albatts
Alliance for Batteries Technology, Training and Skills

European Skills Agenda in the Automotive Ecosystem

Alliance for **B**atteries **T**echnology, **T**raining and **S**kills
2019-2023

Dr. Jakub Stolfa, VSB-TUO, ALBATTS Project WP Supervisor and DRIVES Project Coordinator

ALBATTS Workshops: Electric Vehicle Manufacturing & Battery Integration – Future Qualifications Needed, 27th January 2021

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

Automotive Skills Agenda

The road until now

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

Automotive Skills Agenda - Background

- **Automotive ecosystem** is facing **unprecedent transformation**

- Caused by, e.g.
  - Long-term shift towards **zero-emission**, **digital mobility**, **new mobility concepts**, or **carbon neutrality** by 2050
  - Short-term **COVID impact**

- Impact to the workforce – **cca. 15 million people employed** in European automotive value-chain
  - **Jobs endangered VS. struggle to attract and recruit qualified people for new and emerging jobs**

Sustainable, massive and pragmatic approach towards education and training (up-/re-skilling) in the ecosystem is needed more than ever before

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

Automotive Skills Agenda – Initiatives

- **High Level Group GEAR 2030 (2015 - 2017) - Final report** on automotive competitiveness and sustainability

- New Skills Agenda for Europe (2016) with action **The Blueprint for Sectoral Cooperation on Skills**

DRIVES
Development and Research on Innovative Vocational Education Skills

Automotive Sector
Ongoing (2018 - 2021)

albatts
Alliance for Batteries Technology, Training and Skills

Batteries Sector
Ongoing (2019 - 2023)

- European Skills Agenda (2020) with action **Pact for Skills (launched November 2020)**

ASA AUTOMOTIVE SKILLS ALLIANCE

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

Automotive Skills Agenda

DRIVES Blueprint Project

Development and Research on Innovative Vocational Education Skills

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

Automotive Skills Agenda –

DRIVES
Development and Research on Innovative Vocational Education Skills

- **24 full project partners from 11 European Countries, including ACEA, CLEPA, ETRMA**

- **Main results so far:**
  - Strategy and Roadmap including also Sectoral Analysis of Skills Demand and Offer

  - DRIVES Job Roles and DRIVES MOOCs to offer directly to companies and also to education and training providers to their courses

  - DRIVES Framework – initial version of EU-wide database of reference job roles and training courses provided across Europe and possibility of digital badges for skills awards

- **See more at: www.project-drives.eu**

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

Automotive Skills Agenda

AUTOMOTIVE SKILLS ALLIANCE

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

Automotive Skills Agenda – AUTOMOTIVE SKILLS ALLIANCE

- ASA is implementation of European Skills Agenda, **Pact for Skills in Automotive Ecosystem**

- The ASA mission is to bring together different kind of stakeholders involved in the Automotive ecosystem and to ensure continuous, pragmatic and **sustainable cooperation on the skills** agenda in the ecosystem. Including Massive workforce **upskilling and reskilling across the automotive ecosystem**

- It further aims to ensure collaboration on a **European level, as well as on national and regional levels**, between all the involved stakeholders in the Automotive ecosystem

- See more at: https://bit.ly/35TKEVO
- Get involved: info@skills-alliance.eu

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

Automotive Skills Agenda

albattsS Blueprint Project

Alliance for Batteries Technology, Training and Skills

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

What is **ALBATTS**?

- 4-year (2019-2023) Erasmus+ funded project
- Blueprint for Sectoral Cooperation on Skills in Battery sector
- Contributes to the electrification of transport, green energy and environmental goals in Europe
- Gathers demand and supply sides of competences in the battery value chain

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

What is **ALBATTS**?

- Identification of skills and job roles needs
- Enabling education sector to provide education and training for the future workers and specialists needed by the battery sector
- Set up clear sectoral skills strategy
- Covers the battery life cycle - batteries developed for and used in both stationary and mobile applications

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

Partners

Skellefteå municipality

AIA AUTOMOTIVE INDUSTRY ASSOCIATION

atec

eupportunity

MERINOVA TECHNOLOGY CENTRE

vamia

VSB TECHNICAL UNIVERSITY OF OSTRAVA

ACEA European Automobile Manufacturers Association

APIA ASOCIAȚIA PRODUCĂTORILOR ȘI IMPORTATORILOR DE AUTOMOBILE

Corvus Energy

efacec

U.PORTO UNIVERSIDADE DO PORTO

HE3DA

ISCN International Software Consulting Network

northvolt

Realize it

Spin360

Univerza v Mariboru

Vaasan yliopisto UNIVERSITY OF VAASA

Vestland fylkeskommune

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

ALBATTS

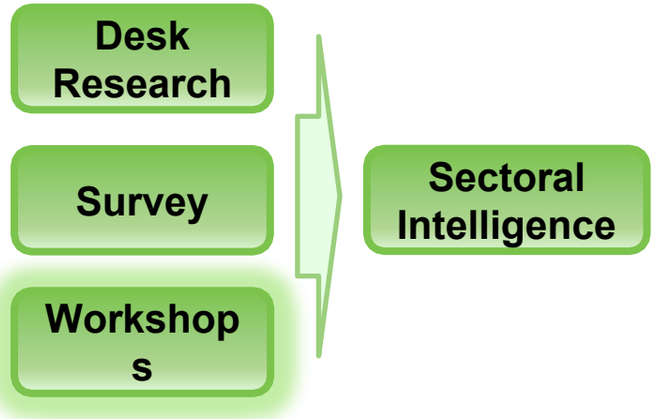
Sectoral Intelligence

Q1: What is going on?

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

ALBATTS Workshop Series

- Brings stakeholders together to participate on the skills intelligence updates and consult on the latest inputs
- Workshop Series starts by 2021 and will be hold till 2023

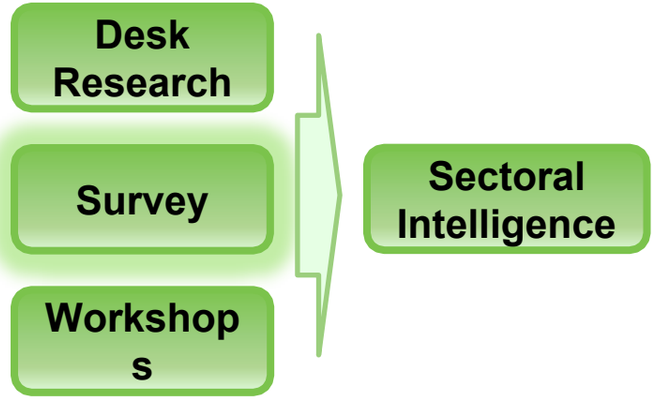


Co-funded by the Erasmus+ Programme of the European Union

ALBATTS Online Survey

- Online Survey is focused on detailed analysis of skills and job roles needed in the sector

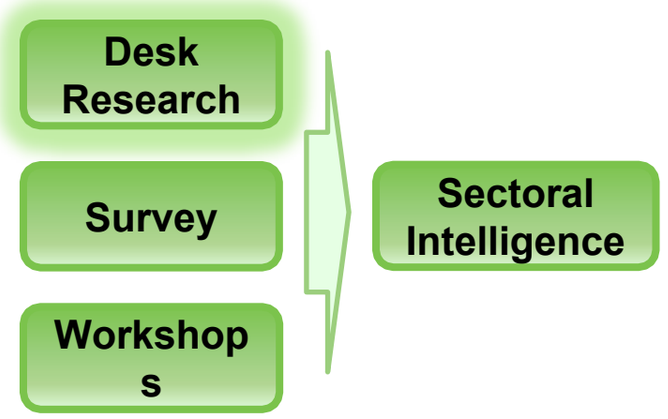
- Please, participate in online questionnaire: https://stakeholders.project-albatts.eu/s/survey2020



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

ALBATTS Desk Research

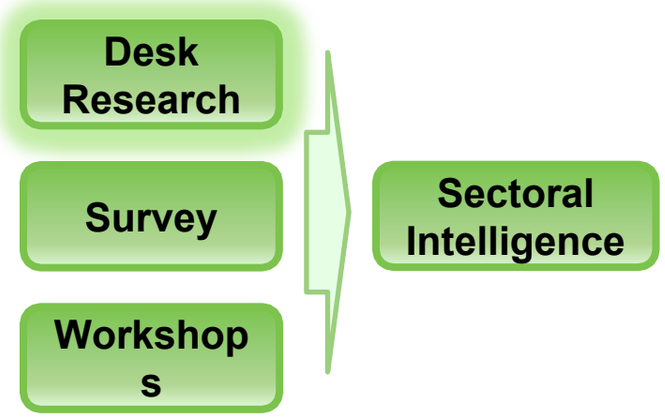
- Desk research provide screening of the latest information relevant for skills agenda in Battery Sector
- Desk Research starts by 2020 and will be hold till 2023



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

ALBATTS Desk Research

- D3.3 Desk Research and Data Analysis (Nov 20) - Overview of the Battery Sector
- D4.1 Intelligence in Stationary and Industrial Battery Applications – Desk Research Report (Aug 20) – Details related to battery application sub-sector
- D5.1 Intelligence in Mobile Battery Applications – Desk Research Report (Aug 20) – Details related to battery application sub-sector



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

ALBATTS

Education and Training

Q2: How can we adress the education and training needs?

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

ALBATTS will…

- Analyse new job roles/skills
- Suggest learning objectives
- Develop course plans
- Develop learning material
- Try out adaptive learning
- Pilot-test innovative courses
- Train-the-trainer guidelines
- Network!
- Use European instruments
- Implement results

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

ALBATTS

Desk Research Initial Findings

EV Manufacturing & Battery Integration

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

Job Roles & Skills – Desk Research I.

Basic **skills/knowledge** for EV battery production and integration:

- Battery packs and modules production and design
- Battery testing and analysis, embedded systems and battery management systems knowledge
- Software development
- Specific battery integration tehchniques
- Data Science

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

Job Roles & Skills – Desk Research I.

Most frequent **job roles** for EV battery production and integration:

- BMS and embedded system engineers, battery systems engineers
- Software developers
- Data Scientists
- Module and pack design engineers (electrical, mechanical, simulations, test engineers)

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

albatts
Alliance for Batteries Technology, Training and Skills

To get involved with the albatts stakeholders group:

Stakeholder registration **here**

LinkedIn Group - European Battery Skills Agenda **here**

Thank you

Follow us on:

Web: https://www.project-albatts.eu

LinkedIn: LinkedIn

Facebook: Facebook

Twitter: Twitter (@ALBATTS1)

Mail: info@project-albatts.eu

Presenter
Dr. Jakub Stolfa
jakub.stolfa@vsb.cz
https://twitter.com/jakub_stolfa

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

DAIMLER

ALBATTS Automotive Webinar

Dr. Oliver Fischer, Head of Daimler Culture, Talent & Learning

Jan 27, 2021

Daimler consists of three legally independent companies

Daimler facts & figures for 2019

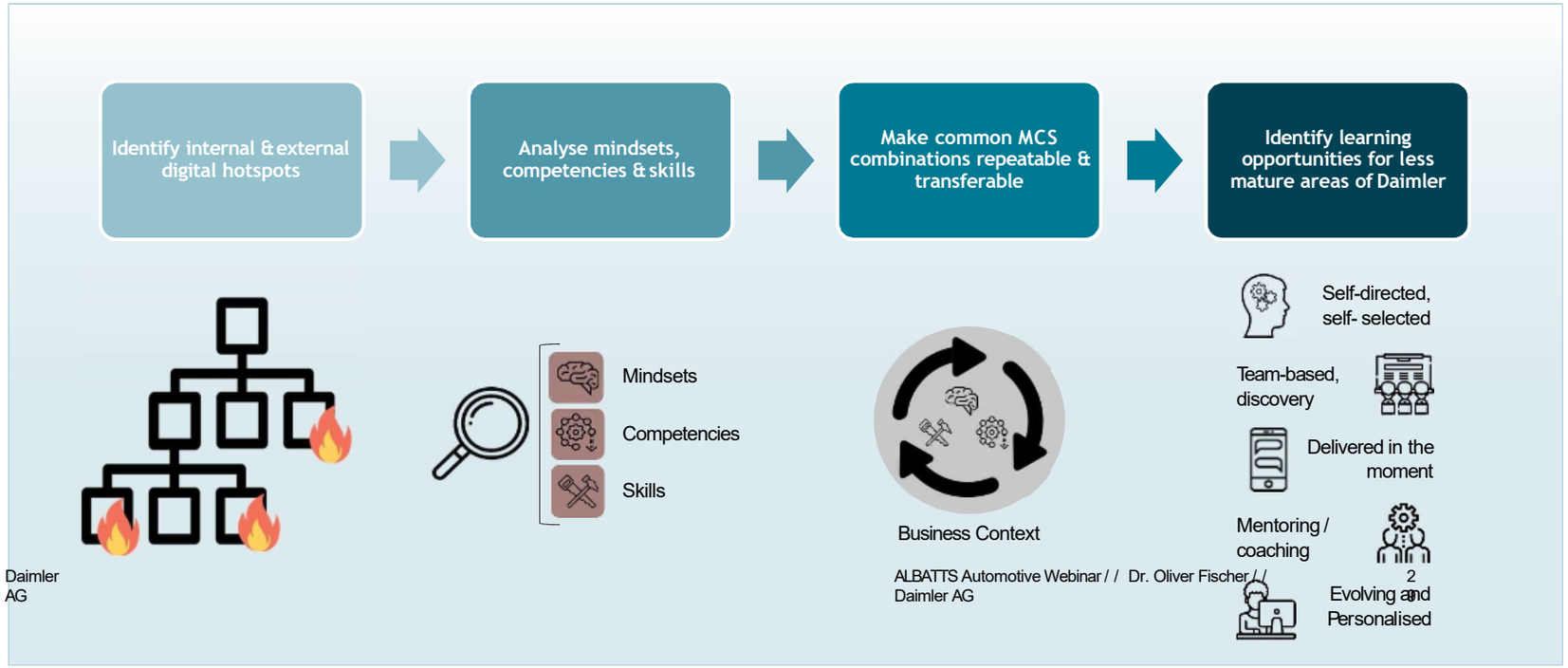
Overview (in m €)	**2019**	**2018**
Revenues	172,745	167,362
EBIT	4,329	11,132
Net Profit	2,709	7,582
R&D expenditure	9,662	9,107
Free cash flow industrial business	1,368	2,898

Daimler facts & figures
Q1-3 2020

Overview (in m €)	Q1-3 2020	Q1-3 2019
Revenues	107,688	125,618
EBIT	2,005	3,930
Net Profit	420	2,720
R&D expenditure	6,735	7,236
Free cash flow industrial business	3,508	-522

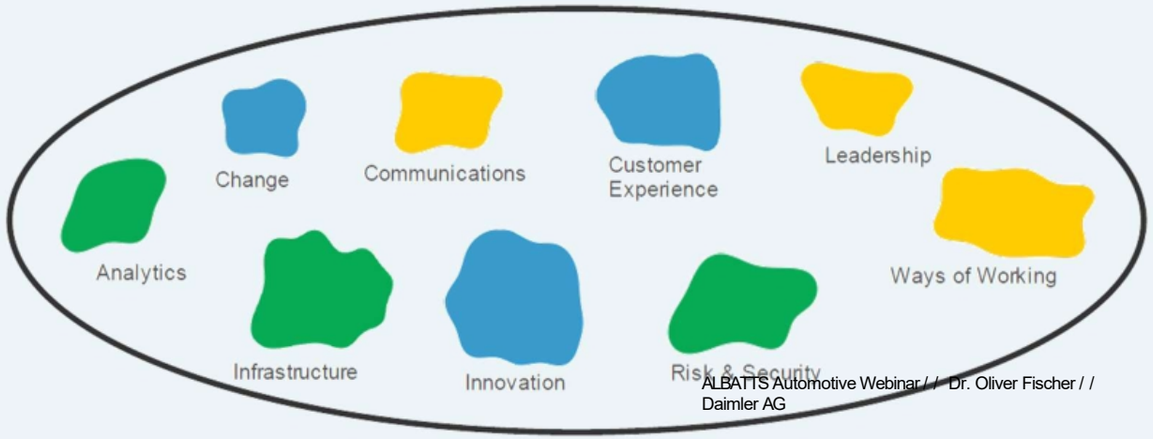
Key Elements of the Daimler Strategy

We advise on future qualification needs:
Taking mindsets, competencies, and skills into account.



Competencies required for the Digital Transformation: Redrawn from a broad set of disciplines & cover a wide array of domains of knowledge.

- Internal and external digital hotspots combine expertise from different domains, and have high numbers of employees that are hybrids.
- These hybrids have strengths in a combination three types of competencies: **technical** competency, **enabling** competency or a **transformational** competency.



Example: Mercedes-Benz “Upskilling in the Transformation”
Different requirements towards qualification

Example: Daimler Trucks “Qualification Electric Specialist”
Modular Design for Basic Qualification

Physics

Electrical Engineering

Lithium Ion Battery

Experience

Safety, Standards & Regulations

…

Thank you!

ACEA

European Automobile Manufacturers Association

ACEA PERSPECTIVE ON THE EU POLICY FOR E-MOBILITY AND SKILLS

ALBATTS WORKSHOP

27 January 2021

PETR DOLEJŠÍ
Director Mobility and Sustainable Transport

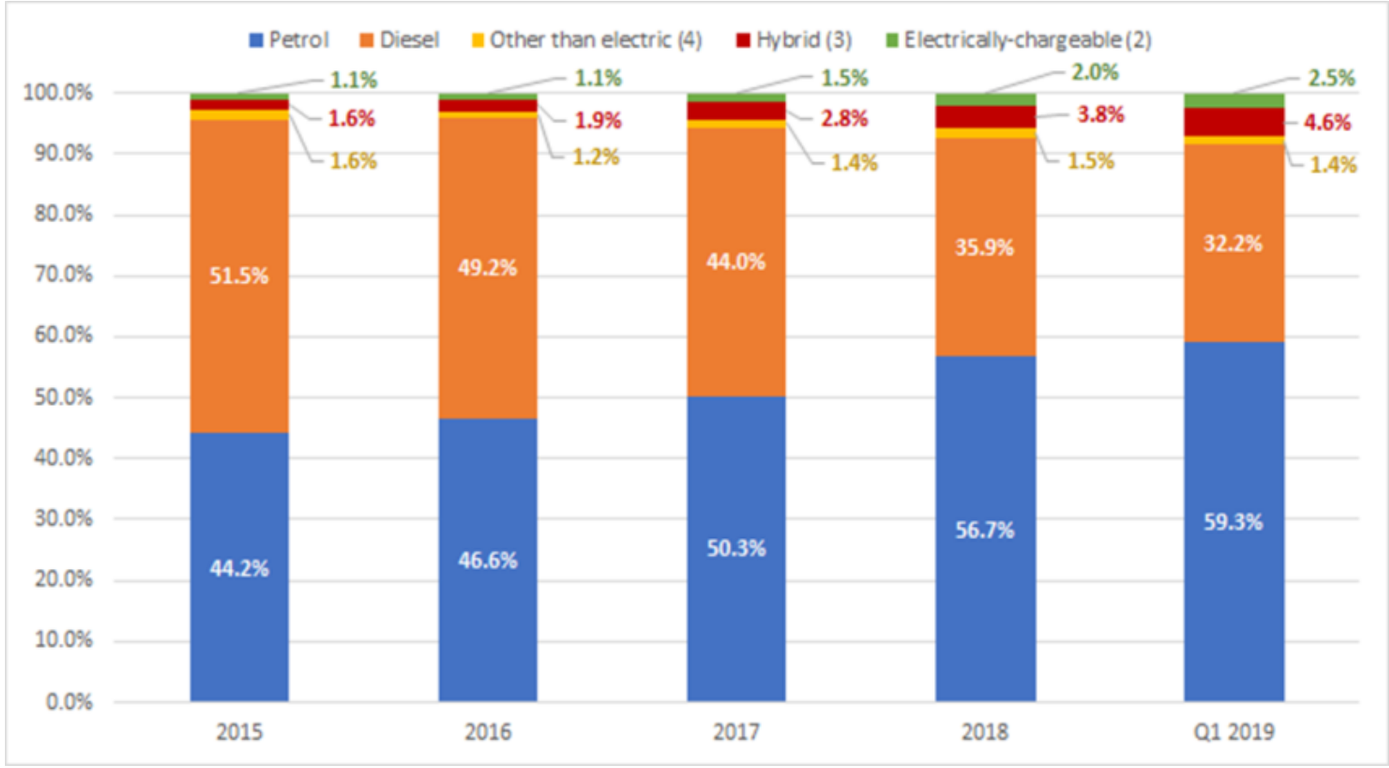
MEMBERS

BMW Group	CNH INDUSTRIAL	DAF	DAIMLER
Ferrari	FCA FIAT CHRYSLER AUTOMOBILES	Ford	HONDA The Power of Dreams
HYUNDAI	JAGUAR LAND ROVER	PSA GROUPE	GROUPE RENAULT
TOYOTA	VOLKSWAGEN AKTIENGESELLSCHAFT	VOLVO	VOLVO VOLVO GROUP

COMMERCIAL VEHICLE MEMBERS

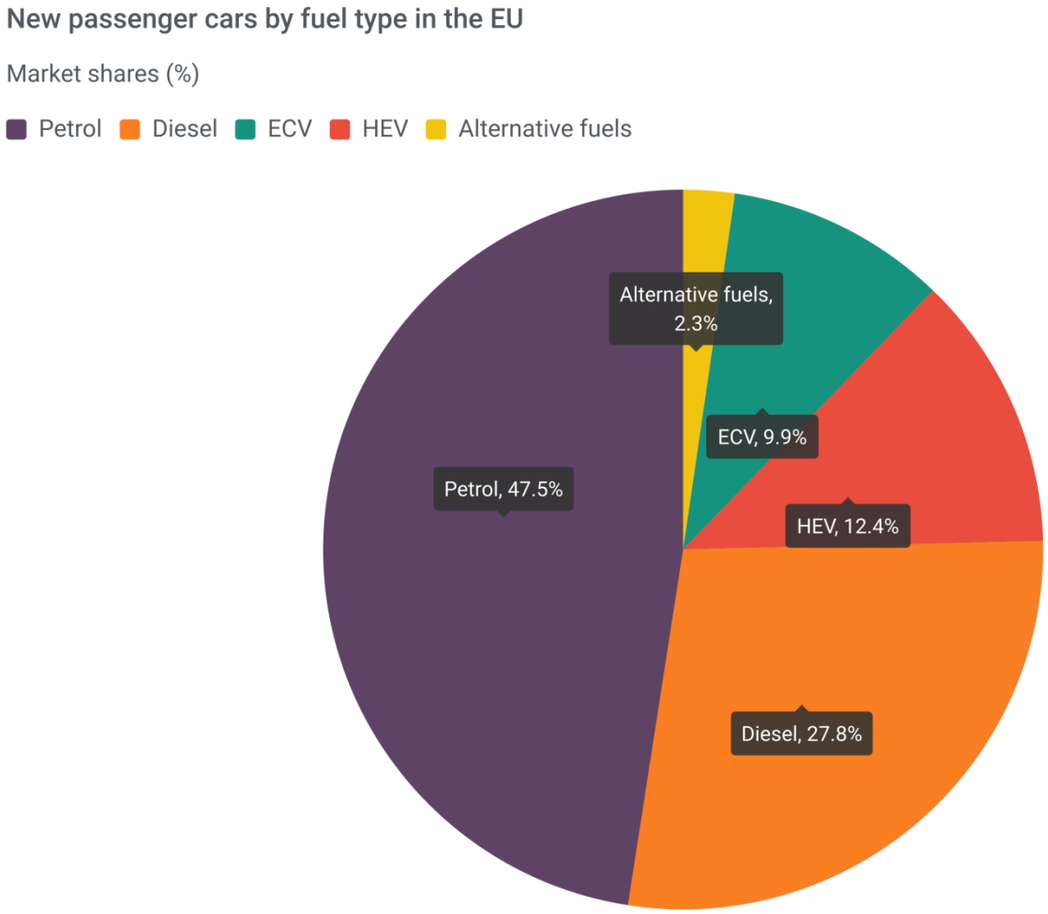
BACKGROUND – KEY STATISTICS

- **Role of alternatively powered vehicles is still low in the EU**



BACKGROUND – KEY STATISTICS

- **The share of ECVs is growing fast and accelerates (figures Q3 2019)**



BACKGROUND – KEY STATISTICS

- **With CO_2 targets fixed, more to expected…**

Projected number of newly registered ZLEV in 2030 (thousands of cars)				
Scenario	Plug-in hybrid vehicles (PHEV)	Battery Electric Vehicles (BEV)	Fuel Cell vehicles (FCEV)	**Total ZLEV)**
30%	2,162	1,420	380	3,962
40%	3,157	1,962	514	5,633
45%_40%ZLEV	4,266	4,468	1,166	9,900
50%	4,440	2,607	671	7,718
50%_30%ZLEV	2,703	3,567	1,066	7,336
50%_50%ZLEV	677	8,287	1,046	10,010
75%	5,836	8,930	1,762	16,528

Table 3: Projected number of newly registered ZLEV in 2030

ACEA PERSPECTIVE ON E-MOBILITY POLICY ON EU LEVEL

- **Key drivers of future growth**
  - Regulatory requirements
  - COVID-19 recovery plan
  - Changing patterns of the consumers

ACEA PERSPECTIVE ON E-MOBILITY POLICY ON EU LEVEL

- **Regulatory requirements**

  - Industry has to meet 95g target in 2021
  - Additional -37,5% CO_2 reduction target for 2030
  - Associated with 35% benchmark level for passenger cars for 2030
  - To be further tightened by the Green Deal revision
  - Strong push for Euro 7 legislation

ACEA PERSPECTIVE ON E-MOBILITY POLICY ON EU LEVEL

- **COVID-19 recovery plans**

  - Many member states introduced incentives for fleet renewal
  - Supported by the EU funding through nation programmes
  - Some will definitely continue in 2021 (but not sustainable forever)
  - The Commission in pushing to Green Deal objectives in transport sector

ACEA PERSPECTIVE ON E-MOBILITY POLICY ON EU LEVEL

- **Changing consumer patterns**

  - OEMs deliver significantly more models on the market
  - Price parity is approaching (also supported by fleet renewal schemes)
  - Societal "push" on regional or municipal level
  - Economics always is essential for final consumers (even more for vans and HDV sector)

ACEA PERSPECTIVE ON E-MOBILITY POLICY ON EU LEVEL

- **Key challenges**

  - Lack of recharging infrastructure
  - Sustainability of the supportive measures
  - Transformation of the industry – skills gaps

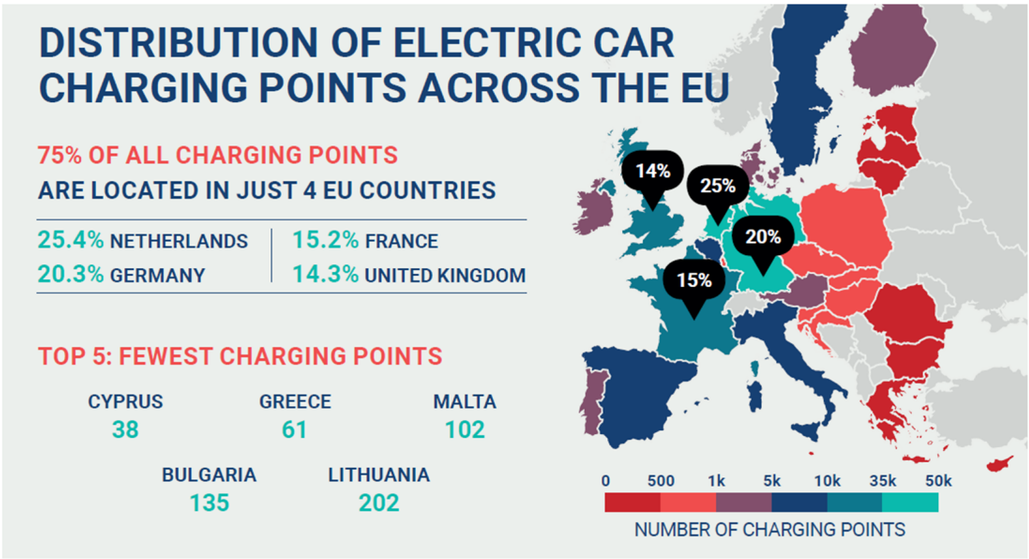
ACEA PERSPECTIVE ON E-MOBILITY POLICY ON EU LEVEL

- **Lack of charging infrastructure across the EU**

Projected number of EV and number of public electric charging points in 2030 (thousands)				
Scenario	Plug-in hybrid vehicles (PHEV)	Battery Electric Vehicles (BEV)	Total PHEV + BEV	**Number of public charging points (thousands)**
30%	16,494	9,780	26,274	2,627
40%	21,331	12,256	33,587	3,359
45%_40%ZLEV	35,906	27,086	62,992	6,299
50%	27,584	15,394	42,978	4,298
50%_30%ZLEV	29,008	23,481	52,489	5,249
50%_50%ZLEV	10,768	49,499	60,267	6,027
75%	61,035	27,158	88,193	8,819

Table 5: 2030 Projected number of EV and number of public electric charging points

Distribution of ECV charging points across the EU (2019)



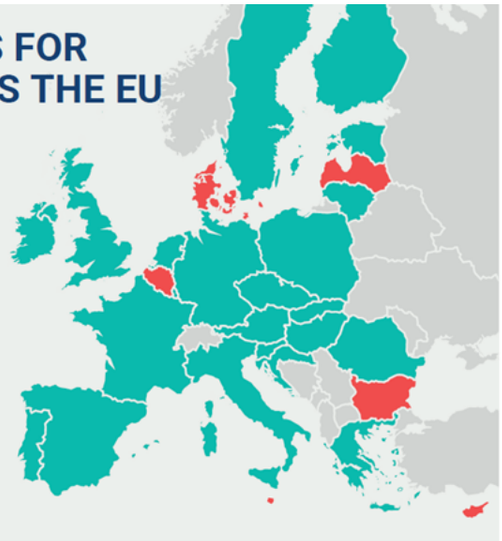
'Electric car' = electrically-chargeable vehicles (battery electric vehicles + plug-in hybrid electric vehicles)
Source: ACEA, EAFO

ACEA PERSPECTIVE ON E-MOBILITY POLICY ON EU LEVEL

- **Sustainability of the supportive measures**

PURCHASE INCENTIVES FOR ELECTRIC CARS ACROSS THE EU

AUSTRIA	✓	ITALY	✓
BELGIUM	✗	LATVIA	✗
BULGARIA	✗	LITHUANIA	✓
CROATIA	✓	LUXEMBOURG	✓
CYPRUS	✗	MALTA	✗
CZECH REPUBLIC	✓	NETHERLANDS	✓
DENMARK	✗	POLAND	✓
ESTONIA	✓	PORTUGAL	✓
FINLAND	✓	ROMANIA	✓
FRANCE	✓	SLOVAKIA	✓
GERMANY	✓	SLOVENIA	✓
GREECE	✓	SPAIN	✓
HUNGARY	✓	SWEDEN	✓
IRELAND	✓	UNITED KINGDOM	✓



'Electric car' = electrically-chargeable vehicles (battery electric vehicles + plug-in hybrid electric vehicles)
Source: ACEA Tax Guide 2020

TAX BENEFITS FOR ELECTRIC CARS

	Acquisition	Ownership	Company car
AUSTRIA	✓	✓	✓
BELGIUM	✓	✓	✓
BULGARIA	✗	✓	✗
CROATIA	✓	✓	✗
CYPRUS	✓	✓	✗
CZECH REPUBLIC	✓	✓	✗
DENMARK	✓	✓	✓
ESTONIA	✗	✗	✗
FINLAND	✓	✓	✗
FRANCE	✓	✗	✓

	Acquisition	Ownership	Company car
GERMANY	✓	✓	✓
GREECE	✓	✓	✓
HUNGARY	✓	✓	✓
IRELAND	✓	✓	✓
ITALY	✗	✓	✗
LATVIA	✓	✓	✓
LITHUANIA	✗	✗	✗
LUXEMBOURG	✗	✓	✓
MALTA	✓	✓	✗
NETHERLANDS	✓	✓	✓

	Acquisition	Ownership	Company car
POLAND	✓	✗	✗
PORTUGAL	✓	✓	✓
ROMANIA	✗	✓	✗
SLOVAKIA	✓	✓	✗
SLOVENIA	✓	✗	✗
SPAIN	✓	✓	✗
SWEDEN	✗	✓	✓
UNITED KINGDOM	✓	✓	✓

'Electric car' = electrically-chargeable vehicles (battery electric vehicles + plug-in hybrid electric vehicles)
Source: ACEA Tax Guide 2020

ACEA PERSPECTIVE ON E-MOBILITY POLICY ON EU LEVEL

- **Transformation of labour force and restructuring**

  - Massive electrification will tackle the whole value chain
  - New skills would be needed in massive way
  - Most of the automotive regions will undergo massive restructuring
  - Upskilling and reskilling projects are needed (e.g. ALBATTS, DRIVES)
  - Newly established Pact for Skills and Automotive Skills Alliance (https://bit.ly/35TKEVO)

ACEA

European
Automobile
Manufacturers
Association

ACEA represents the 16 major Europe-based
car, van, truck and bus manufacturers

www.acea.be
+32 2 732 55 50
communications@acea.be

twitter.com/ACEA_eu

linkedin.com/company/ACEA

youtube.com/ACEAeu

ELECTRIC VEHICLE MANUFACTURING & BATTERY INTEGRATION - FUTURE QUALIFICATIONS NEEDED

Ing. Stanislav Hackl

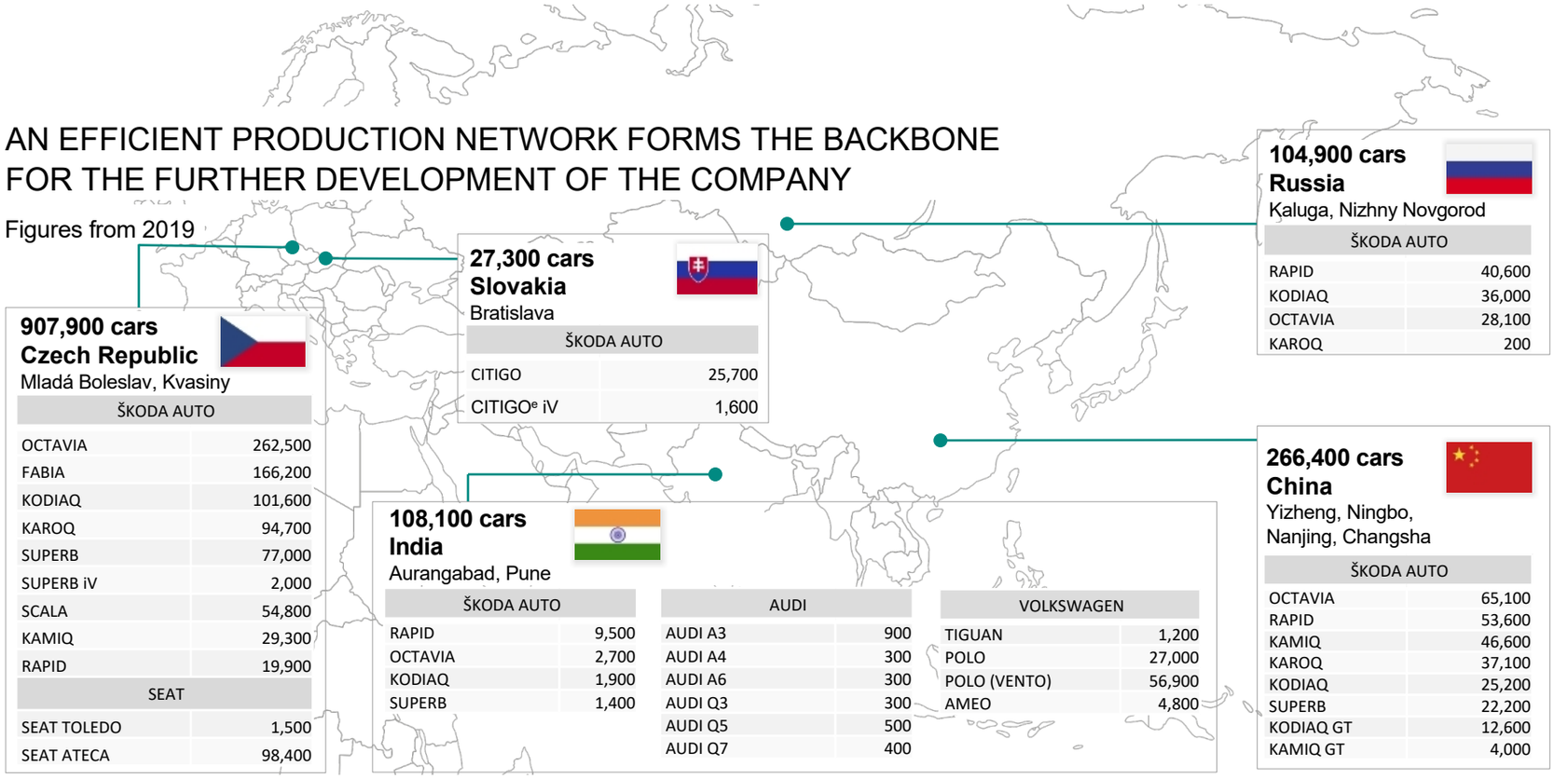
ŠKODA Academy (ŠKODA AUTO a. s.)

January, 27th 2021

INTERNATIONAL PRODUCTION NETWORK WITH GROUP RESPONSIBILITY

AN EFFICIENT PRODUCTION NETWORK FORMS THE BACKBONE FOR THE FURTHER DEVELOPMENT OF THE COMPANY

Figures from 2019



907,900 cars
Czech Republic
Mladá Boleslav, Kvasiny

ŠKODA AUTO	
OCTAVIA	262,500
FABIA	166,200
KODIAQ	101,600
KAROQ	94,700
SUPERB	77,000
SUPERB iV	2,000
SCALA	54,800
KAMIQ	29,300
RAPID	19,900
SEAT	
SEAT TOLEDO	1,500
SEAT ATECA	98,400

27,300 cars
Slovakia
Bratislava

ŠKODA AUTO	
CITIGO	25,700
CITIGOe iV	1,600

104,900 cars
Russia
Kaluga, Nizhny Novgorod

ŠKODA AUTO	
RAPID	40,600
KODIAQ	36,000
OCTAVIA	28,100
KAROQ	200

108,100 cars
India
Aurangabad, Pune

ŠKODA AUTO	
RAPID	9,500
OCTAVIA	2,700
KODIAQ	1,900
SUPERB	1,400

AUDI	
AUDI A3	900
AUDI A4	300
AUDI A6	300
AUDI Q3	300
AUDI Q5	500
AUDI Q7	400

VOLKSWAGEN	
TIGUAN	1,200
POLO	27,000
POLO (VENTO)	56,900
AMEO	4,800

266,400 cars
China
Yizheng, Ningbo, Nanjing, Changsha

ŠKODA AUTO	
OCTAVIA	65,100
RAPID	53,600
KAMIQ	46,600
KAROQ	37,100
KODIAQ	25,200
SUPERB	22,200
KODIAQ GT	12,600
KAMIQ GT	4,000

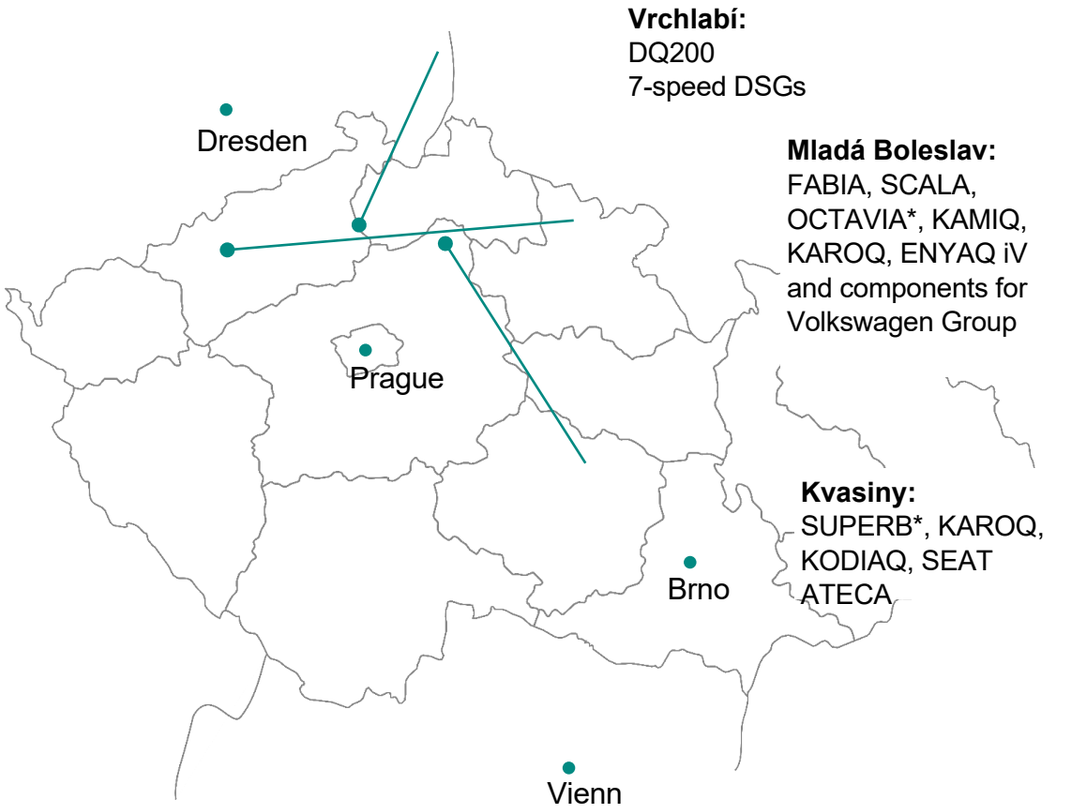
In 2020, ŠKODA AUTO delivered1, 004, 800 cars to customers worldwide despite the coronavirus pandemic

ŠKODA IN THE CZECH REPUBLIC

Facts:
- The brand's home country and second-largest European market
- 907,900 cars produced at the Czech ŠKODA plants in 2019
- 180 dealership sites

Three production sites:
- Mladá Boleslav, Kvasiny, Vrchlabí

Strategic focus:
- The company has entered the era of e-mobility in its home country, the Czech Republic



Vrchlabí:
DQ200
7-speed DSGs

Mladá Boleslav:
FABIA, SCALA, OCTAVIA*, KAMIQ, KAROQ, ENYAQ iV and components for Volkswagen Group

Kvasiny:
SUPERB*, KAROQ, KODIAQ, SEAT ATECA

* Electrified variant available

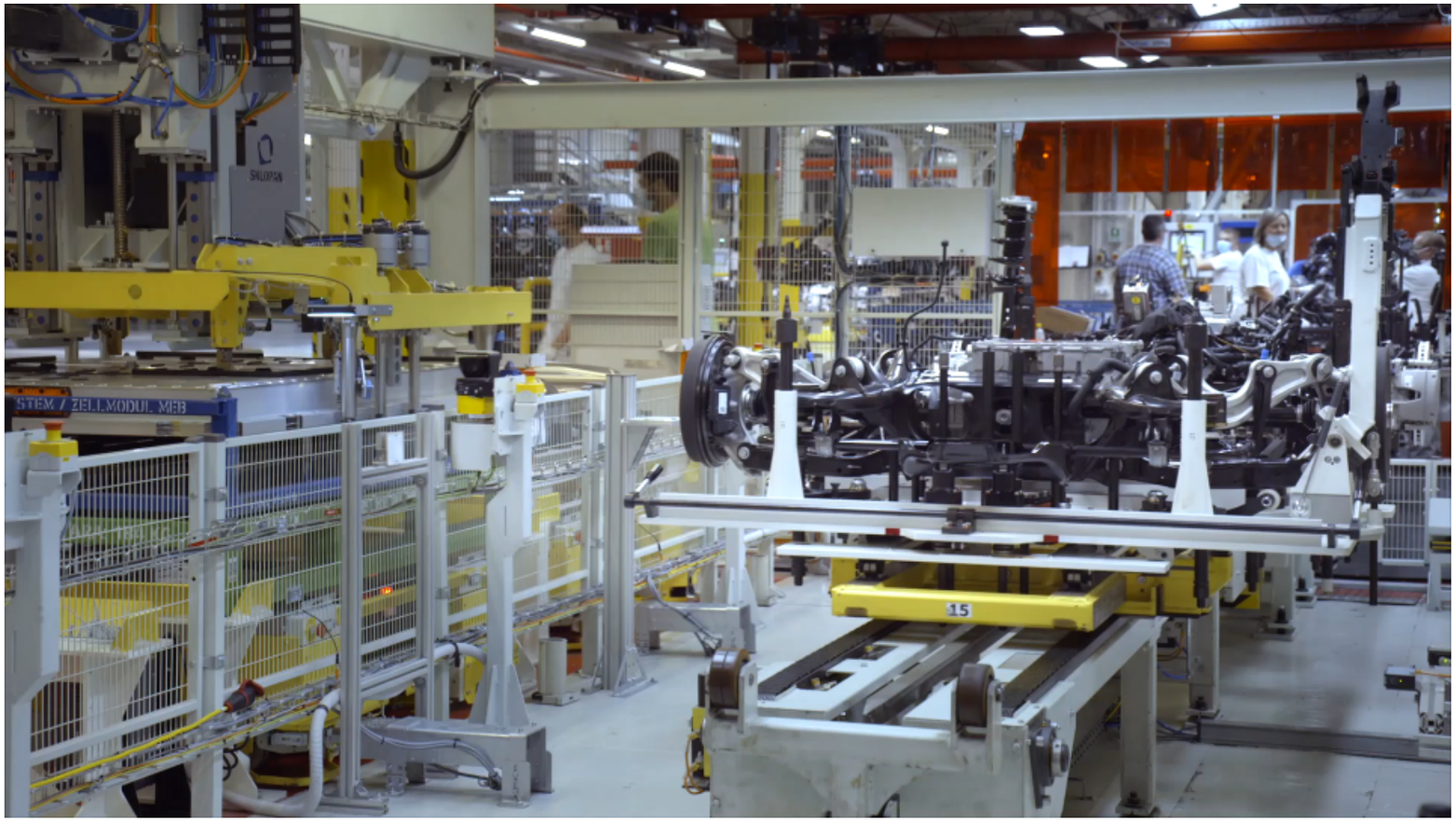
CURRENT MODEL RANGE

2020

* Models available in Russia, China and India ** Models available in China

ŠKODA ENYAQ - ASSEMBLY LINE

So called „Wedding“



Compulsory training system for electric / hybrid cars

	Qualification title	Authorized work activities (target groups of employees)	Compulsory electrotechnical training		Compulsory type training			
			Training title	Validity	Training title			Validity
Level 3	**High-voltage battery expert** (VNEb)	All activities below and in addition: Evaluation, analyses, classification of safety and repair of damaged HV batteries (all NIO statuses)	Regulation no. 50/1978 Coll., on the professional qualifications in electrotechnics (at least §6) (technical development also § 11 Art.2) (course no. 1-09-001) (3 days) **Conditions for application:** • Electrotechnical education • Confirmation of the length of practice from the employer	**3 years**	Type training E-Car for electrical engineering (course no. 1-14-222) (6 lessons)	+	Analysis of traction batteries (course no. 1-14-234) (1 day)	forever**
	High-voltage expert (HVE)	Measurement and analysis of the energized HV system				Course content:	• Electrical safety E-Car - Sensitization (Course no. 1-14-205)	forever**
		All work on a car with an attached HV system					• **Work conditions for electromobility (Course no. 1-14-209)**	**1 year**
		Creating working instructions for work with energized elements					• Safety instructions and vehicle operating instructions	forever**
		De / activation (disconnection / connection) of the HV system					• Commissioning of the HV system	forever**
Level 2	**High-voltage technician** (HVT)	All activities below and in addition: De / activation (disconnection / connection) of the HV system only according to the serial car work instructions	Instructions under §4 for electromobility (Course no. 1-14-208) (2 lessons) (note: forms part of type training no. 1-14-221)	**3 years**	Type training E-Car for non-electrical subjects (Course no. 1-14-221) (4 lessons)	+	Deactivation and activation of the HV system for non-electrical subjects (Course no. 1-14-223) (2 days)	forever**
	Electrically-educated person (EEP)	All activities below and in addition: Work or repair with deactivated (disconnected) HV system on HV components, HV lines and in their vicinity* (see definition below)				Course content:	• Electrical safety E-Car - Sensitization (Course no. 1-14-205)	forever**
		To be classified according to the safety protocol of the HV -battery according to the work instructions (not in the NIO dangerous status)					• **Instructions under §4 for electromobility (Course no. 1-14-208)**	**3 years**
		Occupational health and safety training - syllabus for HV vehicles					• Safety instructions and vehicle operating instructions	forever**
Level 1	**Electrically acquainted person** (EAP)	All assembly work on the car before the first activation (connection) of the HV system	OHS training (initial, initial or periodic training) (under §3 of regulation 50/1978 Coll.)	According to the rules of the organizational unit	Electrical safety E-Car - Sensitization (Course no. 1-14-205) (1 lesson)			forever**
		First activation (connection) of the HV system in the assembly line (ECOS / UPS)						
		Outside the assembly line: work / repair / replacement of parts on an electric car, if this activity is not in the vicinity* (see definition below) HV-component or HV-line (HV-system can be both active and deactive)						
		Visual assessment and diagnostics of the HV battery (not in the NIO dangerous status)						
		Handling, transport and packing of HV-batteries (not in the NIO dangerous status)						
		Car charging — In development, production or quality tests (electromobility training not needed for a company car)						
		Car use and operation — In development, production or quality tests (electromobility training not needed for a company car)						
		Management or coordination of employees - workplaces with electric cars						

ŠKODA

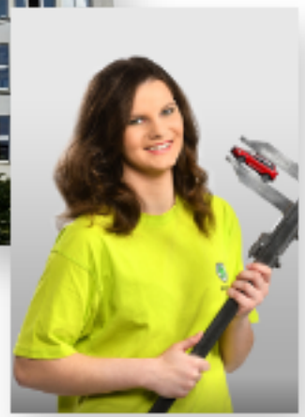
Compulsory training system for high voltage batteries

	Qualification title	Authorized work activities (target groups)		Compulsory electrotechnical training – Training title	Compulsory electrotechnical training – Validity	Mandatory type training – Training title	Mandatory type training – Validity
Level 3	HV battery expert	Battery check in quality management processes		Regulation no. 50/1978 Coll., on the professional qualifications in electrotechnics (at least §6) (technical development also § 11 Art.2) (Course no. 1-09-001) **Conditions for application:** • Electrotechnical education • Confirmation of the length of practice from the employer	3 years	High voltage batteries for electrotechnical workers (Course no. 1-14-232) – Course content: • Electrical safety E-Car - Sensitization (Course no. 1-14-205) • **Work conditions for electromobility (Course no. 1-14-209)** • ESD protective measures • HV battery design • HV battery diagnostics	Forever *
		Repair work, analysis, HV Expert					1 year
		Creating work instructions					Forever *
Level 2	HV battery technician	Assembly work on the HV battery assembly line.		Instructions under §4 of regulation No. 50/1978 Coll., for electromobility (Course no. 1-14-208) (note: forms part of basic training no. 1-14-231, after three years prolonged separately)	3 years	High voltage batteries for workers without electrotechnical education (Course no. 1-14-231) – Course content: • Electrical safety E-Car - Sensitization (Course no. 1-14-205) • **Instructions under §4 of regulation No. 50/1978 Coll. (Course no. 1-14-208)** • **Work conditions for electromobility (Course no. 1-14-209)** • Measurement of electrical quantities • ESD protective measures • HV battery design • HV battery diagnostics	Forever *
		Team leader/foreman, shift co-ordinator and HV battery production setter					Forever *
Level 1	Electrically acquainted person	Entrance to the hall where the HV batteries are assembled		OHS training (initial, initial or periodic training) (under §3 of regulation 50/1978 Coll.)	According to the rules of the organizational unit	Electrical safety E-Car - Sensitization (Course no. 1-14-205)	Forever *
		Handling batteries and their components (shall not be critically damaged)					
		Pre-assembly of parts without voltage					
		Management or coordination of employees (workplace with HV batteries)					
Level 0	Anybody	Entrance to the hall where batteries are assembled by a person with minimal knowledge.	Employees (internal / external) who enter the hall occasionally and do no work on batteries or handle with HV batteries and their components	OHS training (initial, initial or periodic training) (under §3 of regulation 50/1978 Coll.)	According to the rules of the organizational unit	To enter the workplace, a person shall be aware of the danger and their entry is possible only if accompanied by a person at least acquainted.	
			Visits	ŠKODA AUTO Visiting Regulations	-		

* Only significant change in technology will end the validity of the training qualification certificate

ŠKODA ACADEMY: Secondary vocational school of engineering

ALMOST 1 000
STUDENTS



OVER
100
GIRLS

OVER 100 TEACHERS

15
PLANNED PROFESSIONS FOR THE YEAR
2021/2022

OVER
23 000
TOTAL GRADUATES
SINCE 1927

Recruitment and HR Marketing

Information from Recruitment Centre

Current total number of staff in the Component production –
- HV battery assembly department: **200**

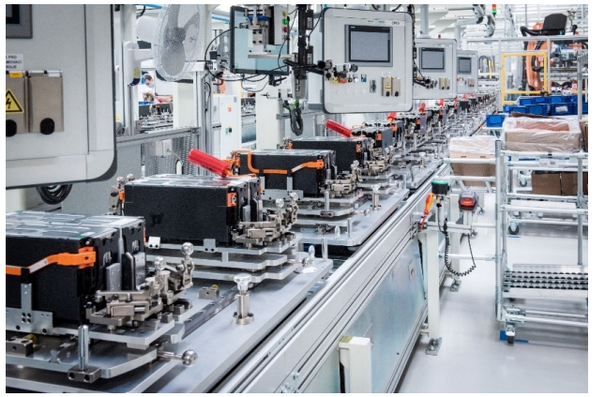
Number of workers for assembly (Level 2): **140**

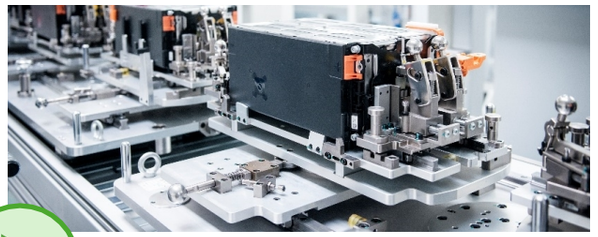
Number of workers for analysis and repair of batteries (Level 3): **30**

Battery relevant qualifications currently missing at the job market:
Graduates of Secondary Technical Schools of Electrical Engineering
Graduates of Secondary Vocational Schools in professions:
Car Electronics, Car Electrician, Electrician

Recommendations – to support for education in two directions:

- **Full-time study**
  - Higher number of teachers
  - Higher number of students in electrical engineering fields
- **Retraining - distance learning**
  - Study of a completely new technical field
  - Supplementing electrical engineering education





Play video

ŠKODA TECHNICAL - High Voltage Batteries Assembly Line

SE – ŠKODA Academy

Furthering your professional excellence.
Wir fördern Ihre fachliche Exzellenz.
Prohlubujeme Vaši profesní dokonalost.

ŠKODA Akademie

Backup


Fraunhofer
IAO
FRAUNHOFER INSTITUTE FOR INDUSTRIAL ENGINEERING IAO
ED.: WILHELM BAUER | OLIVER RIEDEL | FLORIAN HERRMANN
FLORIAN HERRMANN | WOLFGANG BEINHAUER | DANIEL BORRMANN | MICHAEL HERTWIG
JESSICA MACK | THOMAS POTINECKE | CLAUS-PETER PRAEG | PETER RALLY
EMPLOYMENT 2030
EFFECTS OF ELECTRIC MOBILITY AND DIGITALISATION ON THE QUALITY AND QUANTITY
OF EMPLOYMENT AT VOLKSWAGEN