



**FEM position paper
on sustainability requirements for batteries**

Brussels, 25 September 2019

FEM represents European manufacturers of materials handling, lifting and storage equipment. Our members manufacture equipment that enables the movement, storage, control and protection of materials, goods and products. Our industry delivers organisational and technical solutions for efficient and sustainable materials flow.

The materials handling industry covers various types of equipment, both stationary and mobile, powered by different types of energy sources, including batteries. Besides the equipment, our industry also manufactures battery packs for mobile applications, such as shuttles, cranes and lift trucks. Several types of FEM equipment may be impacted by any sustainability requirements for batteries. Therefore, FEM would like to provide its views on the proposals put forwards in the context of the ongoing discussions.

First, we believe that the materials handling industry, like the European manufacturing industry in general, will become an important player on the battery market in the future. Although the impact on cells manufacturing may remain limited, our influence will significantly increase on the management of batteries and on the assembling of cells into battery packs. Indeed, our manufacturers are world leader for most of materials handling equipment and integrated systems, and industrial mobile battery applications in our sector are mainly developed in Europe.

As batteries are a key driver of e-mobility, including for industrial applications, we need a strong battery value chain in Europe. Our industry also needs better access to R&D funding as developing ever more performing products, notably battery applications, is essential to maintain our competitiveness and global leadership position.

Besides limiting unfair competition from third countries, especially for battery cells, we also support ethical sourcing of raw materials and better protection of workers at global level. Indeed, higher sustainability of batteries should not result in degraded raw material extraction with negative impact on the environment and workers.

Transport remains the main barriers to trade battery driven equipment and battery spare parts. Despite a harmonised legislation at global level, manufacturers face different requirements for certification schemes and recycling requirements, including within the European Union.

As regards possible performance requirements, the parameters suggested in the public consultation: energy density, efficiency, durability, and charge retention of batteries raised mixed feelings. Possible requirements



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should not stifle innovation and hamper the development of new battery applications. On the opposite, any measure should accelerate innovation and strengthen the European competitiveness.

The materials handling industry covers a very wide range of equipment and technologies offering different characteristics and needs. Considering this diversity, the relevance of these parameters depends from one application to another.

In general, energy efficiency and durability are relevant since these characteristics contribute to the success of an application. The energy density and charge retention are not key parameters within our sector. The access to usage data history of batteries is a relevant aspect; however, this would require further harmonisation as multiple standards exist today.

In addition, it should be noted that our industry considers the battery density and capacity as characteristics rather than performance factors. As regards the battery capacity, it is necessary to differentiate the charging / discharging speed from the total battery volume.

European manufacturers fully support the recycling of batteries: this must be tackled at the design stage of the equipment, notably to decrease related costs. To increase the recycling rates and efficiency, it is necessary to pay attention to the recycling technology, economics and design requirements, which are complementary. Furthermore, the European Union must support higher cooperation between equipment manufacturers and recyclers to find innovative solutions addressing challenges faced at each phase of the battery life cycle, notably manufacturing, disassembly and recycling.

Although the traceability has a positive impact on supply chains in general, understanding recyclers needs to improve batteries recycling, notably in terms of information, is a necessary pre-requisite. Otherwise, any information requirements will result in costs and higher administrative burdens for equipment manufacturers without substantial benefits for recyclers, and ultimately the environment.



ANNEX

FEM reply to the European Commission public consultation on sustainability requirements for batteries

Market trends and existing policies

According to some forecasts, Europe could capture a share of a global battery market of up to €250 billion per year from 2025 onwards. How do you see the future development of the European market for batteries manufacturing?

- a) I think that Europe will be an important player in the global market
- b) Europe will not play a big role in the global market
- c) I have no opinion

What will be the main driver for Europe being an important player?

- a) Having a strong battery value chain in the EU is of strategic importance to our industry
- b) Batteries are key to sustainable mobility and to the integration of renewable electricity generation in the grid
- c) The market will develop without the need for regulatory intervention

What type of policy and regulatory measures would be most appropriate for the promotion of batteries manufacturing in Europe?

- a) No regulatory intervention is necessary
- b) R&D funding
- c) Financial instruments (preferential loans, grants)
- d) Training
- e) Requirements on ethical sourcing of raw materials and social protection of workers
- f) Limiting unfair competition from third countries
- g) Strict sustainability requirements (durability, low carbon footprint, reusability, recyclability, etc...)
- h) Encourage industry self-regulatory efforts
- i) Other please explain



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Are you aware of barriers (either between Member States or with third countries) for the manufacturing and/or trading of new or used batteries?

- a) Yes
- b) No
- c) I have no opinion

If yes, please explain

Although the transport of batteries is regulated at global level through UN regulation, the biggest barrier to trade new and used batteries is the transport, especially when batteries are shipped as spare parts.

In addition, manufacturers face different types of certification to place on the market batteries integrated into equipment: requirements vary from one region to another. Furthermore, equipment manufacturers and systems integrators have to deal with different requirements for the recycling of batteries, including within the European Union.

In relation with this section, please provide, if possible, evidence (e.g. by quoting an existing report/study) in support of your reply

Specific questions

If a regulatory proposal was made to make batteries more sustainable, do you think that batteries for electro-mobility applications and batteries designed for stationary use as energy storage should be regulated together?

- a) Yes, they have enough aspects in common
- b) No, these applications are too different
- c) I do not have an opinion

Free Text Question



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Amongst the most relevant social and environmental impacts in the production of batteries are the use of raw materials and climate change. Would you be in favour of setting reporting obligations and/or thresholds on these impacts?

- a) Yes, reporting obligation on the climate change impact only
- b) Yes, reporting obligation on all environmental impact categories (including climate change)
- c) Yes, reporting obligation on responsible sourcing of raw materials
- d) Yes, maximum allowable thresholds on the climate change impact only
- e) Yes, maximum allowable thresholds on all environmental impact categories (including climate change)
- f) No reporting obligations or thresholds
- g) Other (please specify) Other (please specify)

There is an emerging market for second life applications of batteries after their first use in electric vehicles.

Do you consider that the generalization of second-life batteries would have positive economic and environmental impacts?

- a) Yes, the generalization of second life applications of batteries should have a positive economic and environmental impact
- b) No, recycling batteries after their first use would be more efficient in economic and environmental terms
- c) I don't know, it is too early to say

If yes, please explain

Generally speaking, the same application may lead to different uses of batteries. Therefore, regulators should not restrict second life applications. We believe that second life applications of batteries after their first use in electric vehicles may have a positive impact in the materials handling sector. In addition, the material handling sector differentiate second and third-life. Indeed, a battery can be re-used for the same application in another equipment and then repurposed for a different application, such as stationary energy storage.



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If it were compulsory that only batteries with minimum performance requirements could be placed on the EU market, which would be in your opinion the most relevant parameters to be used for this purpose?

Please rate the parameters listed in the table below from not relevant to very relevant.

	Not relevant	somewhat relevant	neither relevant nor irrelevant	rather relevant	very relevant
a. Energy density		<input checked="" type="radio"/>	<input type="radio"/>		<input type="radio"/>
b. Energy efficiency (e.g., round-trip efficiency)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
c. Durability (e.g., minimum number of charging cycles)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
d. Capacity (e.g., total number of ampere hours or C-rate)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Storage or charge retention	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Access to relevant usage data history (e.g., cell impedance, conductance, self-discharge) to facilitate State of Charge and State of Health determination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Please explain your reply further

The materials handling industry covers a very wide range of equipment and technologies offering different characteristics and needs.



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The Batteries Directive 2006/66/EC sets minimum recycling efficiency targets by average weight (65% for acid-lead, 75% for nickel cadmium and 50% for other waste batteries including lithium ion ones). Do you consider that design requirements on batteries could help Europe achieve higher recycling efficiency rates? Please rate the different options below from "Don't agree" to "Completely agree"

	Don't agree	Partially disagree	Neither agree nor disagree	Partially agree	Completely agree
a. No further action is needed for this aspect	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. 'Design for recycling' requirements could help increase the efficiency of recycling plants (e.g., easy dismantling)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
c. Minimum weight based recyclability targets at product level could help increase recycling efficiency rates	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. To achieve higher recycling efficiency rates, recycling technology and economics are more important than design requirements	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please explain your reply further

FEM agrees that the recycling must be tackled at the design stage of batteries, notably to improve the recycling efficiency rates. Today, battery cell and pack design mainly focus on the manufacturing and assembly phases rather than the disassembly and recycling phases. To reduce the recycling cost, we believe that the end of life stage of batteries must be properly considered at the design phase. A proper design for disassembly and recycling will compensate the increase costs at the manufacturing stage.

Both recycling technology, economics and design requirements are equally important and should receive the same attention.



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Some of the raw materials used in battery manufacturing (like cobalt, manganese, nickel and natural graphite) have a high economic importance as well as high supply risk (they are monitored by the European Commission as Critical Raw Materials - CRMs). In your opinion, should there be specific requirements to guarantee a minimum recovery rate of the CRMs contained in the batteries?

Please rate the different options below from "Don't agree" to "Completely agree"

	Don't agree	Partially disagree	Neither agree nor disagree	Partially agree	Completely agree
a. I think that there is no need to focus on CRMs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Specific criteria to facilitate the recovery of CRMs should be established (e.g., design for recycling)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Minimum recyclability targets for CRMs at product level should be established	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Although it is important to recover CRMs, minimum requirements for product design are not the right way to address this question (please explain below how else this could be addressed)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How to address the recovery of Critical Raw Materials otherwise

As the recycling technologies and capacities are progressing, a cooperation between equipment manufacturers and recyclers are of utmost importance. Indeed, battery designers and recycling industry designers should further work together to find innovative solutions addressing challenges faced at each phase of the battery life cycle, notably manufacturing, disassembly and recycling stages.



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The traceability of batteries can have a positive impact in many areas of the batteries value chain: from provision of information about the origin of the raw materials to identification of the chemistry and hazardous materials contained, which is useful for the EoL treatment. If a traceability system was to be developed for batteries, which would be in your opinion the key information to be provided and which would be the most appropriate format (e.g., product passport, QR code, etc...)?

Although we agree that a better traceability of batteries has a positive impact in general, it is essential to better understand recyclers needs, notably in terms of information, to fully recycle batteries placed on the EU market. Otherwise, requiring equipment manufacturers to provide a material passport, also called bill of materials, and dismantling information will result in costs and higher administrative burdens without any tangible benefits for recyclers and, ultimately the environment. Also, the different characteristics between consumer and professional equipment must be properly taken into account. Moreover, the necessary protection of confidential information and technology know-how must be considered.

Are there further comments you would like to make on anything that is not covered above?