

Road/Railways - Environmental friendly vehicles: European Commission supports Li-Ion Pilot Lines Network (LiPLANET) to accelerate production of modern battery technologies in the EU

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【概要 : Summary】

In order to meet the EU's Paris Agreement's targets as well as the European Green Deal's climate neutrality target for 2050, the CO2 emissions in the EU's transport sector will have to decrease significantly. The deployment of low- and zero-emission vehicles such as electric vehicles for the mass market plays an important role for achieving the envisaged decarbonised mobility. The production of modern batteries is a key factor for the uptake of electric mobility, but in the EU, there does not exist any significant industrial production of batteries so far. Currently, about 80% of global battery production takes place in Asia, predominantly China. Europe is lagging behind international competitors in battery production and is largely relying on imports. The European Commission is considering solutions to solve the problem of Europe's dependence on battery imports. Since securing the availability of modern batteries is of high importance for the production of electric vehicles (EVs) for the mass-market, the battery cell production needs to be established in Europe. The European companies involved in the set up of a European battery manufacturing industry will enter a challenging industry environment, in which the market is dominated by Asian lithium-ion battery producers. However, at the same time, the late market entry

could also allow the European battery producers to prepare for the upcoming changes in the future lithium-ion battery landscape. Consequently, the establishment of a strong battery cell production industry in Europe has become a key target of the EU's political targets.

The European Commission supports financially projects that will help to set up a European battery producing industry and has approved EUR 3.2 billion in subsidies of several EU Member States that want to develop the electric battery industry. This includes also research and innovation projects for battery cells like the "Li-Ion Pilot Lines Network", (LiPLANET).

LiPLANET is a project funded under the European Commission's Horizon 2020 programme. The project was launched on 1 January 2020 and is expected to establish the lithium battery cell research pilot line network over the next two years. The network aims at strengthening the EU's position in the strategic and fast-growing market for the production of Li-Ion battery cells.

The eight consortium partners under the leadership of the Institute for Particle Technology at the Technical University of Braunschweig are expected to establish an exchange platform for knowledge and data for a European network of research pilot lines for the production of battery cells. The exchange platform is a basis for cooperation between

industry, academia and pilot lines. It should also develop standards for the qualification of pilot lines.

【記事 : Article】

1. Necessity to setting up a European battery industry

There are still around 95% of automobiles in the EU using fossil fuels. In order to meet the future CO₂ emission standards for new passenger cars and vans' in the EU and to achieve the target of CO₂ emission reduction under the Paris agreement and the EU's Green Deal, a transition to low- and zero-emission vehicles needs to take place. Besides fuel cell vehicles, electric vehicles (EVs) are the only other type of vehicles, which would allow a transition to zero emission mobility.

The European automobile manufacturers are still highly dependent on imports of the latest lithium-ion cell batteries for EVs, since currently only about 3% of batteries for EVs are produced in the EU. This situation is mainly the result of a delayed introduction of EVs' production in the EU. Furthermore, the dependence on battery imports from Asia and the US could also create long-term competition disadvantage for European automobile manufacturers. Under the Energy Union Strategy to achieve zero emission mobility, the mass-production of EVs needs to be accelerated. Therefore, the increase of battery cell production in the EU has been identified as one of the key initiatives and a battery cell production industry needs to be established in the EU. The establishment of a strong battery cell production industry in Europe has become a main political target for the European Commission and for the EU Member States, as a strategic basis for a functioning of the EVs producing industry and to prevent a further dependence on battery production industries outside Europe. Accordingly, the European Commission supports the European Battery Alliance (EBA) and the set-up of the Batteries Europe platform as the Batteries "Research and Innovation" (R&I) pillar

of the EBA. However, the EU will need an estimated 10 to 20 large-scale battery cell production facilities ("gigafactories") in order to set up a competitive manufacturing industry for producing sustainable battery cells of significant size in Europe.

2. Research initiative for setting up European battery production

The strategic Action Plan for Batteries is part of the Europe on the Move III package (COM (2018) 293 final) of 17 May 2018 and comprises of a set of measures, encompassing the extraction and processing of raw materials, the design and manufacturing phase of battery cells and battery packs, and their use, second use, recycling and disposal in a circular economy context, as well as regulatory requirements. As part of the action plan on batteries, the Commission announced the formation of interregional partnerships, under a smart specialisation platform for industrial modernisation on 8 October 2018.

After the launch of the European Battery Alliance (EBA), the European Investment Bank (EIB) approved EUR 52.5 million in financing for Swedish battery cell manufacturer Northvolt, in February 2018. In 2018 and 2019, the German and French governments announced several measures to set up facilities for the development and production of next-generation solid-state batteries, among others.

Furthermore, on 9 December 2019, the European Commission approved EUR 3.2 billion in subsidies of several EU Member States that want to develop the electric battery industry. In Sweden, France, Germany, Italy and the Czech Republic, battery cells production related consortia have been established. The establishment of a European battery industry will contribute to the EU's objective of becoming the first carbon-neutral continent by 2050.

3. Research for a new generation of lithium-ion batteries: Li-Ion Pilot Lines Network (LiPLANET)

In order to reduce the gap with the battery cell

production in Asia and to become a world leader, the EU must develop an independent capacity to produce and upscale battery cells. The understanding is that the development of cost-effective, reliable, and high-performance battery cells in Europe will have an impact on the production of EVs but it will also be a key to make the European automobile manufacturing industry more competitive in the international market of EVs in future. The set-up of a high-performance battery cell production in Europe will also have importance for the electric power sector and will be essential for several European industry sectors in order to become independent from the imports of battery cells. The EU must develop a competitive Li-ion battery production value chain. According to the European Commission, the EU funded LiPLANET project aims at setting up an ecosystem for industrial scale manufacturing of high-performance Li-ion cells. The project is expected to achieve this by setting up a network of significant European Li-ion cell pilot lines and most important related entities. The task will be to identify needs and assets, organise cooperation of scientists and industry, trainings and legal framework enabling pilot lines and testing methods in order to form a production roadmap.

In order to strengthen the EU's position in the production of modern batteries and to create an ecosystem for viable industrial scale manufacture of high-performance Li-ion cells, the "Li-Ion Pilot Lines Network" (LiPLANET network) was launched on 1 January 2020. On 5 March 2020, the European Commission announced that the project would receive the European Commission's funding of EUR 2 million for two years as part of the Horizon 2020 program under grant agreement No. 875479. LiPLANET brings together the most relevant European Li-ion cell pilot lines and the main stakeholders of the battery sector. Under the leadership of the German Technical University of Braunschweig, eight consortium partners from industry and science are laying the foundation for a Europe-wide network of pilot lines. Besides the TU Braunschweig, the EIT InnoEnergy,

EMIDI, AIT Austrian Institute of Technology, CEA Liten, CIDETEC Energy Storage, ABEE Avesta Battery & Energy Engineering, as well as VDI/VDE Innovation + Technik will participate in the LiPLANET Consortium. The LiPLANET project's consortium intends to form a network of Li-ion pilot lines integrating industrial stakeholders. The LiPLANET project's overall objective is to strengthening the position of the EU within the strategic and fast-growing market of lithium battery cells and to accelerating the industrial series production of modern battery technologies by creating a European innovation and production ecosystem.

Various activities will be carried out within the project, including the mapping of the European Lithium-based battery cell research pilot lines, implementing the network in a sustainable, non-profit business model, creating the legal framework and development of an exchange platform for knowledge and data. It will develop a roadmap to define a strategy for the network focusing on up-scaling and sustainability and to support the competitiveness of large-scale industrial production of battery cells in Europe. Besides pilot line operators, relevant industrial and policy stakeholders are specifically involved in the design of the network. It will allow exploiting synergies between pilot line operators, identifying knowledge and equipment gaps, organising joint trainings, as well as facilitating the access to the market.

The LiPLANET network will encourage and strengthen the cooperation between industrial and academic partners and it will support the development and the industrial production of battery cells through training. Within the funded two project years, the structures for a sustainable network will be established and the network will be implemented and started. The final aim will be to create an ecosystem for viable industrial scale manufacture of high-performance Li-ion cells and thereby to strengthen the EU's position in the production of modern batteries.

References

- Batteries Europe wants EV jumpstart, carbon cuts. In: <https://www.neweurope.eu/article/batteries-europe-wants-ev-jumpstart-carbon-cuts/>, June 26, 2019, retrieved 1 July 2019
- Battery Manufacturing In Europe. Is there a second chance? In: <https://www.oliverwyman.com/our-expertise/insights/2019/nov/perspectives-on-manufacturing-industries-vol-14/new-tech-new-strategies/battery-manufacturing-in-europe.html>, retrieved 10 December 2019
- Consolidating the industrial basis for batteries in Europe: launch of the European Technology and Innovation Platform on Batteries. In: https://ec.europa.eu/info/news/consolidating-industrial-basis-batteries-europe-launch-european-technology-and-innovation-platform-batteries-2019-feb-05_en, 5 February 2019, retrieved 11 December 2019
- European Li-ion battery production roadmap. In: <https://cordis.europa.eu/project/id/875479>, retrieved 28 April 2020
- Hampel, Carrie: LiPLANET European battery cell pilot line network formed. In: <https://www.electrive.com/2020/03/05/liplanet-european-battery-cell-pilot-line-network-formed/>, Mar 5, 2020
- Krüger, Janos: LiPLANET Bundles Know-how for Battery Production in Europe. In: <https://idw-online.de/de/news742746>, 27 April. 2020
- Launch of LiPLANET project. In: <https://www.eba250.com/launch-of-liplanet-project/>, 16 April, 2020
- LiPLANET bündelt Knowhow zur Batterieproduktion in Europa. In: <https://www.internationales-verkehrswesen.de/liplanet-buendelt-knowhow-zur-batterieproduktion-in-europa/>, 19. April 2020
- LiPLANET - Li-ion cell pilot lines network. In: <https://liplanet.eu/>
- Technische Universität Braunschweig: Li-ion cell pilot lines network. In: <https://www.tu-braunschweig.de/en/blb/research/projects/liplanet>, retrieved 16 March 2020
- LiPLANET: towards a competitive European lithium battery production. In: <https://batterieseurope.eu/liplanet-towards-a-competitive-european-lithium-battery-production/>, March 6, 2020, retrieved 16 March 2020
- The LiPLANET project lays the foundation of the European network of research pilot lines for the production of battery cells. In: <https://www.cidetec.es/en/news/energy-storage-7/the-liplanet-project-lays-the-foundation-of-the-european-network-of-research-pilot-lines-for-the-production-of-battery-cells-3>, 26/03/2020