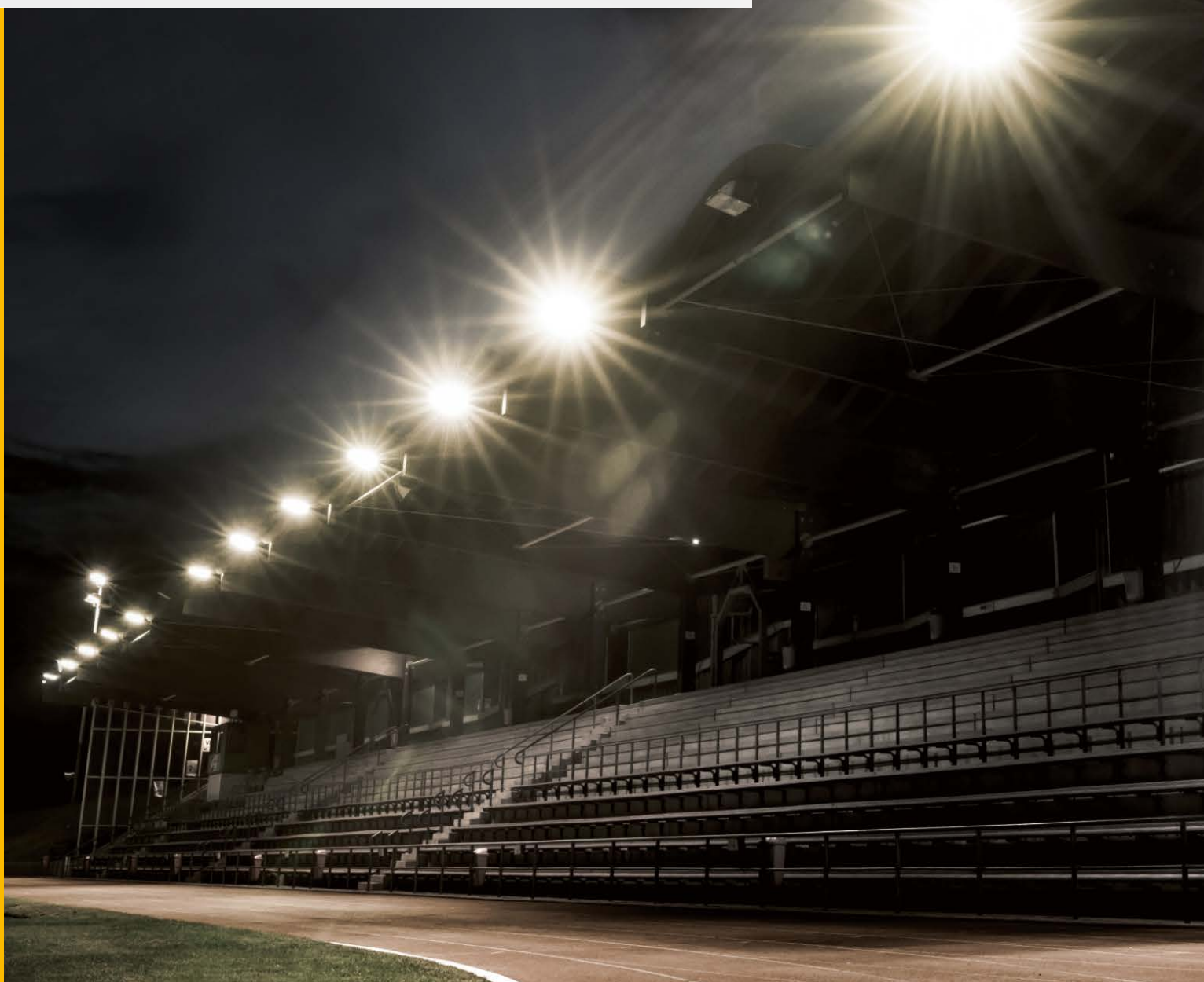


# The energy solution for outrunning the competition.

Li-ion technology.  
Perfected by Jungheinrich.

 **JUNGHEINRICH**





LICHT  
BY JUNGHEINRICH

JUNGHEINRICH

LI-ION  
technology

# The driving force behind electric mobility.

For decades, Jungheinrich has pioneered advances in the field of electric mobility. Now, Jungheinrich's li-ion technology is taking warehouse electrification to a whole new level.

## **65 years of electric mobility in warehouses.**

In 1953, Dr Friedrich Jungheinrich built the first electrically powered forklift truck, thereby setting standards early on for e-drive units intended for everyday use. With the insight that the key to efficient electric propulsion lay in continually enhanced motor technology, he founded his own motor development and production company in 1956. In 1991, Jungheinrich mass-produced the first forklift truck with a three-phase motor. It requires fewer components, has virtually no wear parts and is extremely efficient, reliable and cost-effective. Nowadays, there are more than one million battery-powered Jungheinrich forklift trucks featuring three-phase technology in operation around the world.

## **And on the market since 2011: Jungheinrich li-ion technology.**

Most people know that li-ion batteries are used in laptops and smartphones, and these batteries are now also being successfully utilised in warehouse operations. Compared to lead-acid batteries, li-ion batteries are safer, more efficient, more durable and: they are absolutely maintenance-free.

In 2011, Jungheinrich proved once again that it is a technology leader by producing the first production-ready forklift truck with li-ion battery propulsion. We achieved that goal by developing and manufacturing the batteries and charging devices in-house. The secret behind the success of Jungheinrich li-ion vehicles is a combination of intelligent teamwork and seamless interaction between all technical components involved.

## **Ultimately, everyone wins.**

Since 2017, nearly the entire portfolio of Jungheinrich forklift trucks has been available with li-ion batteries. As mass production increases, manufacturing costs decrease, which gives li-ion propulsion a further boost. This development not only benefits Jungheinrich customers – its implementation in intralogistics also plays a significant role in the reduction of carbon emissions worldwide.

# Reach your goals faster with li-ion technology.

As a technology leader in intralogistics, Jungheinrich is also ahead of the competition in terms of li-ion power sources. This gives our customers a key advantage in expanding their respective market share and becoming more efficient.

Li-ion batteries substantially reduce handling and maintenance costs as well as loading times in warehouses, so that our customers can now focus entirely on their objectives.

And that is a key advantage, especially when endurance is required to run multi-shift operations, day after day.





# Forklift trucks become high-performance machines: Jungheinrich li-ion power.

The impressive performance figures of li-ion technology beat those of conventional lead-acid batteries.

Ultra-fast charging times and zero maintenance costs make li-ion batteries the longest-lasting power sources by far. As a result, vehicles can be run almost continuously. Full power is always available, with no signs of sluggishness. And of course, the service life is extremely long.

In fact, Jungheinrich is the only one in the industry to offer a five-year guarantee on all its li-ion batteries.

In most usage scenarios, the switch to li-ion powered forklift trucks will pay off immediately, with conversions to li-ion technology possible in most cases.

When taking a look at the complete total cost of ownership (TCO), currently high procurement costs are more than compensated for by longer service times and significantly lower operating expenses. Our Jungheinrich technical consultants are trained to run these kinds of customised calculations. Feel free to contact us to find out how we can support you.

**5** YEARS  
**GUARANTEE**  
ON LI-ION BATTERIES



# The advantages of li-ion technology:



Consumes up to 20 % less energy than lead-acid batteries



Needs only 30 minutes for a 50 % charge or 80 minutes for a full 100 % charge



Lasts longer in multi-shift operations



No maintenance costs



Lasts three times longer than lead-acid batteries



Five-year warranty



## **Get better results with the better team.**

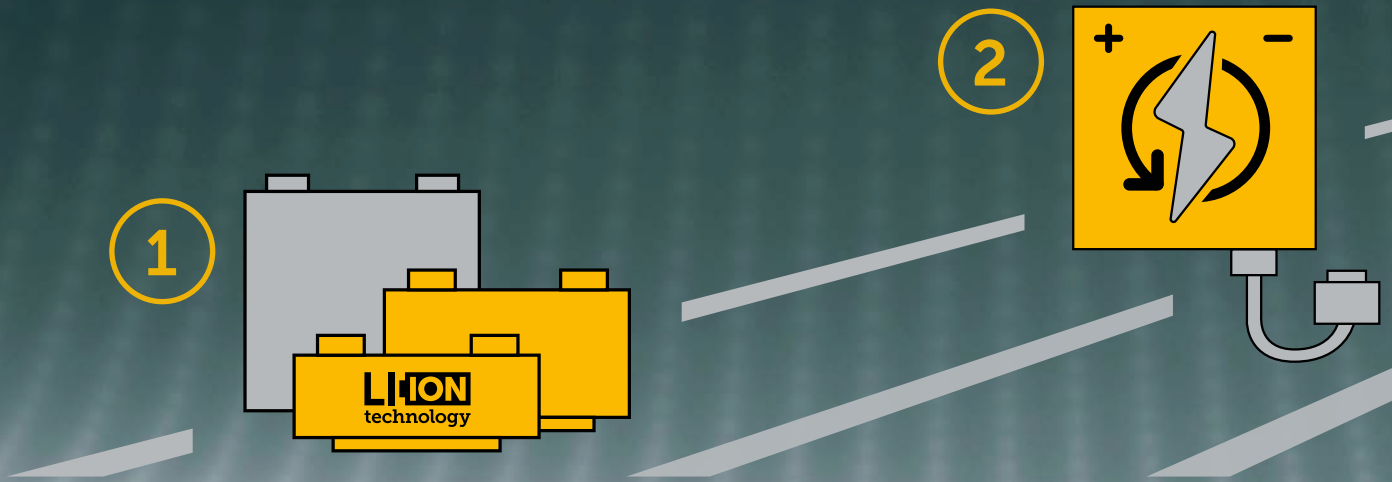
In a world of tough competition, we want our customers to know that everything is running like clockwork – which means everything behind the scenes is adjusted perfectly.

By developing and manufacturing its own products, Jungheinrich has unparalleled expertise when it comes to li-ion batteries, charging devices and vehicle technology. As a result, it can draw higher performance from the entire system.

This teamwork makes Jungheinrich unique on the world market in terms of li-ion technology. No other intralogistics company has perfected this technology to such a degree for its customers.







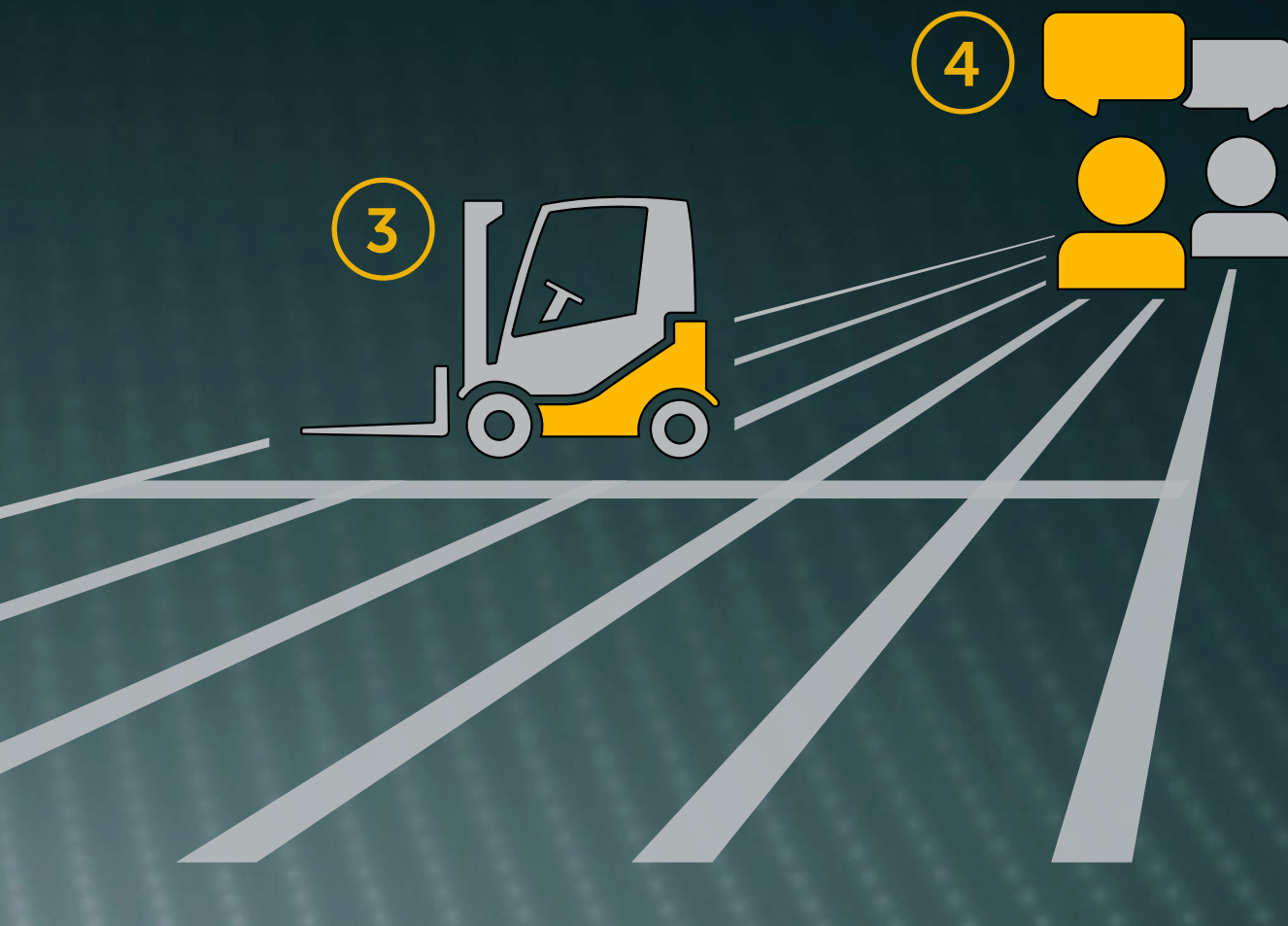
# Unrivalled in all four li-ion disciplines.

Jungheinrich develops and produces batteries, charging devices and all corresponding in-vehicle components in-house. In this way, all parts of our system are able to communicate perfectly with one another and tap maximum performance.

## 1. Jungheinrich li-ion batteries

At our facilities, we produce the most cutting-edge li-ion batteries, ranging in output from 40 Ah to 500 Ah. Our 40 Ah batteries are permanently installed in the vehicle and are charged at any power outlet via an integrated charging

device. Jungheinrich li-ion batteries are absolutely maintenance-free and fully resistant to severe vibrations; they are even impervious to high temperatures. Our electronic battery management system (BMS) monitors the li-ion cells at all time. As a result, our li-ion solution is the most reliable power option.



## 2. Jungheinrich charging devices

Our charging devices have a specific li-ion communications interface. The battery thereby optimally governs the charging process. The battery's exact charge state can be viewed at any time on a display. This means that in the near future, our customers will be able to get an overall picture of their fleet's real-time power status.

## 3. Jungheinrich vehicles

Almost all of our electric forklift trucks are available with li-ion batteries, and the vehicle technology is always perfectly matched to li-ion implementation. Visit our website to get an overview of our li-ion vehicles.

## 4. Jungheinrich consulting services

If customers want to make a simple switch to li-ion battery and charging technology for their entire fleet, our energy experts can provide our customers with in-depth advice at their locations. An assessment will include an actual condition analysis of all systems and processes, energy profiles that are generated on the spot and charging concepts to optimise the overall energy balance sheet.

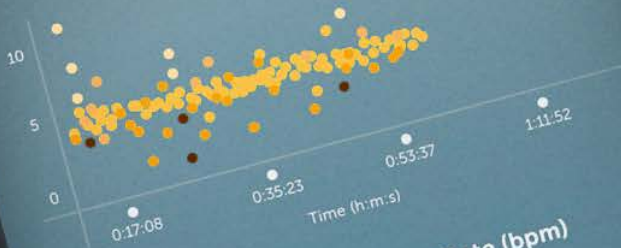


Mobile.com ●●●●

21:38

68%

### Vertical Oscillation (cm) Average 6,3 cm



### Pace (min/km) & Heart Rate (bpm)





**Values are critical  
in competition.  
And in your warehouse.**

Rating performance means measuring key parameters, and to Jungheinrich that is extremely important. How economical is a solution? How efficient is an energy system when everything is factored in?

As a family-owned company, we also focus on traditional values. For example, we value reliability and long-term customer relations more than a quick path to success.

# **We are driven by your business success. In all intralogistics sectors.**

Intralogistics is our passion. We know that an optimised flow of goods and materials can be the decisive factor for companies to succeed.

For that reason, it has been our objective for more than 65 years to be the driving force in the realm of intralogistics. Our extreme customer focus and value-adding implementation of cutting-edge technology create the basis for long-term partnerships.

Propulsion and energy technologies have always been areas of innovation in which we invest heavily.

We promise that any customer anywhere in the world can utilise the competitive advantages of our future-oriented energy technologies – regardless of their industry sector or company size.



**ISO 9001** The German production facilities  
**ISO 14001** in Norderstedt, Moosburg  
and Landsberg are certified.

 Jungheinrich trucks  
conform to the European  
Safety Requirements.

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