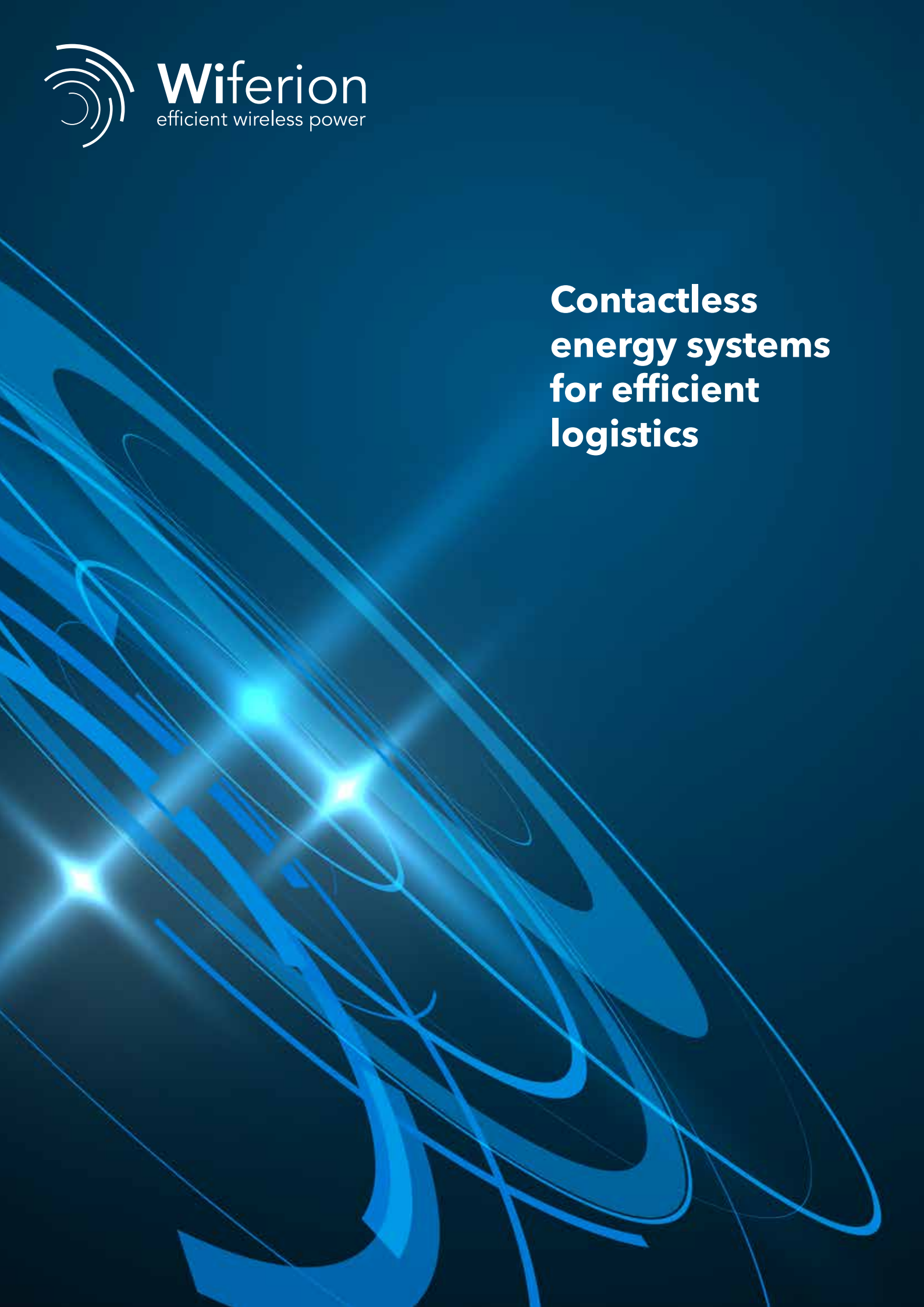
Wiferion
efficient wireless power

Contactless energy systems for efficient logistics

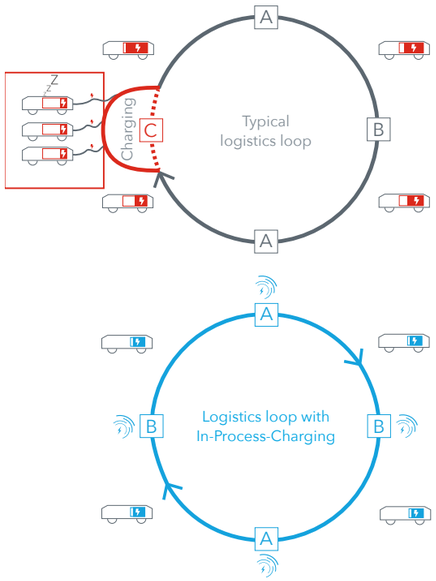


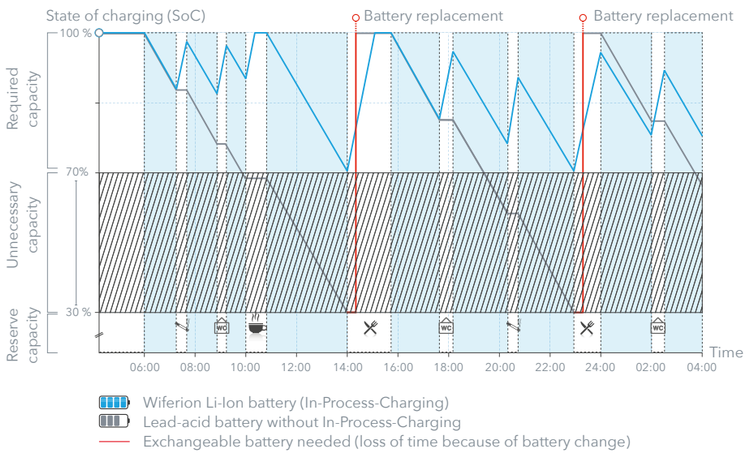
Energy for the future of logistics

Cost pressure, around-the-clock availability and high levels of automation are constantly creating new challenges for production and intralogistics. Meanwhile, warehousing and inventory management processes are facing shorter turnaround times, demanding greater flexibility and scalability from suppliers and operators.

Companies are missing out on a huge source of potential to overcome this situation, as vehicles equipped with old lead-acid technology are still spending hour upon wasted hour in charging stations, uselessly taking up valuable space.

But there's a better way – with Wiferion energy systems, you can take your logistics to the next level. Contactless, inductive energy transfer, state-of-the-art lithium-ion battery technology and comprehensive data acquisition make your logistics processes more efficient, intelligent and cost-effective.





Increase vehicle availability by up to 30%

Wiferion energy systems lower your costs by allowing you to operate with smaller vehicle fleets and do away with large charging areas.
With In-Process-Charging, the batteries are charged intermittently at critical areas of the warehouse, such as at the loading and unloading points. The vehicles can keep being recharged during breaks and at downtimes within the process, meaning they are available around the clock for automated continuous operation. Vehicle availability increases by up to 30% because charging no longer needs to take place outside of the logistics loop.

Avoid downtime and costly battery changes

The graph shows the state of charge of two different battery systems in otherwise identical industrial trucks.
The absence of mechanical charging contacts in Wiferion's wireless charging system makes it easy for batteries to be charged intermittently during any short break. With traditional charging processes, on the other hand, the vehicle must be taken out of operation for a longer period of time after each shift so that it can be charged or have its battery changed. In-Process-Charging enables you to use lithium-ion batteries that are more than 30% smaller in size, significantly reducing battery investment costs.

Better

- The In-Process-Charging technology in Wiferion energy systems allows you to use your logistics vehicles non-stop – 24 hours a day, 7 days a week.
- The faster initiation of the charging process and high charging currents speed up charging, enabling battery charging to be integrated seamlessly into your logistics operations.
- From the power supply unit and the inductive energy transfer technology to the battery itself, overall system efficiency stands at 93% and exceeds even that of many wired charging systems.

Simpler

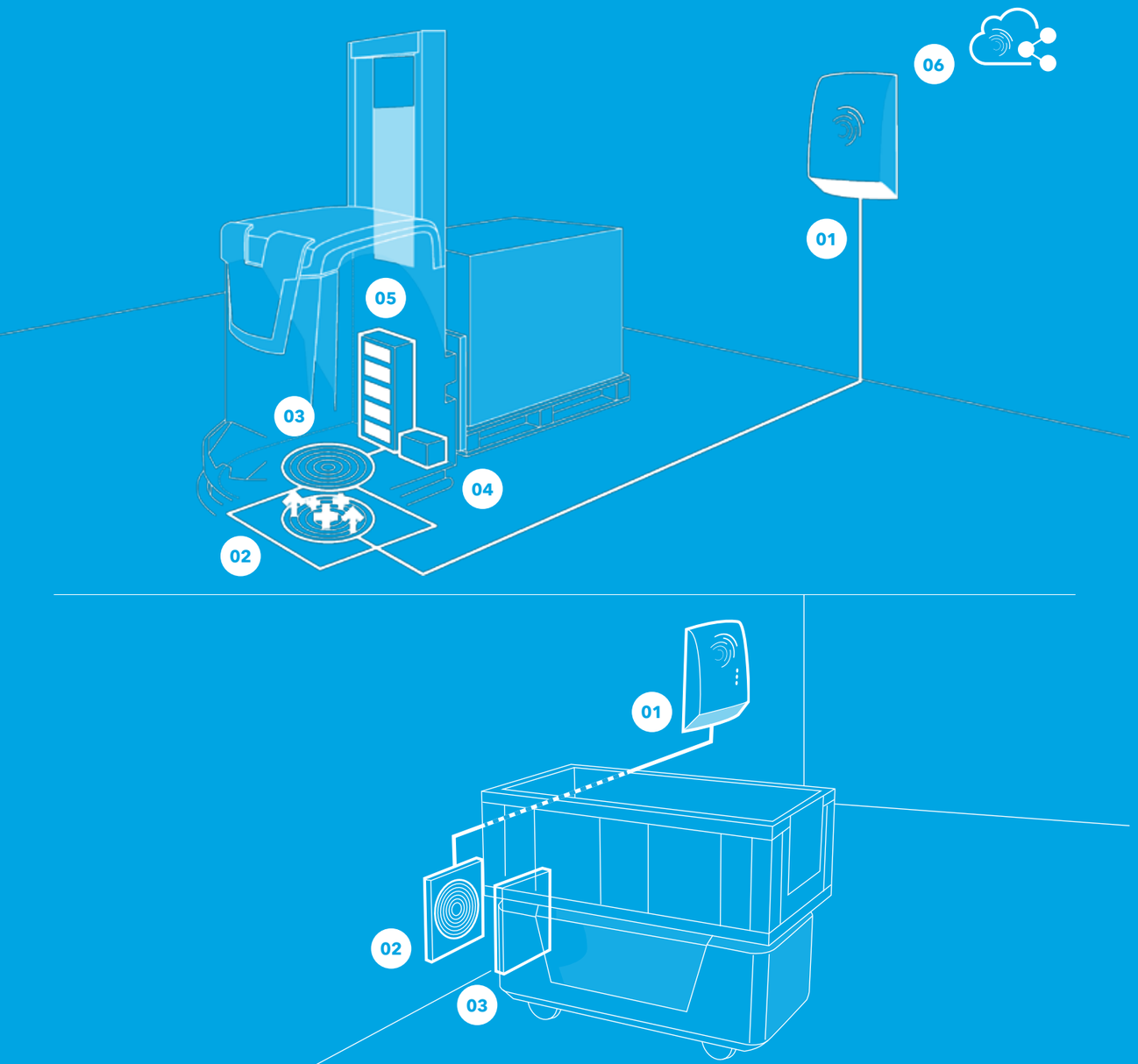
- The wireless, inductive energy transfer technology simplifies the charging process, making autonomous logistics vehicles much easier to use.
- The flexible energy supply infrastructure can be tailored to your requirements. You only need to position charging stations at appropriate points in your logistics systems.
- The systematic recording of all energy data allows you to look ahead and manage your processes in advance. For example, you can plan vehicle services to help prevent breakdowns and take specific vehicles out of operation if their battery is running low or error messages appear.

Cheaper

- Expensive changes to building infrastructure and special areas for changing and charging batteries are no longer necessary.
- Regular In-Process-Charging reduces the required vehicle battery capacity and the amount of peak current to be provided from your energy supplier (peak shaving).
- Wear parts, spare batteries and damage caused by improper use are things of the past, as are accidents brought about by overlooked or frayed charging cables.

Everything from a single source

Wiferion provides the entire energy system from a single source – from its simple connection to the building's power supply and the inductive transfer of energy to energy storage in the state-of-the-art lithium-ion batteries that ultimately power the vehicles.



Wiferion offers the first market-ready and 100% contactless wireless charging system for industrial electric vehicles. The automatic, CAN-controlled charging solution for the latest battery systems can be installed quickly and flexibly without any infrastructural work. Thanks to the smart internal communication technology, charging starts in less than one second. Once charging is complete, the automated guided vehicle (AGV) or industrial truck is ready to go again and the system automatically turns off.

01
The etaLINK wall box generates the high-frequency AC voltage needed for the inductive transfer of energy.

02
The etaLINK charging pad on the floor or on the wall generates an electromagnetic alternating field.

03
The etaLINK receiver pad in the vehicle is positioned in the alternating field and converts the vibrations back into electricity.

04
The etaLINK charging unit manages, monitors and records the battery charging process.

05
The etaSTORE lithium-ion batteries store the electrical energy and supply it to all of the vehicle's components.

06
The etaHUB software communicates the current state of charge and the energy consumption to a central database and can be connected to your systems using a CAN bus.

What Wiferion can do for you

Automated charging

As soon as the vehicle autonomous drives or is driven by the operator to the charging pad, the automated charging starts within one second. The inductive energy transfer technology means there is no need to manually connect the vehicle. Wear parts are no longer necessary and potential hazards can be avoided.

High efficiency

The sophisticated power electronics – from the power supply unit and the inductive energy transfer technology to the battery itself – achieve a 93% degree of efficiency. This even exceeds that of many wired charging systems.

High charging power

Our energy charging systems reach a charging power of up to 12 kW, meaning that even large vehicles are ready for use again in a very short time.

Compact design

Our induction pads, charge controllers and battery packs have a compact design so they also fit perfectly into small vehicles.

One-4-All System

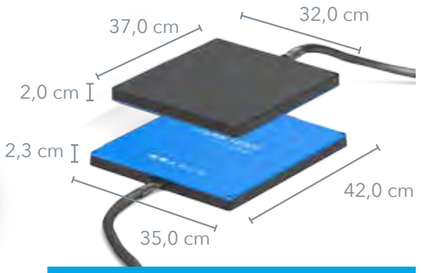
One charging system for all vehicles. The intelligent system detects the voltage needed by each electric vehicle and quickly provides the required amount of energy automatically, e.g. 24 or 48 volts.

etaLINK

The contactless link to your logistics processes

It is no coincidence that we named our charging equipment etaLINK. It achieves an efficiency – indicated by the Greek letter η (eta) – of up to 93%, from the power supply unit all the way to the battery. This even outperforms many wired charging systems.

01 Wallbox
02 Charging Pad
03 Receiver Pad
04 Charging Unit



etaLINK 12000

Continuous charging power	12,000 W
Charging voltage	15 – 120 V
Charging current	400 – 100 A
Protection class	IP65 & IP68
Optimum distance	15 – 40 mm
Position tolerance	+/– 70 mm

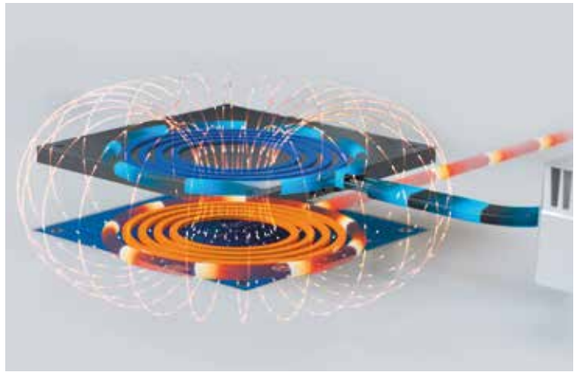
etaLINK 3000

Continuous charging power	3,000 W
Charging voltage	15 – 60 V
Charging current	60 A
Schutzart	IP65 & IP68
Optimum distance	15 – 40 mm
Position tolerance	+/– 30 mm

Fast, safe, efficient

Inductive energy transfer

Induction bridges the gap by allowing for the contactless transfer of electrical energy through the air.



Induction involves electrical energy being transferred across high-frequency magnetic fields.
The etaLINK wall box converts the mains electricity into several thousand hertz and uses the coil in the stationary charging pad to create an alternating field. This field, whose strength is similar to that of a conventional induction stove, induces a high-frequency alternating current in the coil in the receiver pad. The charging unit then uses this current to charge the batteries.

etaLINK 3000r

Also available in an elongated shape for integration into the side of flat vehicles.

Better

- etaLINK achieves efficiency of up to 93% during the transfer of energy.
- The charging process begins within 1 second.
- The system complies with the IP65 & IP68 protection class, making it suitable for use outdoors and in harsh environments.

Simpler

- AGVs and other logistics vehicles can simply be driven up to the charging pad from any direction and a high position tolerance is guaranteed.
- Thanks to their small dimensions, the mobile units can even be fitted into compact vehicles.
- Management, consumption and telemetry data is transferred to the charging pads contactlessly via infrared interfaces, allowing the system to be digitally integrated into the logistics process.

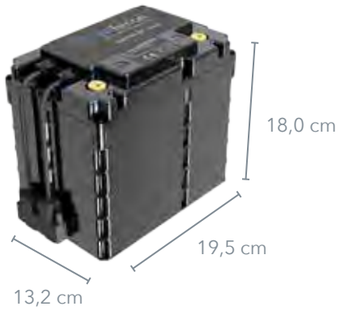
Cheaper

- In-Process-Charging may reduce the amount of peak current provided by your energy supplier.
- One charging pad can be used by a vast number of different vehicles.
- Changes to building infrastructure and special charging areas are not necessary.
- Wear parts, damage caused by improper use and problems caused by contamination all become things of the past.

etaSTORE LFP und LTO

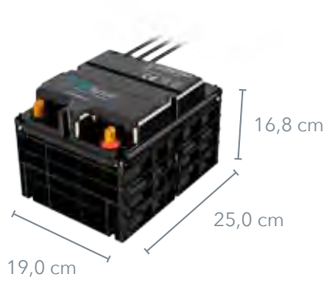
Small, fast, durable

Our etaSTORE relies completely on lithium-ion battery technology.
In fact, our In-Process-Charging technology just wouldn't be the same without it. Lithium-ion batteries have a long service life, simplify processes significantly and allow for lean infrastructure, making them the most cost-effective long-term solution. Our close partnership amongst others with Japanese battery manufacturers is what gives our energy storage systems such exceptional durability.



etaSTORE LFP
The ideal solution
for continuous use

Capacity	21 Ah
Charging rate	up to 2C
Cycles	> 7.500
Modular with integrated BMS	



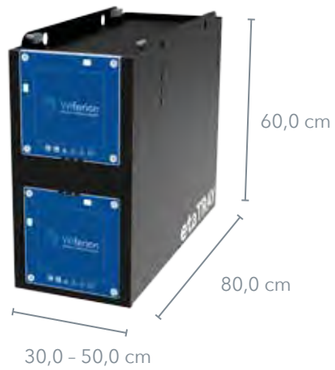
etaSTORE LTO
The right choice for high charging currents and many charge cycles per day

Capacity	22 Ah
Charging rate	up to 5C
Cycles	> 17.000
Modular with integrated BMS	

etaTRAY

Upgrade your industrial trucks

Old industrial trucks still have a lot of life left in them.
Instead of throwing them on the scrap heap, you can replace their standard lead-acid battery trays with our etaTRAY in just a few steps. This retrofitting solution combines inductive power transmission, intelligent charging technology and lithium-ion batteries to make old vehicles fit for the future.



etaTRAY
Plug-and-play energy systems to retrofit your industrial trucks

Available for all standard industrial truck battery trays with battery capacities of 100–240 Ah

etaHUB

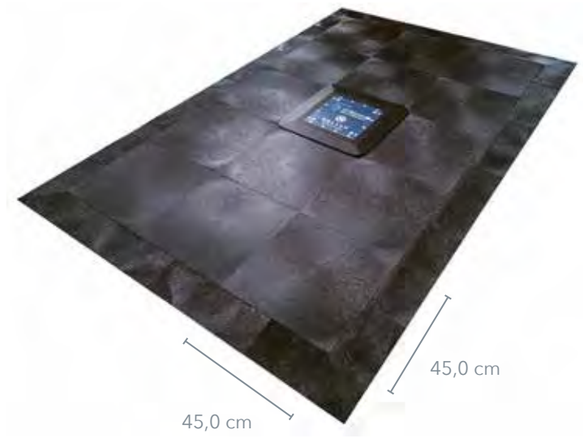
Keeping everything under control

Your energy data holds the key to optimizing your processes. Our etaHUB cloud solution and the CAN bus gives you access to all this data. You could use it, for example, to plan in vehicle services far in advance to help prevent breakdowns or to take specific vehicles out of operation if their battery is running low or error messages appear.

powerTILES

Flexible installation without
any infrastructural work

The robust floor tiles, which can withstand being driven on, can be arranged flexibly according to requirements without the need for any costly floor work. This means you can start using your wireless charging system in no time at all and can respond quickly to any changes in your logistics process.



Better

- Extremely long service life even at high charging rates
- In-Process-Charging and high C-rates for fast charging for greater availability with smaller battery capacities
- Low stand-by consumption and extremely low self-discharge rates

Simpler

- Capacity can be scaled according to requirements
- Real-time management of charging and discharging process for optimum battery use
- CAN connectivity for simple integration into your processes

Cheaper

- Batteries have a service life of up to ten years, covering the entire lifespan of one or more vehicles
- Batteries no longer have to be replaced midway through a process
- No need for separate charging infrastructure or storage of spare batteries

Our research improves your logistics

2015
Four ISE researchers lay the foundations for the company's development

2016
Development work begins on **etaLINK**

2017
First field tests with pilot customers

2018
Market launch of **etaLINK 3000**

2019
Market launch of **etaSTORE etaTRAY**

2020
Unveiling of **etaLINK 12000 etaHUB**

Energy supply thought through to the very last detail

We develop and sell energy systems for production and intralogistics. The etaLINK inductive charging system, the etaSTORE lithium-ion batteries and the etaHUB central monitoring platform form the foundation of our scalable, modular energy systems. All components are intelligently and optimally adjusted to fit with one another so that we can offer you the most efficient, smartest and most cost-effective energy system technologically available.

Research for your processes

Our company is a spin-off from the Fraunhofer Institute for Solar Energy Systems (ISE) in Freiburg, Germany. In 2015, four former researchers lay the foundations for the establishment of Wiferion by developing an inductive 22 kW charging solution for an electric car. As a start-up, we offer you technologically outstanding solutions tailored to the requirements of your specific market – and we already have lots of satisfied customers. Equip yourself for the future!

We want to change the world

We are convinced that by encouraging more and more companies to turn to electricity and power all of their business processes with renewable energy, we will change much more than logistics alone.
We are driven by a determination to use our systems to create a sustainable way of doing business and to protect our planet's limited resources.

Awards 2020

- IFOY Winner 2020
- LogiMAT Product of the Year 2020

YOUR BENEFITS AT A GLANCE

- **Automatic charging**
- **One-4-All – one charging system for every type of vehicle**
- **Short charging times**
- **High position tolerance**
- **Outstanding efficiency of up to 93%**
- **Wear- and maintenance-free high level of availability**
- **Extremely safe No tripping hazards**
- **Significant reduction in process costs**

Together we can make your logistics processes more efficient

ASTI MOBILE ROBOTICS · BÄR · BHS · BRUNNER · CEIT · EISENMANN · h · KUKA · LINDIG · SHERPA MOBILE ROBOTICS · STILL | LR Intralogistik · STÄUBLI WFT

What our partners say

"In-Process-Charging plays a crucial role in improving the efficiency of our SOTO robots. Wiferion's contactless etaLINK battery charging systems can be implemented into any layout quickly and easily without the need for any costly infrastructure."

Kai Franke, Head of Hardware Development, Magazino

MAGAZINO simple storage

Wiferion GmbH
Munzinger Straße 1, 79111 Freiburg
+49 (0) 761 1542670
info@wiferion.com, www.wiferion.com
LinkedIn wiferion

Wiferion
efficient wireless power