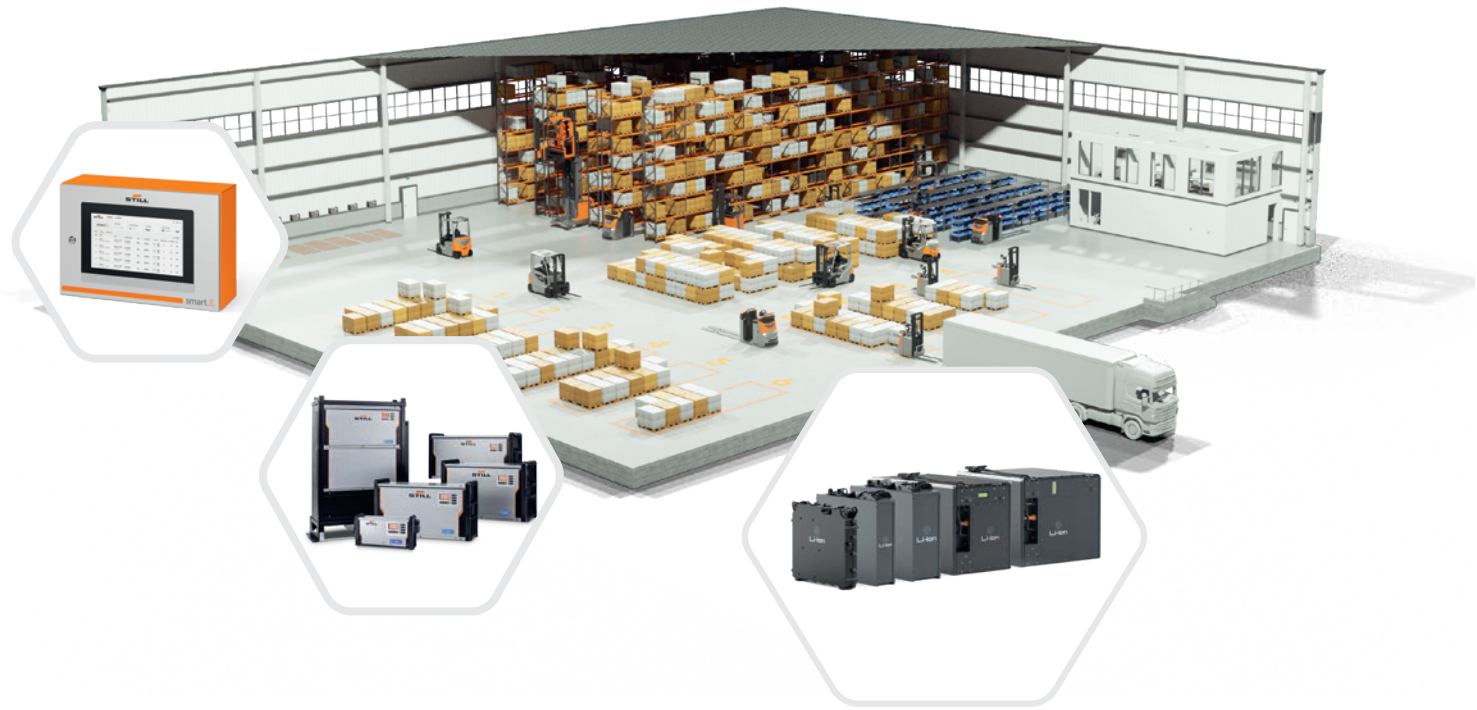
Energy Solutions

Lithium-Ion Batteries

Chargers

Smart Energy Unit



smart ENERGY

first in intralogistics

STILL has been a pioneer in electromobility and intralogistics for over 100 years – with innovative vehicles and powerful battery systems. And all that at zero emissions.
Lithium-ion technology has been opening up new dimensions of battery-powered vehicle systems for several years now: more energy-efficient, more powerful, more available, more space-saving and safer than ever before, lithium-ion batteries are the answer to the ever-increasing demands of intralogistics. And in this regard too, STILL remains a trailblazer: With a perfectly integrated concept incorporating powerful lithium-ion batteries, innovative vehicles, flexible chargers and a pioneering battery management system. For our customers, this means maximum flexibility, unmatched efficiency and optimal CO_2 levels.

Lithium-ion technology excels wherever vehicles in multi-shift operation enable maximum productivity without battery changes and where short (interim) charging cycles must suffice to achieve full energy performance. Lithium-ion batteries are the perfect solution for all warehousing and production environments in which space is scarce and safety requirements are high. In short, anywhere where smart energy solutions are the key to efficiency, future viability and success. Reduce your operating costs with STILL lithium-ion technology: You will benefit not only from optimised energy efficiency compared to lead-acid batteries, but also from significantly higher battery capacities and up to twice as long a battery life.

The 'Simply Efficient' factors: Performance attributes as a measure of economic efficiency

Simply easy

- Work comfortably without time-consuming battery changes
- Impressively simple: Maintenance-free operation, no need for regular water replenishment or acid level checks
- (Interim) charging of the lithium-ion battery is quick, flexible and straightforward
- All relevant charging management data is always in view via the STILL Smart Energy Unit (SEU)* intuitive dashboard

Simply powerful

- Always ready for use thanks to the high energy density and the quick and interim charging options of the lithium-ion batteries
- Constantly full truck performance thanks to stable voltage curves
- Extremely fast charging time with a charging current of up to 375 A and powerful chargers for every battery class

Simply safe

- A safe and healthy workplace with no battery changes or maintenance
- A high level of user safety as batteries require no acid for operation and do not emit battery gases
- Safety, transparency and proactive charging management with the STILL Smart Energy concept
- A perfectly integrated overall concept incorporating truck, battery, charger and battery management system

Simply flexible

- Decentralised charging without any complex charging infrastructure – optionally even with a on-board charger that can be simply plugged into a standard socket
- Straightforward to use thanks to the maintenance-free lithium-ion battery
- All relevant battery and charging data for the entire fleet is always in view via the innovative dashboard of the STILL Smart Energy Unit

Simply connected

- A perfectly integrated energy system allows for a long battery life and the efficient use of the industrial truck
- The STILL Smart Energy interface integrates all stationary chargers into one overall smart network and manages energy requirements and levels to ensure efficiency and save costs

Maintenance-free operation: No need for time-consuming maintenance or checks (e. g. of the acid level and water level) – intelligent battery management ensures protection and long service life

Environmental responsibility: The high efficiency during charging and discharging reduces energy requirements and conserves valuable resources

High availability: Always ready to operate, even in multi-shift operation, thanks to extremely fast charging and interim charging without any loss of performance

With STILL, you benefit from one of the most comprehensive and powerful ranges of pioneering lithium-ion batteries that intralogistics has to offer. Three different voltage classes (24, 48, 90 V) and flexible capacities guarantee the right battery for any (energy) need. Charge up, get in and get going. STILL lithium-ion batteries are compact powerhouses: They can hold twice as much energy as a lead-acid battery in the same construction volume. Their net capacity and efficiency are substantially higher than that of conventional batteries and permit sustainable and resource-efficient energy management. In terms of availability, STILL is also setting new standards. Just 60 minutes of charging time is enough to achieve up to 60 percent of charging capacity – all with no loss of performance or impact on battery life whatsoever. A full charging cycle takes two hours on average. As such, time-consuming battery changes between shifts are a thing of the past. Now, thanks to smart charging and interim charging, STILL lithium-ion batteries make even 24/7 shifts possible with just one battery. There is even no more need to spend time and money on battery maintenance. Unlike lead-acid batteries, lithium-ion batteries are maintenance free and do not require any separate infrastructure for battery changes and charging.

Overview Lithium-Ion Batteries

Battery voltage	Batterie type	Capacity (Ah)	Capacity (kWh) net	gross	IP protection class	Operating temperature	Charging temperature [3]	Maximum charging time 0–95 % [4]
24 V Li-Ion		~69	1.5	1.8	67	-5 °C to 45 °C -35 °C to 45 °C [1]	-5 °C to 45 °C -35 °C to 45 °C [1]	1.8 h (24 V, 225 A, 6 kW)
		~138	3	3.6	6K9K			1.8 h (24 V, 225 A, 6 kW)
		~276	6	7.1				1.8 h (24 V, 225 A, 6 kW)
		~414	9	10.7				1.8 h (24 V, 225 A, 6 kW)
		~552	12	14.3				2.2 h (24 V, 225 A, 6 kW)
48 V Li-Ion	C-Line	~404	15.4	18.8	54	+5 °C to +45 °C	+5 °C to +45 °C	5.5 h (48 V, 160 A, 9 kW)
48 V Li-Ion	X-Line	~360	13.7	17.2	6K9K	-10 °C to 45 °C [2] -28 °C to 45 °C [1]	-10 °C to 45 °C [2] -25 °C to 45 °C [1]	2 h (48 V, 375 A, 18 kW)
		~552	22.9	26.5				2 h (48 V, 375 A, 18 kW)
		~736	31.8	35.3				2 h (48 V, 375 A, 18 kW)
		~920	39.7	44.2				2.5 h (48 V, 375 A, 18 kW)
90 V Li-Ion	X-Line	~360	25.4	31.7	6K9K	-10 °C to 45 °C [2] -28 °C to 45 °C [1]	-10 °C to 45 °C [2] -25 °C to 45 °C [1]	2 h (80 V, 375 A, 30 kW)
		~368	29.7	33.0				2 h (80 V, 375 A, 30 kW)
		~460	33.8	41.2				2 h (80 V, 375 A, 30 kW)
		~552	42.3	49.5				2.1 h (80 V, 375 A, 30 kW)
		~736	59.2	65.9				2.3 h (80 V, 375 A, 30 kW)
		~828	63.4	74.2				2.6 h (80 V, 375 A 30 kW)
		~920	74.2	82.4				2.8 h (80 V, 375 A, 30 kW)
		~1,288	95.1	115.4				3.8 h (80 V, 375 A, 30 kW)
		~1,288	101.5	115.4				3.8 h (80 V, 375 A, 30 kW)

[1] With low temperature protection
[2] Up to 0 °C full performance, below 0 °C possibly reduced performance
[3] Nominal charging range from +10 °C to +30 °C for X-Line, from +15 °C to +30 °C for C-Line, outside the nominal charging range possibly reduced power
[4] At a battery temperature of 25 °C

		HFC 24V		HFX STD 24 V		HFX STD 48 V			HFX STD 80 V			
		120A (3 kW)	225A (6kW)	120 A (3 kW)	225 A (6 kW)	OBC[1] 9 kW	185 A (9 kW)	375 A (18 kW)	OBC[1] 9 kW	110 A (9 kW)	210 A (17 kW)	375 A (30 kW)
Mains voltage	V	220V-240V +/-10%	400V +/-14%	230 +/-10%	400 +/-10%	400 +/-10%	400 +/-10%	400 +/-10%	400 +/-10%	400 +/-10%	400 +/-10%	400 +/-10%
Mains frequency	Hz	50/60	50/60	50/60	50/60	45/65	50/60	50/60	45/65	50/60	50/60	50/60
Power cable length (AC)	m	3	3	3	3	4	3	3	4	3	3	3
Protection class	IP	21	21	21	20	65	20	20	65	20	20	20
Operating temperature	° C	-20 bis +40	-20 bis +40	-20 to +40	-20 to +40	-25 to +60	-20 to +40	-20 to +40	-25 to +60	-20 to +40	-20 to +40	-20 to +40
Dimensions (L x W x H)	mm	289 x 360 x 84	289 x 360 x 137	417 x 110 x 198	633 x 180 x 344	-	633 x 180 x 344	785 x 247 x 392	-	633 x 180 x 344	647 x 247 x 392	780 x 369 x 1090
Weight	kg	5.5 (5.7 mit Fuß)	9.1 (9.3 mit Fuß)	9.3	25	17	25	47	17	25	38	104
Max. DC current	A	125	225	120	225	170	185	375	120	110	210	375
Max. AC current	A	15	15	15.5	12.8	15.5	15.7	31.5	15.5	15.1	30.6	54.3
Max. AC power	W	3300	6450	3360	7490	10000	9940	20340	10000	9710	18110	31970
Efficiency (up to)	%	93	93	93	93	94	92	93	94	93	94	94

		HFX PRO 48 V			HFX PRO 80 V		
		120 A	185 A	375 A	120 A	240 A	375 A
Mains voltage	V	400 +/-10%	400 +/-10%	400 +/-10%	400 +/-10%	400 +/-10%	400 +/-10%
Mains frequency	Hz	50/60	50/60	50/60	50/60	50/60	50/60
Power cable length (AC)	m	min. 2.5	min. 2.5	min. 2.5	min. 2.5	min. 2.5	min. 2.5
Protection class	IP	21	21	21	21	21	21
Operating temperature	° C	0 to 40	0 to 40	0 to 40	0 to 40	0 to 40	0 to 40
Dimensions (L x W x H)	mm	430 x 415 x 355	430 x 415 x 355	460 x 735 x 355	430 x 415 x 355	430 x 735 x 355	460 x 1300 x 550
Weight	kg	30	37	72	37	72	111
Max. DC current	A	120	185	375	120	240	375
Max. AC current	A	nom. 14.7 (max. 16)	nom. 14.7 (max. 16)	nom. 29.5 (max. 32)	nom. 14.7 (max. 16)	nom. 29.8 (max. 32)	nom. 59.7 (max. 63)
Max. AC power	W	6800	10100	20200	10200	20500	34100
Efficiency (up to)	%	97	97	97	97	97	97

[1] OBC = on-board charger

On-board charger

Maximum availability: decentralised charging and interim charging irrespective of location – anytime and anywhere

High resource efficiency: saves on materials and space – in both trucks and the warehouse overall

Ease of handling: the STILL on-board charger is maintenance-free and can be used flexibly at any time

If desired, we will fit your truck with an on-board charger. The on-board charger permits decentralised charging and interim charging of your battery – all with remarkably high efficiency and impressive charging performance. The ideal solution for varying operating environments and flexible operational planning. With the STILL on-board charger, forgetting a charger is a thing of the past. In addition, the on-board charger is a great choice wherever the use of space is a matter of every metre. The truck can simply access any socket for charging– there is no need for any dedicated charging areas in the warehouse. Space and resources for external chargers can also be saved. Moreover, the STILL on-board charger has a compact and space-efficient design and does not require any additional accessories. Charging batteries was never simpler – and more environmentally friendly – than this. Simply smart.

Chargers

High availability: rapid charging and interim charging with a charging current of up to 375 A

Sustainability: long battery life thanks to a highly efficient charger and smart charging management

Flexibility: diverse energy system portfolio for the perfect fit

HFX STD

HFC

HFX Pro

Everything from a single source. At STILL, the truck, lithium-ion battery and charger are a perfectly coordinated energy system. In addition, the smart STILL battery management system guarantees the perfect coordination of truck control and battery management. The system equalises load peaks and always provides sufficient energy. This protects the battery and extends its operating time as well as the service life.

More benefits of our chargers: Our portfolio is as diverse as our customers' requirements. For an optimal charging process, our STILL lithium-ion chargers and STILL lithium-ion batteries are in continuous communication with each other to ensure flexible compatibility between devices of corresponding voltage classes – 24, 48 or 80 V.

Furthermore, STILL chargers have an efficiency of up to 97 percent. That is substantially more than conventional chargers can achieve, and with noticeably lower energy requirements. Short charging and interim charging times ensure that forklift trucks are reliably available at all times, perfectly tailored to your schedule and shift planning. Depending on the battery capacity, 60 minutes of charging time is enough to achieve up to 60 percent battery capacity. Thus, smart charging management means that even challenging multi-shift use can be accomplished with no need to change batteries. No matter what your shift planning looks like and how long the available charging slots are, how much space you have for chargers in your hall layout and whether you want to have them on the floor or prefer the wall-mounted version: Together we will find exactly the right device for your individual, efficient battery charging management.

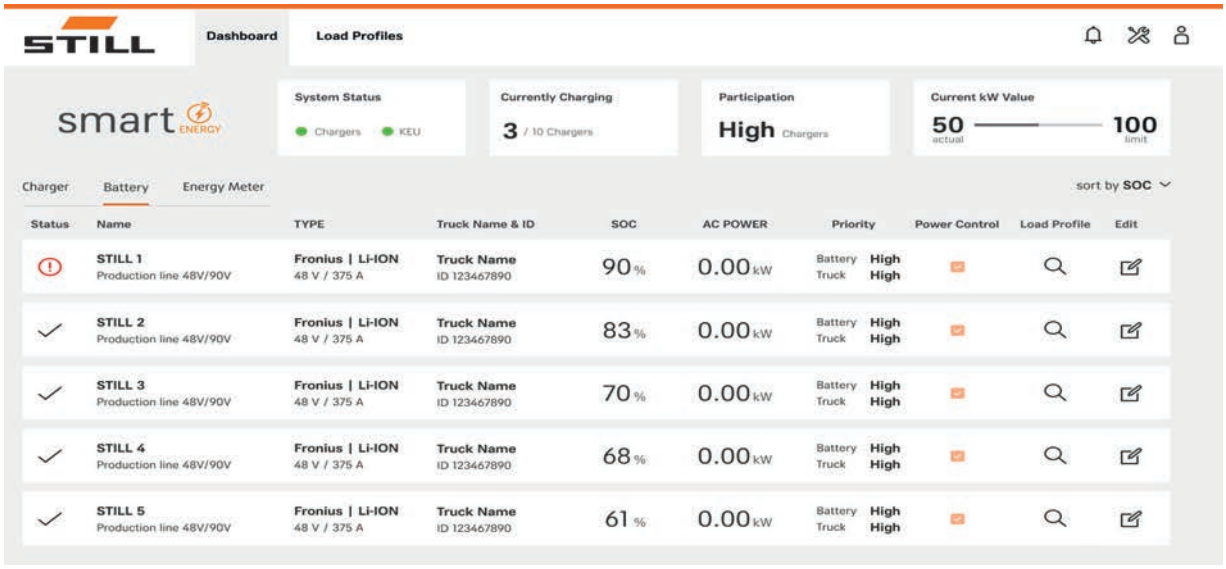
Optimised costs: cost-intensive power peaks are avoided thanks to smart power distribution and the definition of charging time slots

Transparency: clear visualisation of all relevant charging data in one user friendly dashboard

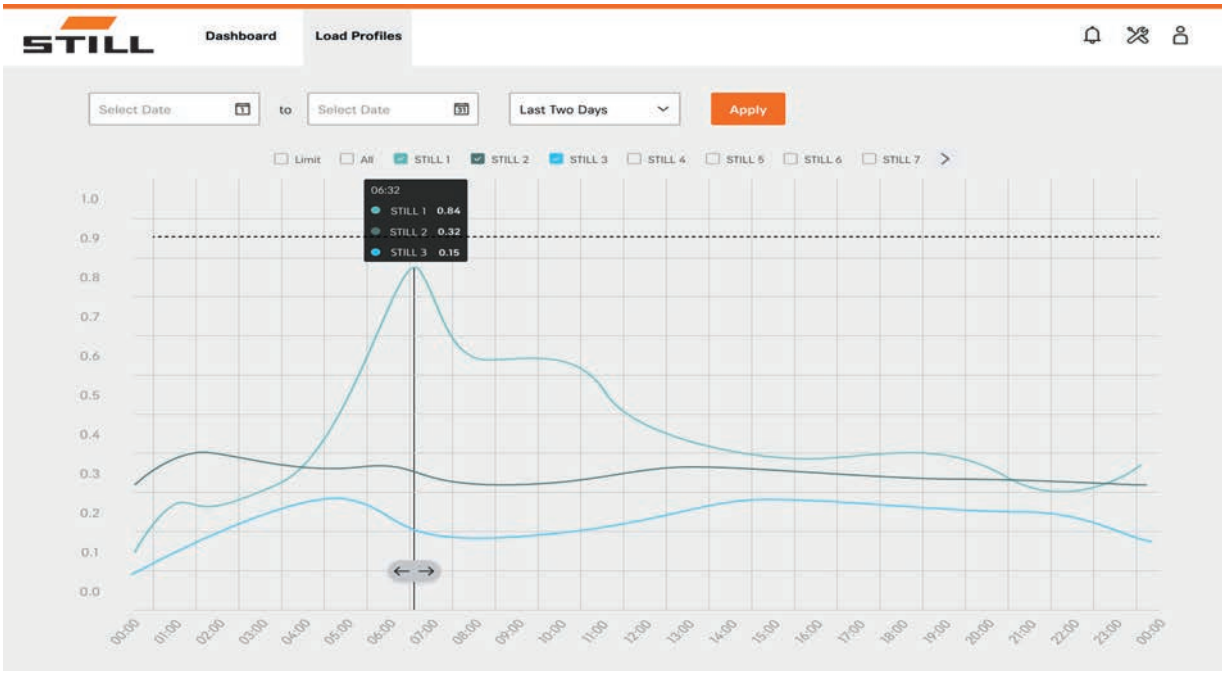
Energy efficiency: optimised resource utilisation thanks to a smart charging management algorithm

Smart fleet management is a basic prerequisite for remaining competitive in the dynamic world of intralogistics. Smart charging is an important part of this, ensuring availability, flexibility, energy efficiency and, not least, transparent cost management. Only if you know when, where and how much energy is needed and consumed can you plan your charging processes and thus the availability of your vehicles and the seamless flow of materials reliably and with foresight. With STILL smart charging, you benefit from comprehensive, digital and transparent monitoring and management of battery and charging-relevant processes. The STILL Smart Energy Unit (SEU) provides hard-wired networking for your stationary chargers and ensures efficient energy distribution. Thus, charging levels can be analysed, capacities planned and charging processes prioritised. With remarkable results: Thanks to a smart charging algorithm, your fleet remains ready at all times, avoiding queues in front of chargers. Via the dashboard, you will have absolute clarity about battery charge levels, energy use and charging behaviour at all times. And importantly, you will save money. After all, by defining charging time slots, priorities and power limits, you will avoid cost-intensive load peaks, and you will be able to achieve noticeable reductions in your power costs overall. That is smart charging with STILL lithium-ion technology.

Dashboard

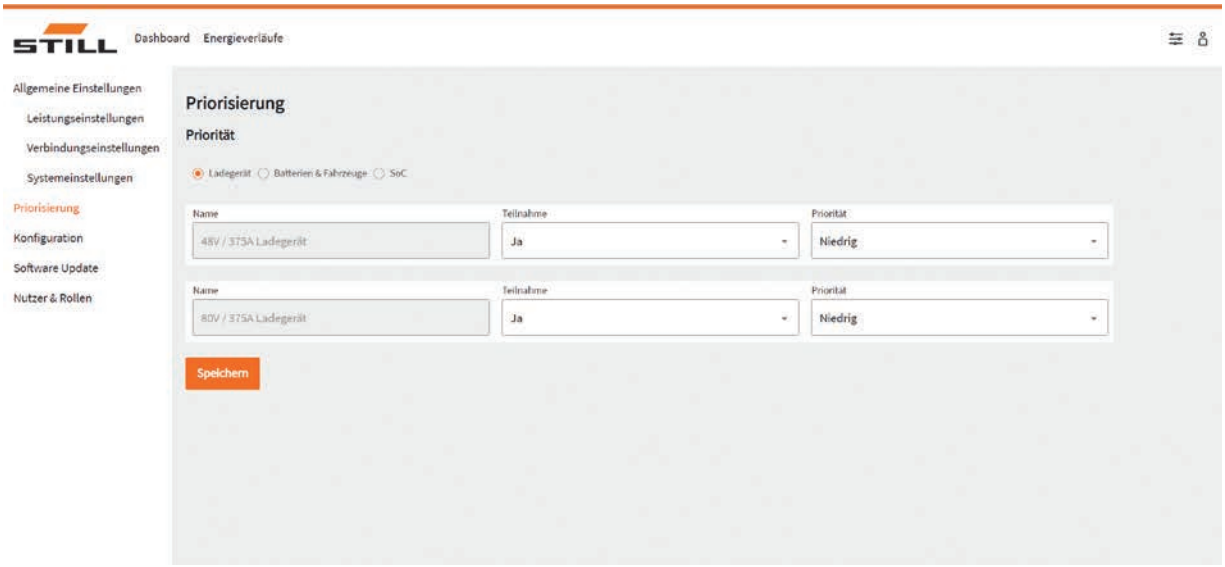


The dashboard of the STILL Smart Energy Unit provides a clear view of all relevant charging management information. This includes not only the system status and the number of active chargers, but also the current prioritisation (priority) and the current operating power. The lower part of the dashboard provides a detailed view of the most important parameters for each connected charger.



In the “Load Profiles” area, the operator is provided with an overview of the charging data from all connected chargers. Different time slots can be selected, any number of devices can be viewed in comparison and evaluations can be downloaded. The data can be used to obtain helpful information to optimise charging processes, e. g. to avoid load peaks by setting appropriate charging limits.

General Settings



The “General Settings” button also offers a number of individual setting options. For example, power limits can be defined in kW, charging time slots can be configured or personal priorities set, based on categories such as “Chargers”, “Status of charging (SoC)” and “Truck ID”.

STILL GmbH
Berzeliusstr. 10
22113 Hamburg
Germany
Tel.: +49 40 73 39 20 00
Fax: +49 40 73 39 20 01
info@still.de

For further information please visit

www.still.eu

STILL is certified in the following areas: Quality management, occupational safety, environmental protection and energy management.

Energy Solutions EN 03/24 Subject to technical modifications.

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