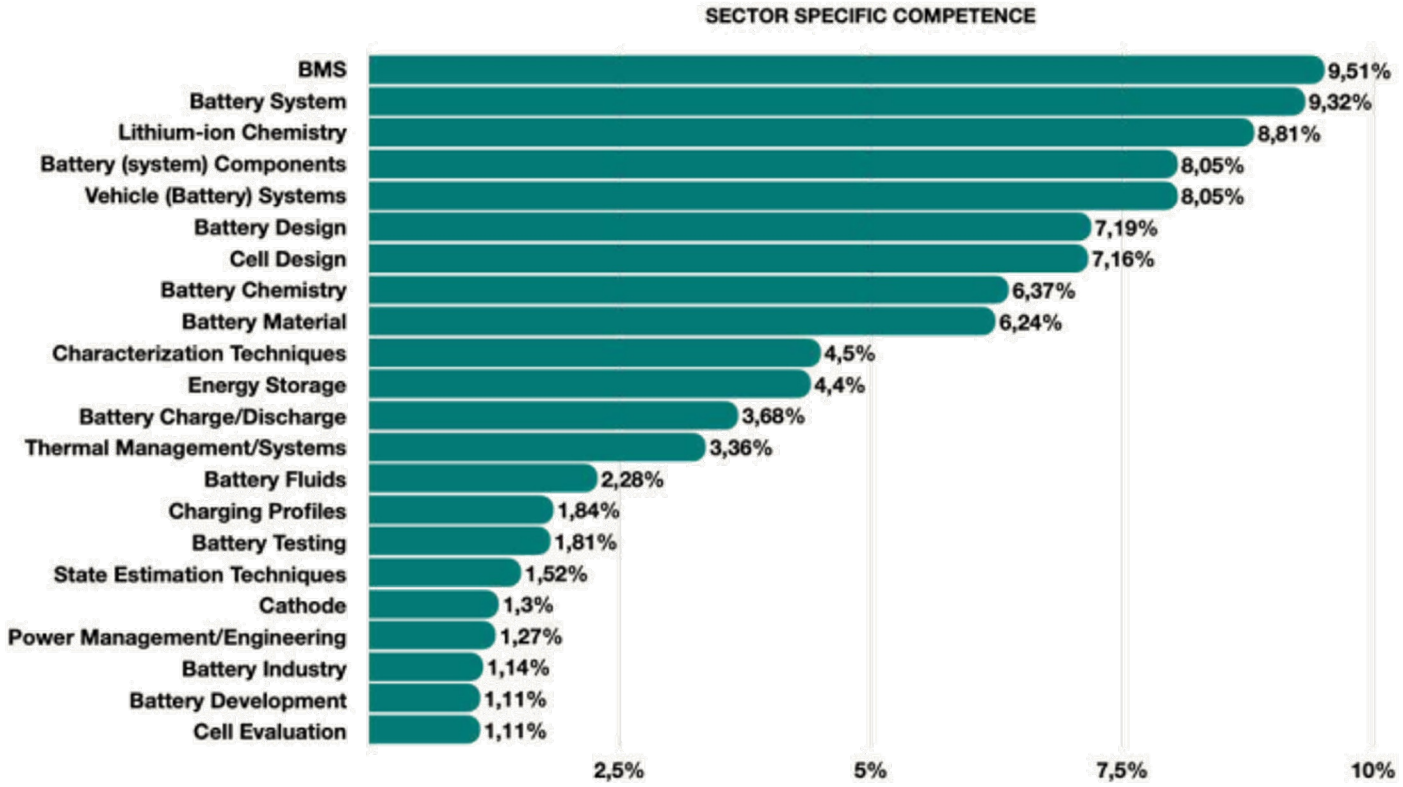
Battery Integration, Modules, and Packs – Skills and Competence

→ What Industry Demands



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Battery Integration, Modules, and Packs – Skills and Competence

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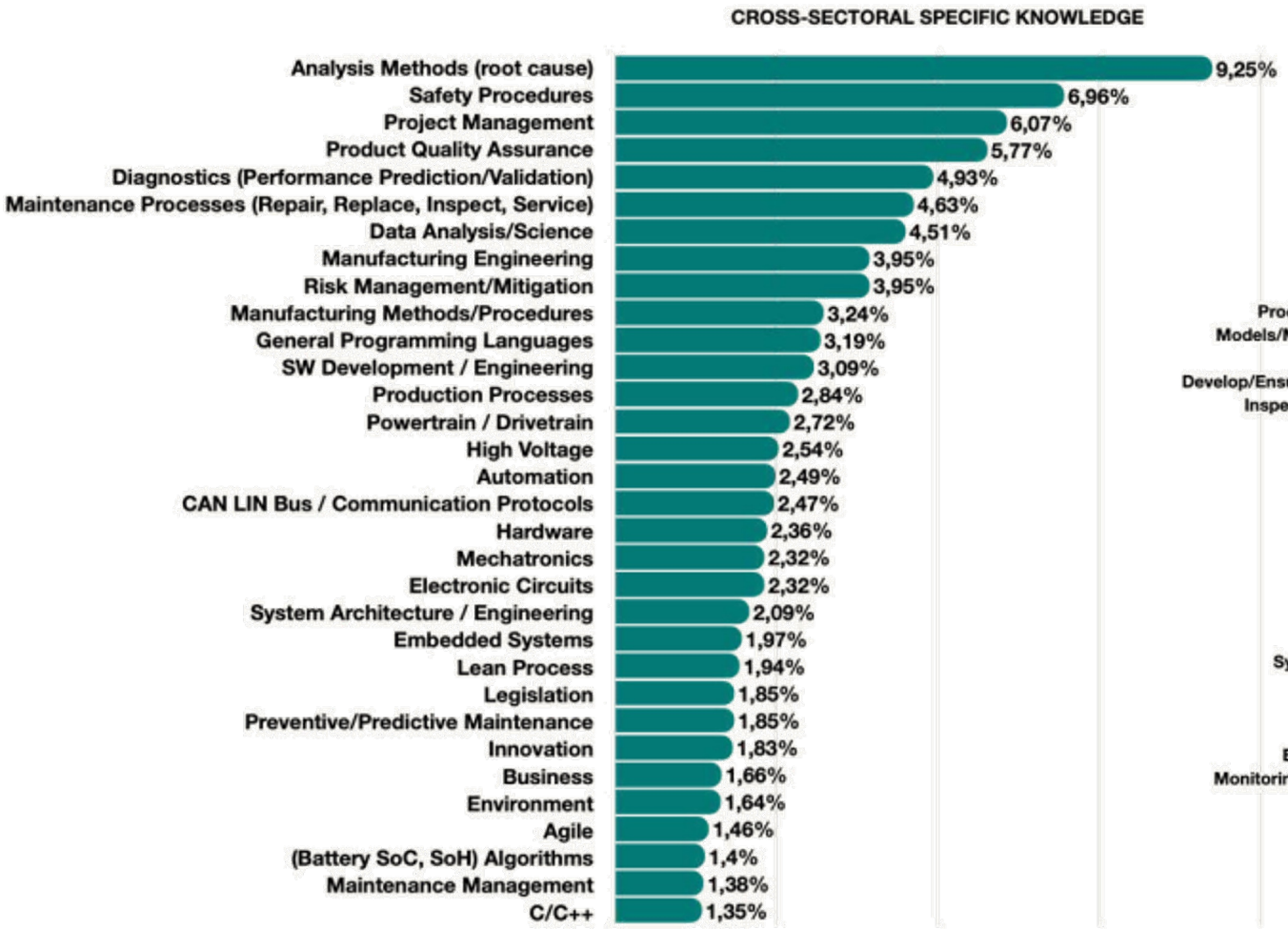

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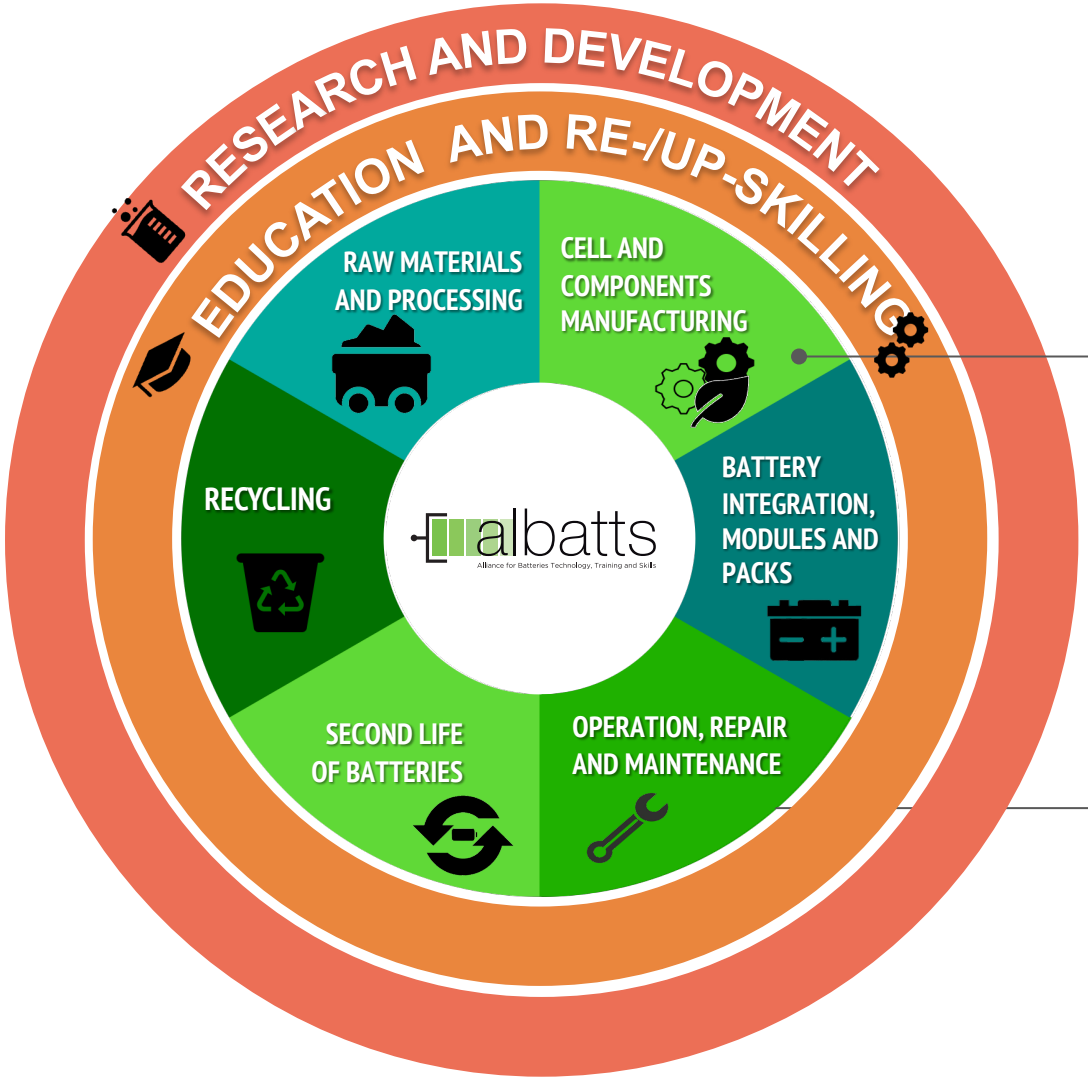
Glance on Needed Skills

Recycling and Second Life



- PRODUCTION
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Recycling and Second Life

→ What Industry Demands

The most extensive recruitment challenges currently concern the hiring of engineers and researchers. In the set-up phase of recycling plants, most staff are university-educated white-collar employees. However, after a plant becomes more established, the share of blue-collar employees with vocational education increases.

With the battery recycling-related positions, it is important to know battery technologies and recycling processes (chemical/physical) themselves.

Regarding environmental legislation, it is important to understand related national and EU directives. Safety is also important.

It is recommended to provide education and training in the following areas: (1) Environmental management and circular economy concepts; (2) Battery design - Battery components: Cell, anode, cathode, electrolyte and Precursor design, Electrode design, Separator design; (3) Battery material (material science) - Battery fluids and chemistry (Lithium-ion) and other materials and their properties; (4) Vehicle and other battery systems; (5) Material flow including procurement; (6) Battery testers; (7) Recycling knowledge to enable developing recycling programs - Recycling processes and technologies, R&D, Automation; (8) Production Planning.

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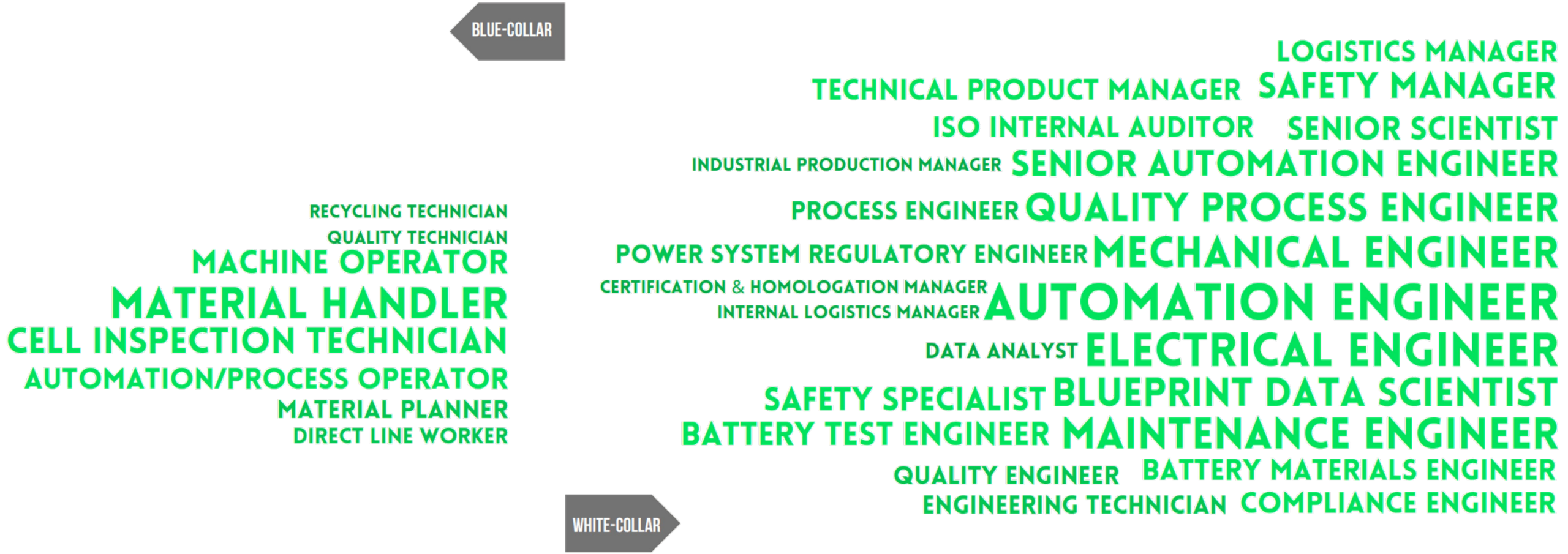
Battery Integration, Modules, and Packs

→ What Industry Demands



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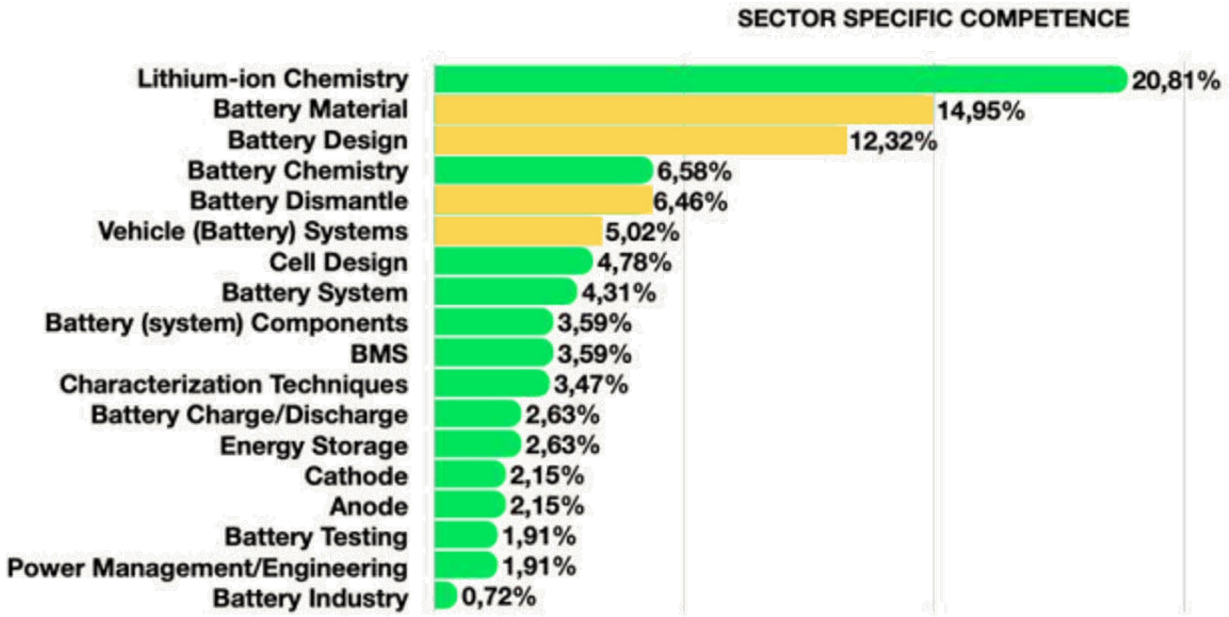
Battery Integration, Modules, and Packs – Skills and Competence

→ What Industry Demands



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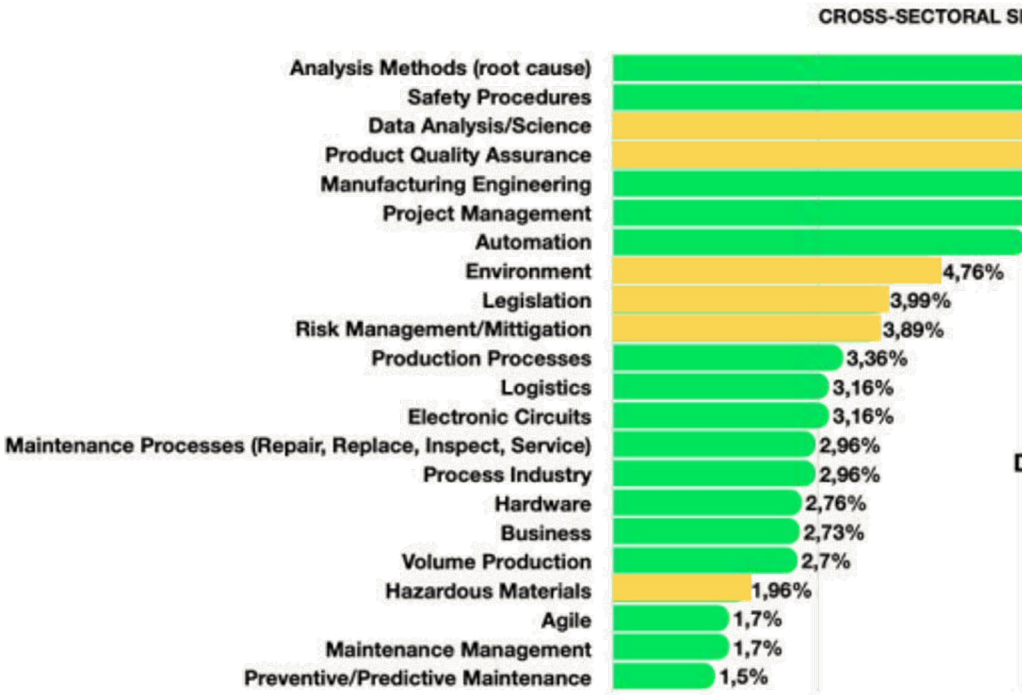
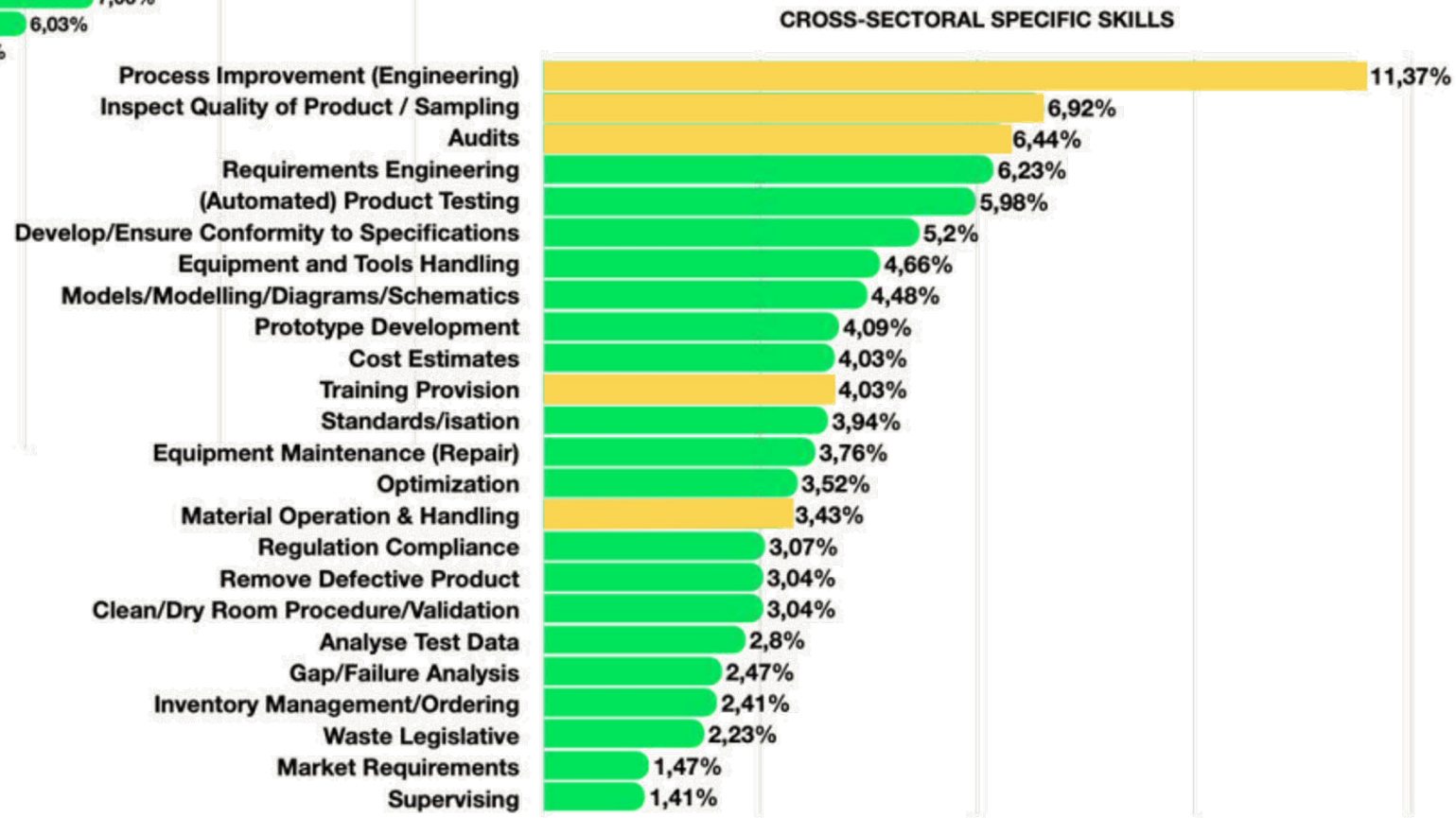
Battery Integration, Modules, and Packs – Skills and Competence

→ What Industry Demands





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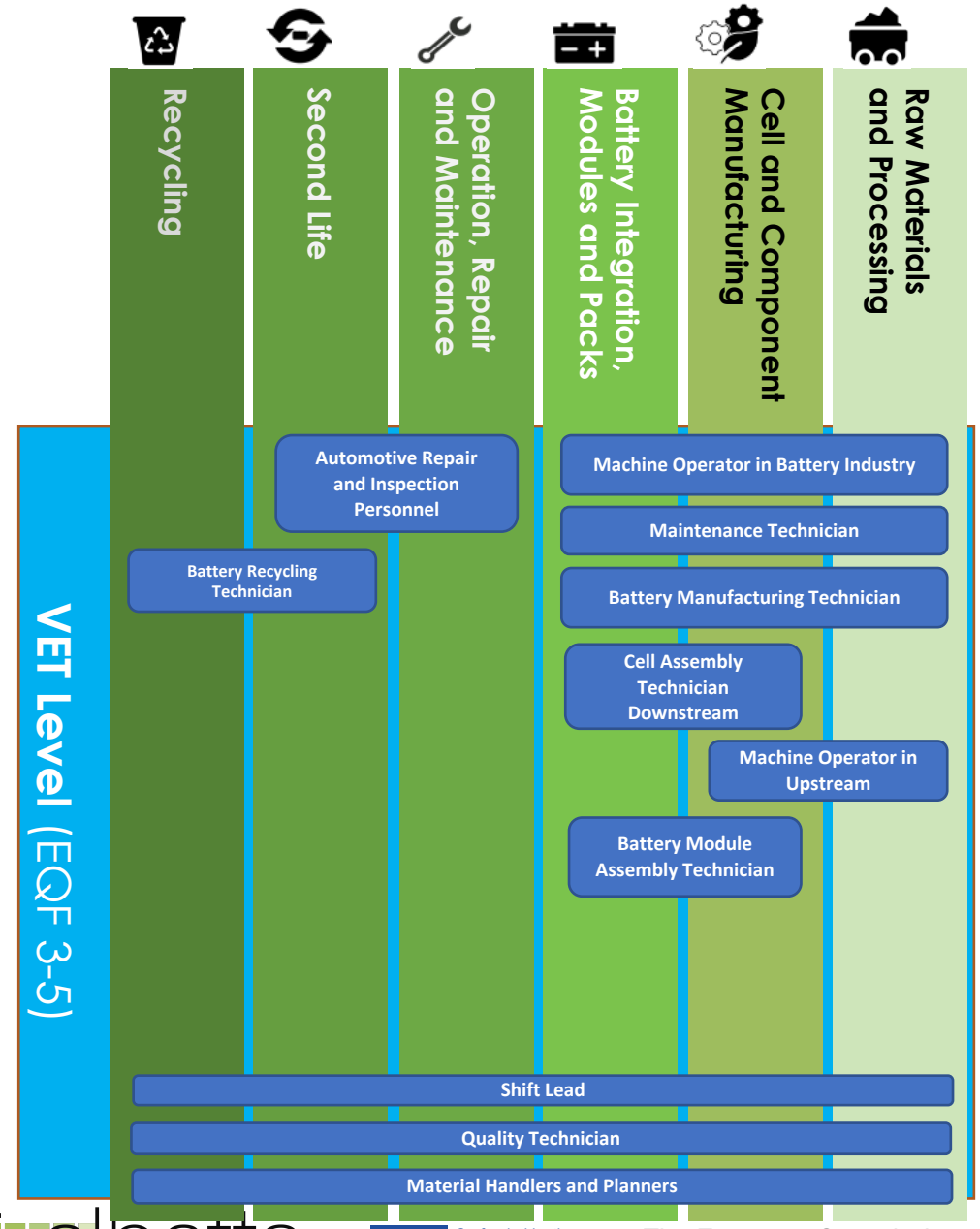
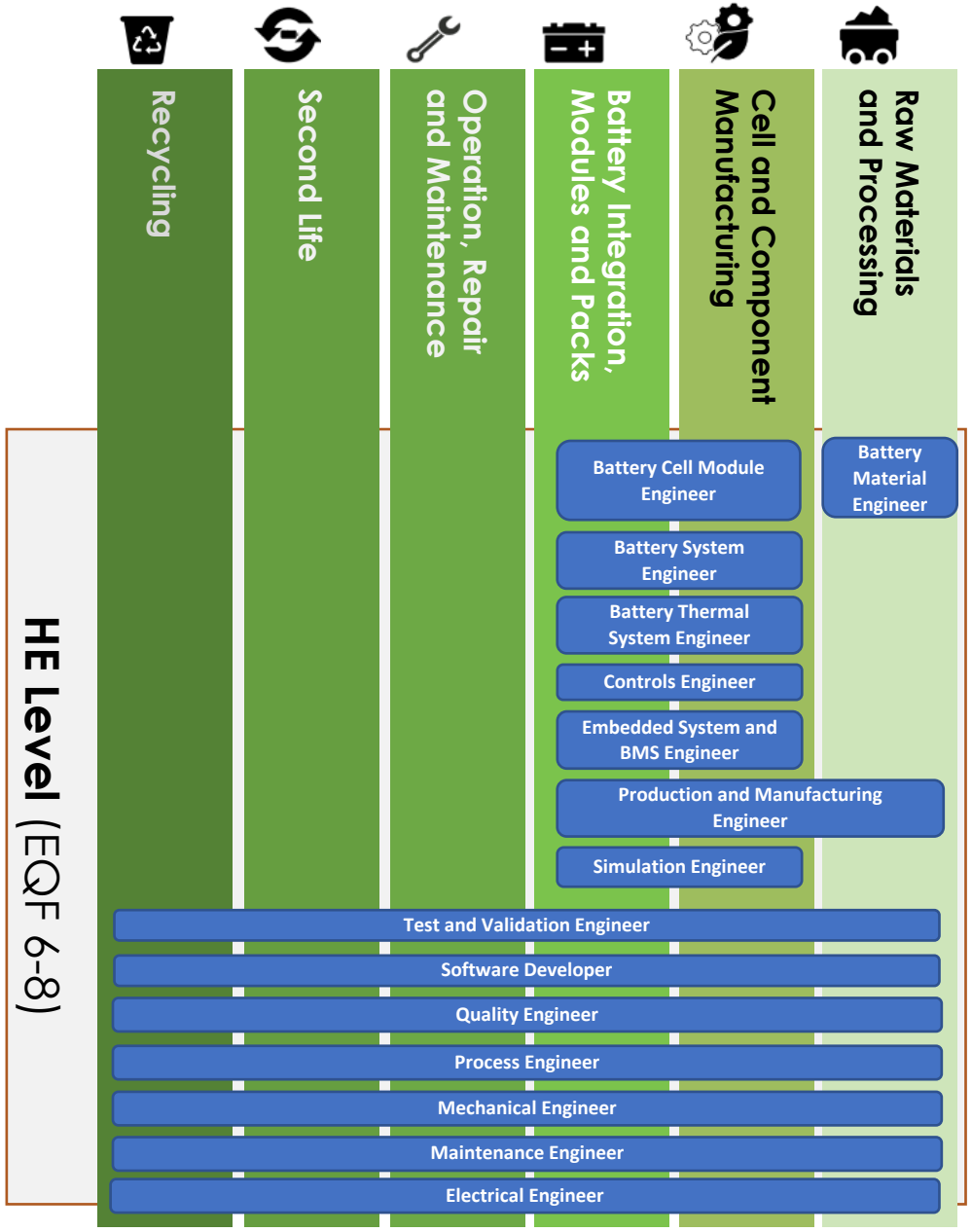
Defined Job Roles





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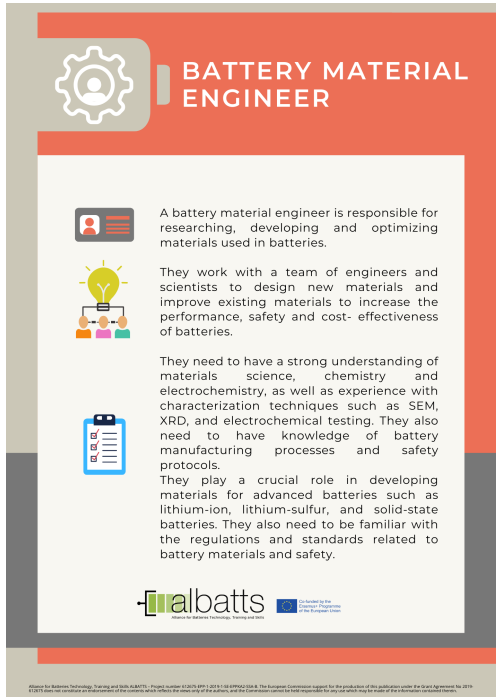
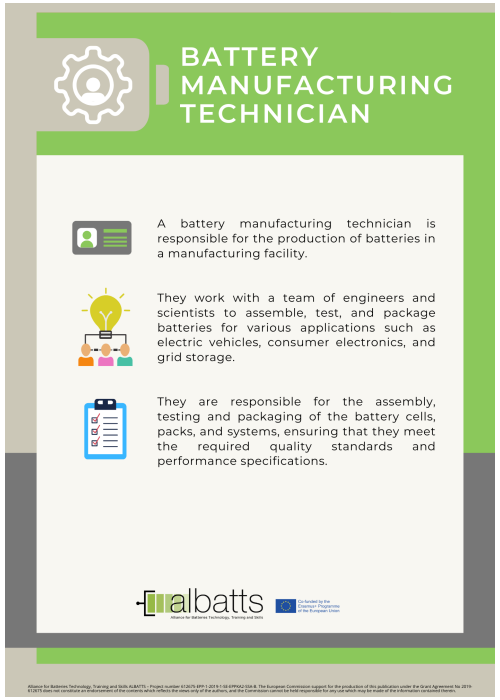
Skills Cards

26 job skills cards produced
(15 on HE level and 11 on VET level)





Summaries of Skills Cards (available in our website)

Each card has short description of the job role and
-Cross-sectoral specific competences
-Sector specific competences (has a big importance)
-General transversal competences
-Academic competences

ALBATTS SKILLS CARDS

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Reports

Intelligence in Mobile Battery Applications

R&D and technological perspectives for the battery sector

Sectoral Intelligence

Intelligence in Battery Manufacturing and Battery Technology

Stationary & Industrial Applications

Intelligence in Stationary and Industrial Battery Applications

Education and Training

State-of-art of job roles and education in the batteries' sector

Examples of reports released

REPORTS' HIGHLIGHTS

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JOIN OUR NETWORK THROUGH OUR WEBSITE AND GET FIRST-HAND INFORMATION ABOUT OUR WORK & BATTERY SECTOR SKILLS AGENDA!

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BATTERY POWERED

TOUR FOR SKILLS

Enabling a prepared education network for the battery ecosystem in Europe

Database of Training Courses
ASA Framework

Ing. Simona Jursová, Ph.D. (VSB-TUO)

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of the European Union

TOOLS

Learning Platform

- Online platform for hosting online courses
- More than 50 online courses now and growing
- Free of charge

Erasmus+

DRIVES
Development and Research on Innovative Vocational Education Skills

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ECEPE

aLIFEca

CYBERENG

EURO CLUSTERS

RESIST

eit InnoEnergy
Skills Institute

Courses Free of Charge

Learning Platform

Learning Platform

learn.skills-framework.eu

…and more coming

TOOLS

Learning Platform

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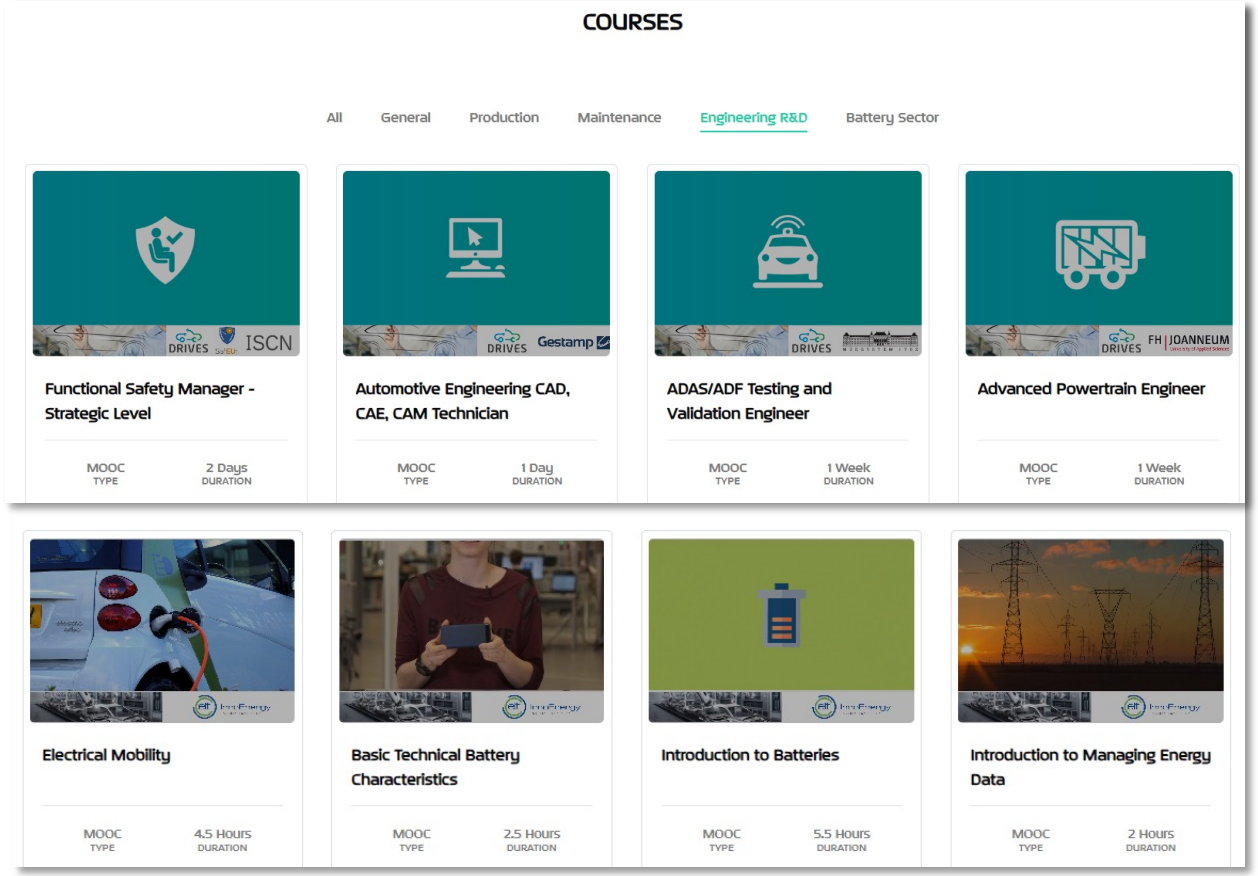
- More than 50 online courses now and growing
- Free of charge



Learning Platform

learn.skills-framework.eu

TOOLS

Skills Hub

- **One-stop shop database for training courses** in the Automotive-mobility ecosystem
- Definition and **recognition of job roles** and skills/competence concepts using **micro-badges**.
- More than **180 courses linked** - by providers according to coherent structure and mapping exercise

Skills Hub

Courses catalogue

Reference Job Roles Definitions

Digital Badges (microcredentials) in addition to existing full cert

Plug-In

Learning Platform

EUROSPI² Academy

TU Graz

educam

...and much more

Skills Hub

https://skills-framework.eu

TOOLS

Skills Hub

- **One-stop shop database for training courses** in the Automotive-mobility ecosystem
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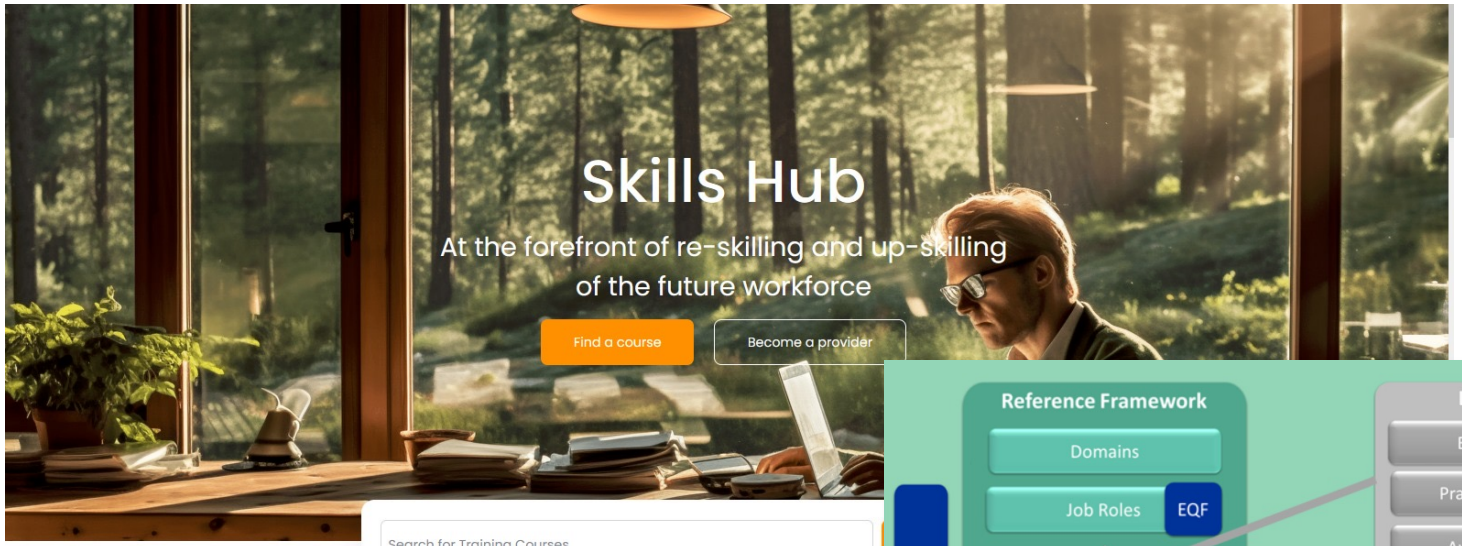

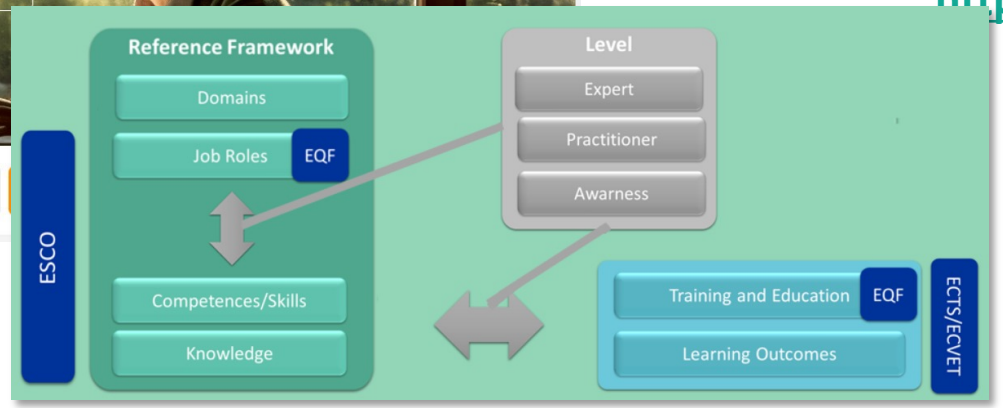

https://skills-framework.eu

Thank you!

albatts
Alliance for Batteries Technology, Training and Skills

FOLLOW US / GET INVOLVED

info@project-albatts.eu

https://www.project-albatts.eu

@ALBATTS – Alliance for Batteries Technology, Training and Skills

@ALBATTS1

@Project ALBATTS

JOIN OUR NETWORK THROUGH OUR WEBSITE AND GET FIRST-HAND INFORMATION ABOUT OUR WORK & BATTERY SECTOR SKILLS AGENDA!

BATTERY POWERED

TOUR FOR SKILLS

Enabling a prepared education network for the battery ecosystem in Europe

Tuesday, March 26th 2024 I 16:30 – 18:30

Utimia Madaleno, Eupportunity – ALBATTS WP Leader

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Alliance for Batteries Technology, Training and Skills

Co-funded by the Erasmus+ Programme of the European Union

THE PROJECT

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Alliance for Batteries Technology, Training and Skills

THE BLUEPRINT FOR SECTORAL COLLABORATION SKILLS IN THE BATTERY SECTOR

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Co-funded by the Erasmus+ Programme of the European Union

ALBATTS CONSORTIUM

Skellefteå municipality

eupportunity european affairs consulting

VSB TECHNICAL UNIVERSITY OF OSTRAVA

MERINOVA Technology Centre Vaasa

AIA AUTOMOTIVE INDUSTRY ASSOCIATION

atec

vamia

acea DRIVING MOBILITY FOR EUROPE

Corvus Energy

efacec

HE3DA

InterTradeCard

ISCN International Software Consulting Network

northvolt

Realizeit

SPIN 360

University of Maribor Faculty of Electrical Engineering and Computer Science

U.PORTO

University of Vaasa

Vestland County Council

20 EUROPEAN PARTNERS FROM 11 COUNTRIES REPRESENTING INDUSTRY AND EDUCATION

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ALBATTS STEERING COMMITTEE

acea
DRIVING MOBILITY FOR EUROPE

CLEPA
European Association of Automotive Suppliers

BATTERY 2030+

eit InnoEnergy

eit RawMaterials

EUROBAT

Wirtschaftsförderung Region Stuttgart

THE ALBATTS STEERING BOARD PROVIDED SUPPORT, GUIDANCE AND OVERSIGHT OF WORK PROGRESS

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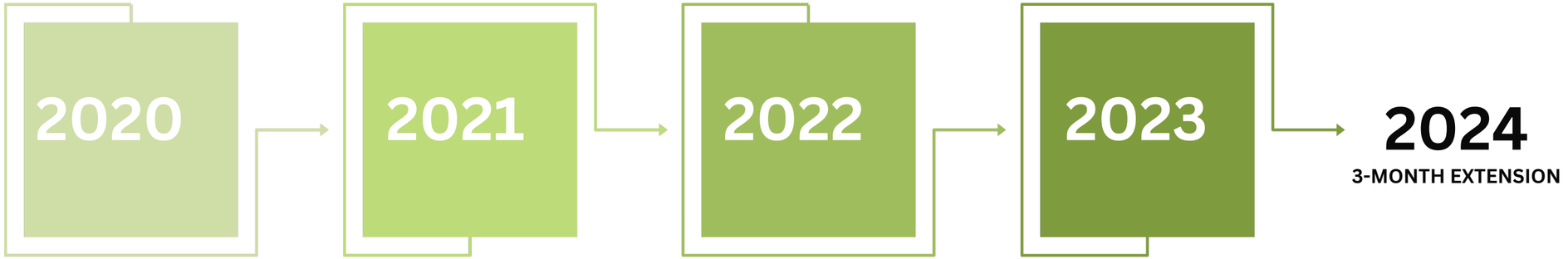
ALBATTS DURATION AND PURPOSE



ALBATTS GOAL WAS TO CONTRIBUTE TO THE GREEN MOBILITY IN EUROPE BY ESTABLISHING A BLUEPRINT FOR PREPAREDNESS OF FUTURE SKILLS ACROSS THE BATTERY VALUE CHAIN

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ALBATTS 2020 REVIEW

Year 1

Website

Launch of the ALBATTS website

Stakeholders

Launch of the ALBATTS Stakeholders Database

Covid-19

Recommendation of online courses during confinement

Policy

Involvement with the Pact for Skills

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MORE THAN 30 WEBINARS & WORKSHOPS

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Co-funded by the Erasmus+ Programme of the European Union

SPEAKERS IN WEBINARS & WORKSHOPS

More than 80 speakers helped ALBATTS research over the project's duration.

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ALBATTS NEWSLETTERS

REGULAR INFORMATION ON THE PROJECT'S ONGOING WORK, BUT ALSO INTERESTING INTERVIEWS AND ARTICLES, AS WELL AS INFORMATION ON POLICY MATTERS AND SECTOR RELATED EVENTS

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BATTERIES TEACHERS & TRAINERS FORUM

The BaTT Forum is an initiative that was launched by ALBATTS with the purpose of gathering current and future teachers and trainers to share ideas and good practices, work together and deepen their knowledge about the battery sector.

BATTERIES TEACHERS & TRAINERS FORUM

Co-funded by the Erasmus+ Programme of the European Union

Is now funded and further developed through the CaBatt - Capacity Building for Battery Teachers in VET, to develop a sustainable model for offering Erasmus+ courses for VET teachers.

SCAN TO JOIN THE BATT FORUM LINKEDIN GROUP

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ALBATTS REPORTS

INTELLIGENCE IN BATTERY SECTOR
STATE-OF-THE-ART OVERVIEW
RELEASE 1
D3.3

INTELLIGENCE IN
STATIONARY AND INDUSTRIAL
BATTERY APPLICATIONS
RELEASE 1
D4.1

INTELLIGENCE
IN THE BATTERY VALUE CHAIN
MOBILE BATTERY APPLICATIONS
RELEASE 1
D5.1

DESK RESEARCH REPORT IV
CHARGING BATTERIES OF EV
AND OTHER ELECTRIC MEANS OF
TRANSPORT - JOB ROLES & SKILLS
D5.10

SECTORAL SKILLS STRATEGY
FOR THE EUROPEAN BATTERY SECTOR
RELEASE 1
D3.6

BATTERY MANUFACTURING AND THE
ANATOMY OF A GIGAFACTORY
RELEASE 2
D4.4

DESK RESEARCH
FUTURE BATTERY TECHNOLOGIES
RELEASE 2
D5.4

STATE-OF-THE-ART OF
JOB ROLES AND EDUCATION
IN THE BATTERY SECTOR
D6.1

RECOMMENDATIONS FOR
THE EUROPEAN BATTERY SECTOR
RELEASE 1
D3.6

JOB ROLES & SKILLS RELEVANT TO THE
OPERATION, REPAIR & MAINTENANCE
OF STATIONARY BATTERIES
RELEASE 1
D4.5

JOB ROLES & SKILLS RELEVANT TO
THE OPERATION, REPAIR &
MAINTENANCE OF ELECTRIC
PASSENGERS CARS & VESSELS
RELEASE 1
D5.5

TRAINING AND EDUCATION
WORKPLAN
D6.2

MORE THAN 30 REPORTS RELEASED!

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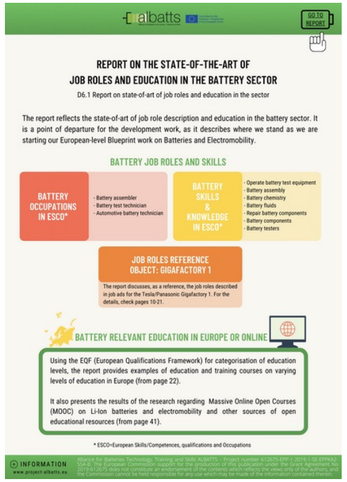
of the European Union

EXPLANATORY FACTSHEETS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GO TO REPORT

REPORT ON THE STATE-OF-THE-ART OF JOB ROLES AND EDUCATION IN THE BATTERY SECTOR

D6.1 Report on state-of-art of job roles and education in the sector

The report reflects the state-of-art of job role description and education in the battery sector. It is a point of departure for the development work, as it describes where we stand as we are starting our European-level Blueprint work on Batteries and Electromobility.

BATTERY JOB ROLES AND SKILLS

BATTERY OCCUPATIONS IN ESCO*
- Battery assembler
- Battery test technician
- Automotive battery technician

BATTERY SKILLS & KNOWLEDGE IN ESCO*
- Operate battery test equipment
- Battery assembly
- Battery chemistry
- Battery fluids
- Repair battery components
- Battery components
- Battery testers

JOB ROLES REFERENCE OBJECT: GIGAFACTORY 1

The report discusses, as a reference, the job roles described in job ads for the Tesla/Panasonic Gigafactory 1. For the details, check pages 10-21.

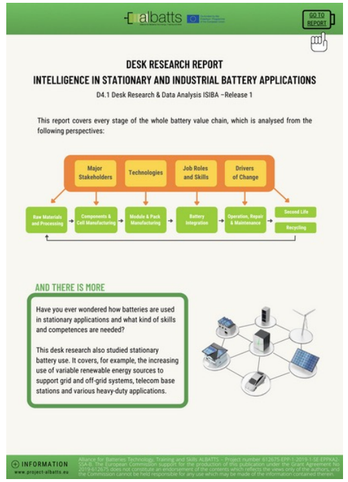
BATTERY RELEVANT EDUCATION IN EUROPE OR ONLINE

Using the EQF (European Qualifications Framework) for categorisation of education levels, the report provides examples of education and training courses on varying levels of education in Europe (from page 22).

It also presents the results of the research regarding Massive Online Open Courses (MOOC) on Li-ion batteries and electromobility and other sources of open educational resources (from page 41).

* ESCO=European Skills/Competences, qualifications and Occupations

INFORMATION www.project-albatts.eu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GO TO REPORT

DESK RESEARCH REPORT INTELLIGENCE IN STATIONARY AND INDUSTRIAL BATTERY APPLICATIONS

D4.1 Desk Research & Data Analysis ISIBA –Release 1

This report covers every stage of the whole battery value chain, which is analysed from the following perspectives:

Major Stakeholders | Technologies | Job Roles and Skills | Drivers of Change

Raw Materials and Processing → Components & Cell Manufacturing → Module & Pack Manufacturing → Battery Integration → Operation, Repair & Maintenance → Second Life → Recycling

AND THERE IS MORE

Have you ever wondered how batteries are used in stationary applications and what kind of skills and competences are needed?

This desk research also studied stationary battery use. It covers, for example, the increasing use of variable renewable energy sources to support grid and off-grid systems, telecom base stations and various heavy-duty applications.

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albatts ANALYSIS OF FUTURE NEEDS RELEASE 1

KEY MESSAGES AND NEEDS

FOR THE DEVELOPMENT OF THE ROADMAP FOR THE EU BATTERY SECTOR

albatts webinars

These key messages and needs emerged from the main findings on sectoral intelligence following the workshops organized in January 2021 with the purpose of discussing the EU battery sector needs within the following themes: (1) electronic vehicles manufacturing and battery integration – future qualifications needed; (2) stationary energy storage in grids and telecom applications: safety and future job roles and skills; (3) battery cell manufacturing – job roles and skills; and (4) vessels of the future: maritime batteries – job roles and skills.
The complete Analysis of Future Needs is in our website under Project Publications.

MOBILE APPLICATIONS

KEY MESSAGES
- Electrification is considered to be the main technological solution to achieving carbon neutrality in transport by 2050 in accordance with the Green Deal objectives.
- An important number of jobs in the supply chain is likely to be lost due to electrification of the vehicles.
- Demand for the electric vehicles is on the rise.
- Assembly capacities are growing constantly which brings about a shortage of skilled professionals and consequent skills and competences.
- Renewable energy and maritime electrification is a perfect combination for maritime investments in electrification.

NEEDS
- To stimulate the battery production in the EU and overcome consequent staff and competence shortage it is important to roll out and support dedicated projects and initiatives such as:
  - European Battery Alliance;
  - The European Skills Agenda and Pact for Skills;
  - Automotive Skills Alliance;
  - European Battery Innovation – IPCEI;
  - DRIVES, ALBATTS and other Blueprint projects.
- Shortage of skilled workforce and consequent competences must be addressed on the national and regional level as well:
  - Implementation of greener policies;
  - Support for battery producers should be encouraged.
- Charging infrastructure in Europe needs to be improved.

This covers the maritime applications and port charging infrastructure as well.

PAGE 1/3

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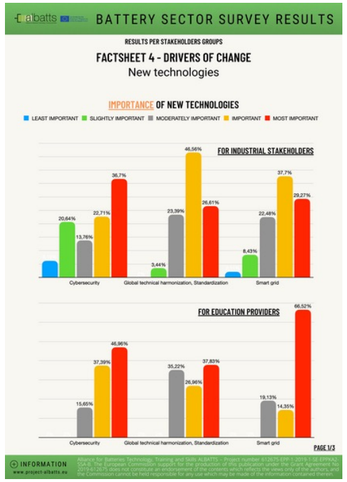
albatts BATTERY SECTOR SURVEY RESULTS

RESULTS PER STAKEHOLDERS GROUPS

FACTSHEET 4 - DRIVERS OF CHANGE
New technologies

IMPORTANCE OF NEW TECHNOLOGIES

LEAST IMPORTANT | SLIGHTLY IMPORTANT | MODERATELY IMPORTANT | IMPORTANT | MOST IMPORTANT

FOR INDUSTRIAL STAKEHOLDERS

FOR EDUCATION PROVIDERS

PAGE 1/3

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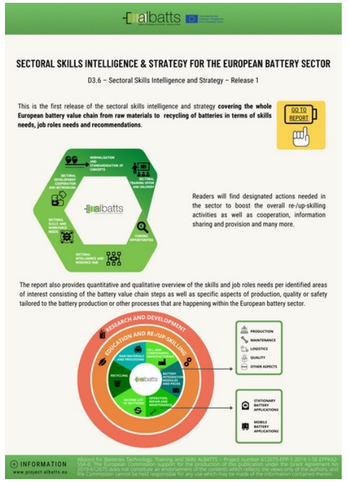
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SECTORAL SKILLS INTELLIGENCE & STRATEGY FOR THE EUROPEAN BATTERY SECTOR

D3.6 – Sectoral Skills Intelligence and Strategy – Release 1

This is the first 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**.

GO TO REPORT

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 overview of the skills and 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.

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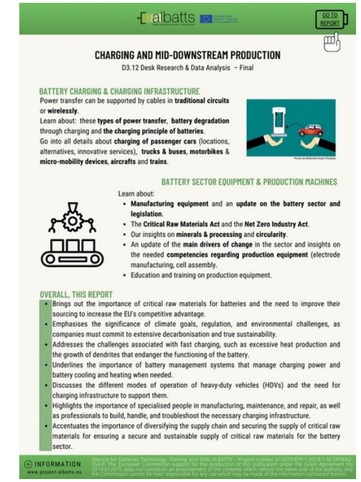
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GO TO REPORT

CHARGING AND MID-DOWNSTREAM PRODUCTION

D3.12 Desk Research & Data Analysis – Final

BATTERY CHARGING & CHARGING INFRASTRUCTURE

Power transfer can be supported by cables in **traditional circuits** or **wirelessly**.
Learn about: these **types of power transfer**, **battery degradation** through charging and **the charging principle of batteries**.
Go into all details about **charging of passenger cars** (locations, alternatives, innovative services), **trucks & buses**, **motorbikes** & **micro-mobility devices**, **aircrafts** and **trains**.

BATTERY SECTOR EQUIPMENT & PRODUCTION MACHINES

Learn about:
- **Manufacturing equipment** and an **update on the battery sector and legislation**.
- The **Critical Raw Materials Act** and the **Net Zero Industry Act**.
- Our insights on **minerals & processing** and **circularity**.
- An update of the **main drivers of change** in the sector and insights on the needed **competencies regarding production equipment** (electrode manufacturing, cell assembly.
- Education and training on production equipment.

OVERALL, THIS REPORT
- Brings out the importance of critical raw materials for batteries and the need to improve their sourcing to increase the EU's competitive advantage.
- Emphasises the significance of climate goals, regulation, and environmental challenges, as companies must commit to extensive decarbonisation and true sustainability.
- Addresses the challenges associated with fast charging, such as excessive heat production and the growth of dendrites that endanger the functioning of the battery.
- Underlines the importance of battery management systems that manage charging power and battery cooling and heating when needed.
- Discusses the different modes of operation of heavy-duty vehicles (HDVs) and the need for charging infrastructure to support them.
- Highlights the importance of specialised people in manufacturing, maintenance, and repair, as well as professionals to build, handle, and troubleshoot the necessary charging infrastructure.
- Accentuates the importance of diversifying the supply chain and securing the supply of critical raw materials for ensuring a secure and sustainable supply of critical raw materials for the battery sector.

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ALBATTS released over 40 FACTSHEETS highlighting main findings in the project‘s reports!

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ALBATTS 2023 REVIEW

Year 4

Launching of Skills Cards

A series of papers describing occupational profiles - and corresponding competencies - within the scope of battery manufacturing, e-mobility and stationary battery storage.

Free Training

ONLINE COURSES

The ALBATTS Courses are available through the Automotive Skills Alliance (ASA), an association created through the bridging of the projects' ALBATTS and DRIVES activities.

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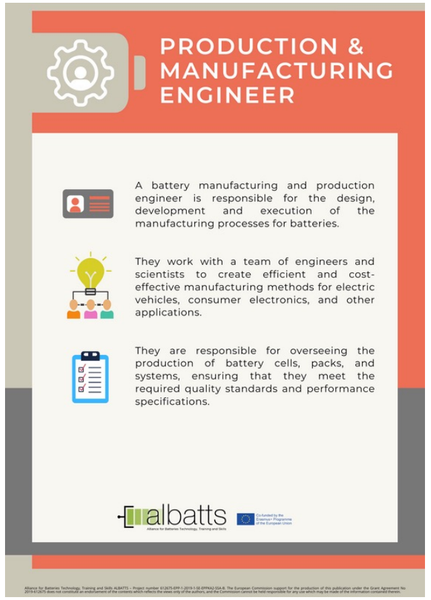
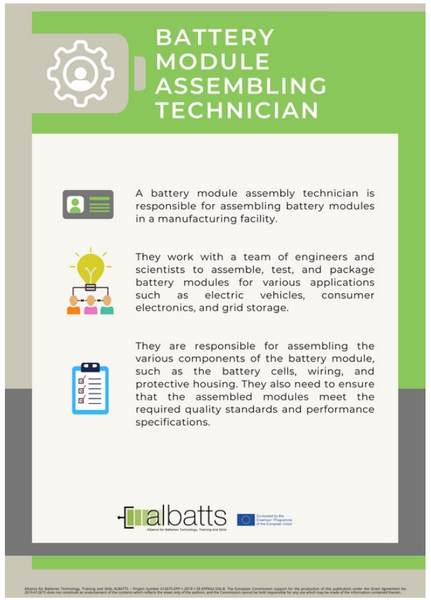
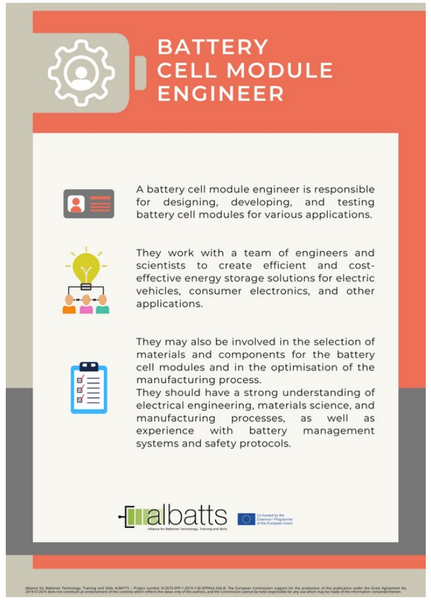
SKILLS CARDS







ALBATTS created the ALBATTS Skills Cards, a series of papers describing a number of occupational profiles within the scope of battery manufacturing, e-mobility and stationary battery storage.

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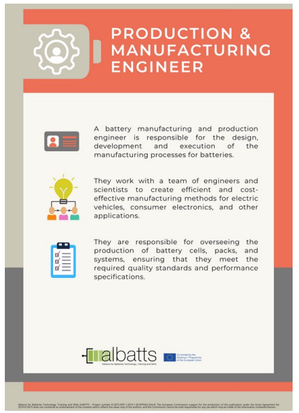
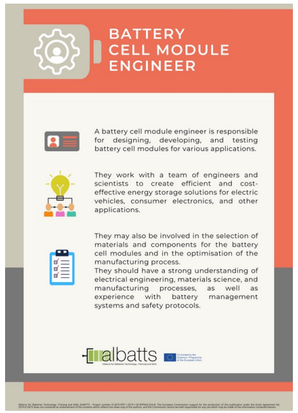
SKILLS CARDS





The Skills Cards are a practical and helpful tool for...

INDUSTRY/COMPANIES

SCHOOLS (VET & HE)

EDUCATION AUTHORITIES

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FREE ONLINE COURSES

ALBATTS created a series of basic and advanced free online courses, covering the whole battery value chain.

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HANDBOOK COMING SOON

To be published in March 2024

Will be available through the homepage of the ALBATTS Website

Target group: education providers, teachers, companies, education authorities

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GRAZIE !

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