

**If you know how –  
you can charge  
the world.**

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**Battery Logistics**

Reliable and sustainable future solutions

# The DB Schenker Approach

## #WESAYYES – to challenging the Status Quo

When it comes to our work, we do not take NO for an answer. We refuse to stand still, putting up with negative statements like “it won’t work.” Because doing fine is just not good enough.

## #CLIENTDRIVEN – we are hungry for your challenges

When it comes to our clients’ business, this ambition motivates us to try harder. We have the confidence and the power to find the best solution for our clients.

## #DBSCHENKERSPIRIT – logistics with a can-do attitude

This professional optimism and the willingness to go the extra mile is what we call the DB Schenker spirit. It wins over clients’ hearts and minds and puts a smile on people’s faces.

# Why our battery transport continues to be in high demand.

Electric vehicles, e-bikes, e-scooters, and other progressive mobility products are populating cities around the world. Scenarios show that by 2030 global electric car sales will reach some 25 million and the stock of vehicles may be greater than 130 million.

In order to meet environmental standards, regulations are strict and new concepts and new policies are continuously being introduced.

Batteries are the main drivers of the ongoing electrification of the world, which rapidly increases the need for reliable solutions. However, the logistics for transport, return, and recycling are complex due to their dangerous-goods classification.

Comprehensive legal requirements for transportation and warehousing are combined with individual regulations concerning battery types and transportation modes.

## The many opportunities for safe and custom-made battery solutions

With our network, we cover the whole logistics spectrum:

land, ocean, and air transport, as well as special solutions in contract logistics and rail transport.

Thereby, we are able to create custom-made and reliable solutions for each of our customers’ needs.



For DB Schenker customers, dangerous-goods regulations (DGR) Experts ensure safety and compliance at more than 2,000 locations at 130 countries worldwide.



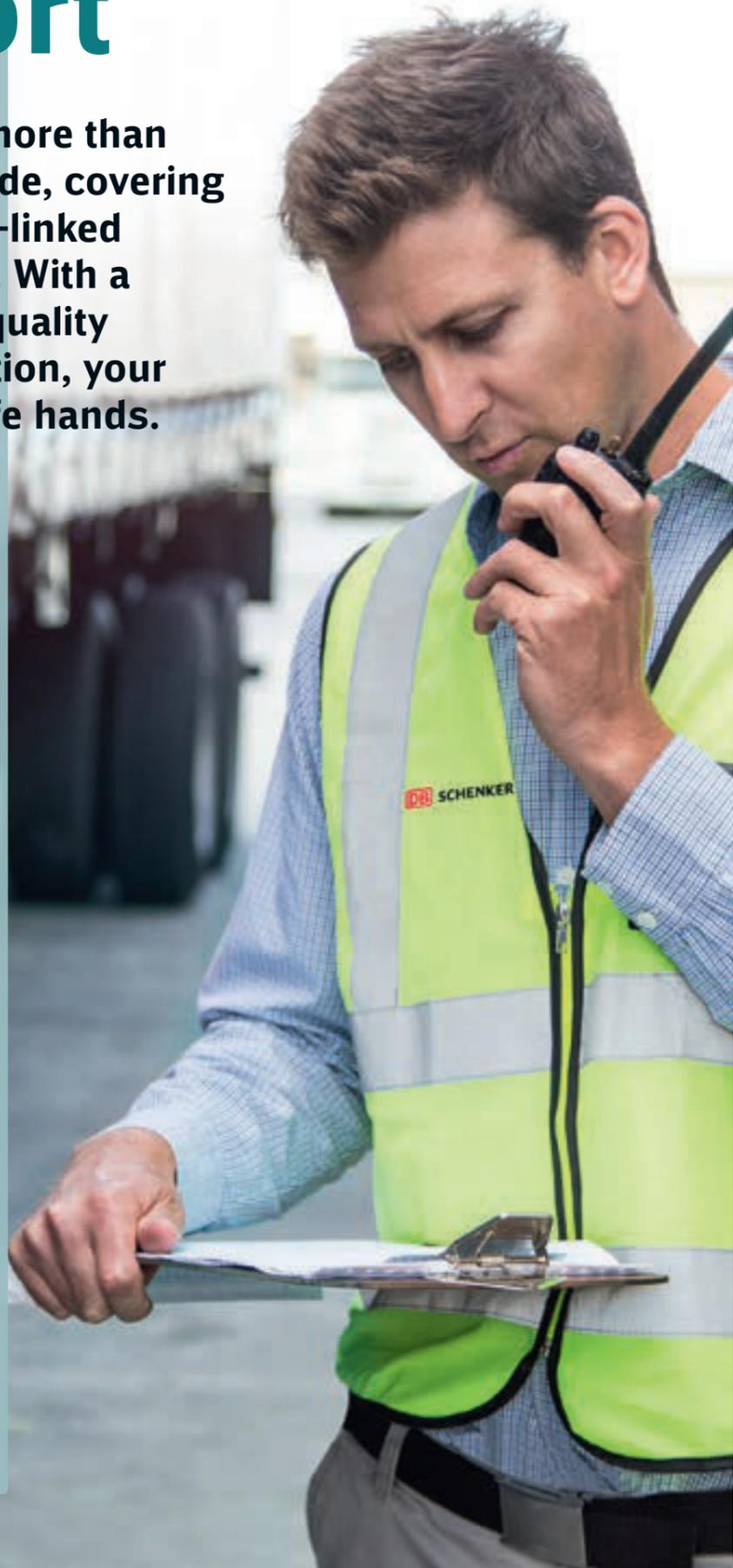
# Land Transport

**DB Schenker serves more than 430 terminals worldwide, covering one of the most cross-linked networks in the world. With a long track record for quality and timely transportation, your products will be in safe hands.**

The vast DB Schenker groupage network is ready to transport batteries from end to end, pallet by pallet – either for inbound deliveries or for the aftermarket.

Combining DB SCHENKERdirect, our FTL product, with individual solutions and special agreements, DB Schenker is able to provide the ground services for dangerous cargo – batteries included.

**430**   
terminals worldwide



**DB Schenker services not only cover transporting newly produced batteries; but the increasing usage of batteries and the growing awareness of the environmental factor put the recycling of batteries into focus, too.**

 **The challenge**

Providing a reliable and cost-effective reverse logistics concept to our customer in the retail industry.

 **The DB Schenker solution**

- Collection of batteries either directly at the customer's site or in defined cross docks, depending on the amount of batteries.
- Consolidation at the DB Schenker branch in Duisburg: specially equipped cross dock from which transportation to recycling facilities nearby is coordinated.
- Steering transport, with all its special requirements, in the most effective way: for the environment and for the customer.



As our network runs from the first mile to the last, our strength in land transport allows DB Schenker to provide our customers with door-to-door security for all other products, too.

# Ocean Freight

**Our global network of ocean freight carriers ensures the transport of batteries worldwide: from continent to continent as part of a complex supply chain.**

By providing a seamless supply chain in compliance with global safety requirements, we ensure that all batteries reach their destinations in a reliable, flexible, and efficient manner – regardless of sizes and quantities.

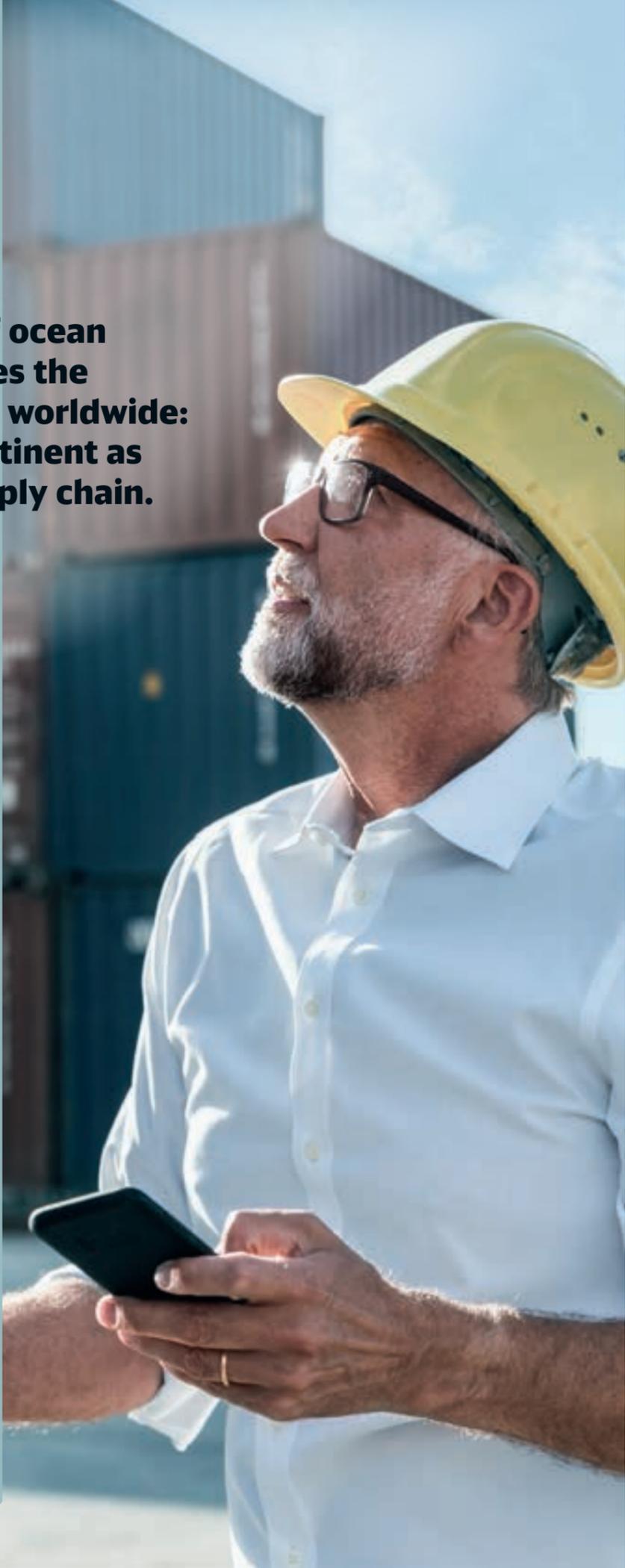
Our ocean freight services ship more than 5,500 containers a day to ports all around the world, making us the preferred partner for Full Container Load (FCL) and Less than Container Load (LCL) shipments. The extensive LCL services are supported by a global LCL hub and gateway network, enhanced by a seamless connection to our land services.

Combining our infrastructure with the knowledge of our experts, we are able to meet the highest standards for comprehensive door-to-door solutions.

**5,500**   
containers per day

**700,000**   
customers across

**130**   
countries



**Our customer is a Chinese battery manufacturer, who sends batteries from Ningbo, China, to Antwerp, Belgium, and Gothenburg, Sweden, delivering them to an automotive manufacturer.**

## The challenge

Meeting extremely high transport requirements:

- It is prohibited to transport or store batteries with other metal goods.
- Lithium batteries should be kept in a cool, dry, and well-ventilated reefer container (+77°F (25°C)).
- Handling of dangerous-goods containers requires extensive experience.



## The DB Schenker solution

- Developing a standard format for dangerous goods cargo declarations: working together with our customer to formulate a Standard of Performance as well as a continuous improvement program to ensure the process for future transports.
- Organizing the transport locally: DB Schenker Ningbo is entrusted with loading and securing all goods into reefer containers.

Using this solution, the first containers were successfully loaded at the port of origin using the maximum capacity – proving a successful setup.

As a result, our customer can now rely on smooth-running transport schedules, securing the supply chain.



# Air Freight

**Air freight is the fastest way to get goods to their destinations. DB Schenker's years of experience in international air freight shipping ensure a strong, flexible supply chain.**

With air freight, even time-sensitive projects can be handled with ease – by providing fast delivery of cargo while minimizing unexpected delays or obstacles.

As a member of TAPA (Transported Asset Protection Association), DB Schenker offers secure warehousing solutions at over 100 selected sites around the world. All sites meet or exceed the highest level of security certification known in the industry: FSR-A (Facility Security Requirements).

Maintaining a long-lasting partnership with our core carriers, DB Schenker is continuously working on the acceptance of battery transports on important routes.

Our local experts regularly prove their ability to find reliable solutions to move batteries by air around the globe for all relevant industries, from automotive to electronics and beyond.

**>100**   
secure operation sites



**A global electronics player needs to be supplied with lithium-ion batteries (LIB) for repair centers and customers in their respective markets in Europe and the Middle East.**

#### The challenge

An air freight solution to transport lithium batteries from Asia to Europe and the Middle East, ensuring flight connectivity to all final markets.



#### The DB Schenker solution

- Development of handling SOPs between the customer and DB Schenker, based on IATA rules and in cooperation with the chosen carrier
- Training of the involved parties
- Additional check of all required documentation by DB Schenker DG specialist (DGD, LOI, MSDS, UN report, etc.)
- Shipping with expert and level 1 airlines to guarantee lead times and service
- Ensuring proper transit via a hub solution in Europe (flight connectivity) to the final markets in the Middle East and Africa

DB Schenker successfully implemented the developed solutions and has extended the possibilities with the following benefits for the customer:

- Developing a strong partnership of all involved parties to secure smooth and faultless transport
- Clear lead times after handover to the airline and acceptance, trackable in our eSchenker services.



We take care of the whole supply chain: as flying batteries is about more than simply booking a flight, solutions should be simple and not complex.

# Contract Logistics

**As a resourceful partner for contract logistics solutions, we add value to every step of your supply chain.**

We cover all stages of the supply chain – and from supplier to customer delivery from reverse logistics to aftermarket support in different industries.

Our worldwide network covers more than 750 locations in over 50 countries with a total warehouse space of around 95 million square feet (more than 8.5 million square meters).

The requirements for battery logistics differ in each region, sometimes even within one country. Some countries have only few requirements, whereas others have very restrictive safety regulations.

Our local DG Experts, in cooperation with our contract logistics experts, are aware of the requirements to find the perfect solution for our customers.

**750**   
locations

**50**   
countries

**8.5 million**   
sq. m warehouse space

We are committed to investing in the future by actively driving innovation and digitalization. To bring today's ideas to tomorrow's unique abilities and add value: lower cost, better quality, higher flexibility.



## A German premium OEM requires a supply of lithium-ion batteries for the production of electric vehicles.

### The challenge

Developing a sustainable solution ensuring the compliance with and development of quality requirements through enhanced quality control of the products:

- Voltage measurement at part level
- Continuously quality reporting
- Dust prevention and temperature monitoring
- Serial-number-based tracking



### The DB Schenker solution

- Implementation of logistic activities in the DB Schenker shared logistics center nearby
- Two-shift warehouse acting as a blueprint for other warehouse activities in this sector in regard to operational excellence
- Continuous expansion of capacities, benefiting the customer



DB Schenker's experience in managing the supply chain for OEMs and the leading battery manufacturers around the globe is the key benefit for our customers: to supply the future of electric mobility.

# Rail Logistics

**The DB Schenker network provides a broad range of multimodal as well as conventional rail solutions.**

DB Schenker has been a pioneer in establishing regular transports on the Trans-Eurasian corridor connecting China with Europe and vice versa by rail.

This intermodal connection is an attractive addition to other transport modes: lower transport cost compared to air freight, faster lead times compared to ocean freight. In regard to batteries, the general packing and labeling provisions of RID SMGS apply, but they are identical to ADR and very similar to the IMDG Code.

Beyond rail transport, our services range from pre-/on-carriage by truck, transshipments via terminal and railports, and numerous additional services (e.g. warehousing, monitoring, customs, documentation), as well as up to the deployment of multilingual staff. With access to the vast track network of our parent company, Deutsche Bahn, we can easily cover great distances.

**2,873**   
trains per day



**DB Schenker has created an attractive solution for the essential transport route from China to Europe. This solution is especially beneficial to battery and component producers.**

Even though the industry is shifting battery production to its final customers in America, the main producers are still in China, South Korea, and Japan. Reliable battery transport from these production sites to destinations in Europe is a key element for efficient supply chains in this industry. While regulations for transport via air freight increase, DB Schenker has created a multimodal solution.



#### The challenge

Transporting batteries from Asia to Europe by rail.

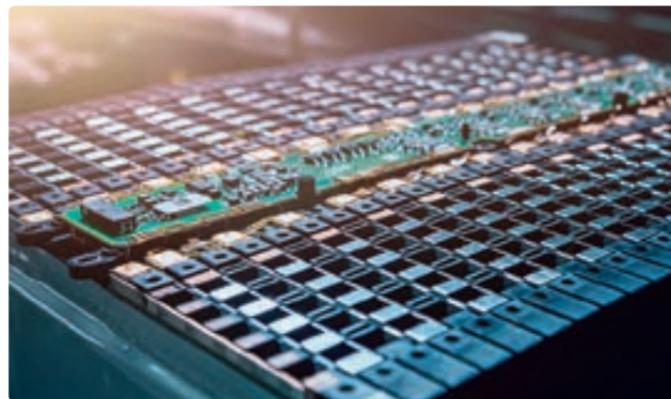


#### The DB Schenker solution

- Short-sea services from South Korea and/or Japan to Vladivostok to load batteries on rail wagons to Europe, where we benefit from the harmonized DG regulations between Europe and Russia.
- For China, DB Schenker provides services either to truck the batteries out of China to the Russian border or to load them on a short-sea vessel to Vladivostok to link them to Europe by rail.



This solution works and has already been tested in both directions. It helped our customers to reduce lead times and costs in this important economic corridor.



# Your one-stop solution for the entire battery supply chain.

**As a fully integrated service provider, DB Schenker covers all logistics modes of transport, as well as the complete life cycle of batteries, globally.**

We cover everything from the inbound transport of materials to the production, as well as the outbound transport of finished goods, after-sales services, and the reverse logistics of recycling or disposal. Our global network of proven dangerous-goods experts allows our customers to compete with the challenges of an emerging industry. Our combined expertise in automotive, electronics, and the semiconductor business results in sophisticated cross-industrial solutions.

At DB Schenker, we can provide or organize the proper packaging to ensure safe transport and storage for all kind of batteries: new, used, and even damaged ones.

Battery logistics in a nutshell:

Life cycle services DB Schenker offers	Lithium (metal/ion) cells/batteries damaged/defective?	
	No	Yes
<b>Packagings</b> We provide approved dangerous-goods packagings	✓	✓
<b>Packing marking/labeling</b> We provide solutions to pack, mark, and label packaging	✓	✓
<b>DG transport document</b> We check the DG transport documents issued by the consignor according to the international/national regulations		
<b>Transport</b> We provide eco-friendly transport according to international/national regulations		
<b>Warehousing</b> We provide warehousing services according to national legislation	✓	✓
<b>Recycling or disposal</b> We provide recycling services according to national legislation (selected partners)	✓	✓
<b>Consulting</b> We provide consulting services concerning regulations for classification, packaging, marking/labeling, documentation, transport, and warehousing, and we offer training	✓	✓

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