

# THE PERFECT ELECTRIC FORKLIFT TRUCK, WHATEVER YOUR NEEDS.

Linde electric forklift trucks E12 to E50



# ELECTRIC FORKLIFT TRUCK SOLUTIONS FOR YOUR REQUIREMENTS

Choosing a Linde electric forklift truck not only provides you with an exceptionally reliable and powerful truck, but also a package of services tailored to your individual needs. After all, the better a forklift truck meets the requirements, the more productive it is. Linde offers 40 different basic models: from the lower-height container version to the forklift truck for narrow aisles, which you can further customise for your particular application. With the unique combination of a combi-steering axle and the powerful dual motor front-wheel drive, your driver can even turn the truck around on the spot.

If forklift truck availability, as in multi-shift operation, for example, is the most important factor for you, then Linde's lithium-ion technology offers a powerful and flexible solution. The driver's workstations are completely ergonomic, so that your drivers can work in a relaxed and precise manner even after long periods of use. Standard safety equipment and intelligent systems such as the Linde Safety Pilot protect your drivers and ensure efficient handling. With the Linde connect fleet management system, you can network your trucks and utilise data analysis to further increase the safety and productivity of your fleet.

A TÜV-certified performance test is evidence that a Linde truck is the most economical solution for you. Plus, of course, you can rely on Linde service around the clock, ensuring smooth servicing and repairs.

Over the following pages you can read how Linde's range of electric forklift trucks can make a vital contribution to your company's success.

→ [www.linde-mh.com](http://www.linde-mh.com)



# FOR A SUSTAINABLE VALUE CHAIN



For Coca-Cola European Partners, sustainability is an integral part of the growth strategy. And in the Parisian suburb of Grigny – one of more than 50 Coca-Cola European Partners production sites – this was the impetus behind opting for a Linde forklift truck fleet. In addition to price, quality and service, Linde’s forklifts also impressed customers with their low emissions, low fuel consumption and good ergonomics. The latter is particularly important because Coca-Cola also attaches great importance to the well-being of its own employees. As such, Linde’s trucks help Coca Cola achieve its high sustainability goals more quickly.



**Innovation**

# A PERFECT VIEW IN THE REVOLUTIONARY ROADSTER

Employees walk through the warehouse while order pickers carry loads through narrow aisles: common practice in warehousing. In the midst of the hustle and bustle of logistics, the forklift driver has a perfectly unrestricted view of their environment. The work is completed quickly and safely. All because the driver is controlling a Linde Roadster – the first electric forklift truck without an A-pillar and featuring a reinforced glass roof, made possible by the ingenuity of Linde’s engineers.

They used the tilt cylinders of Linde forklifts, which are located on the upper side of the truck to reduce vibrations, as a connecting element between the cab roof and the truck, allowing them to do away with the A-pillar. In combination with the world’s largest panoramic reinforced glass roof, the Roadster offers unrivalled all-round visibility and enhanced safety.

This means that nothing stands in the way of efficient and safe working with loads from 2 to 3.5 tonnes.



**NO A-PILLAR**

In removing the A-pillar, the engineers have delivered real innovation: their pioneering work allows for a perfect view of both traffic in the hall and the load.

**PANORAMIC ARMOURED PROVED GLASS ROOF**

The Roadster’s optionally available panoramic reinforced glass roof represents a world first in forklift design.

**ACCESS**

In the A-pillar’s absence, an integrated entry aid helps to facilitate access, while also serving as a spare mount for additional equipment.



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Battery changing is exceptionally flexible thanks to a variety of different options. Put to optimal use, lithium-ion batteries make forklift operation particularly efficient and sustainable.



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Linde forklifts pay off, as evidenced by a TÜV-certified performance test, which proves the high productivity of the trucks. As such, the trucks play an important role in budgeting.



## Fleet management 36–37

Linde connect fleet management networks the trucks and allows for driver-specific access control and extensive data analysis, allowing the fleet's potential to be maximised.



## Service 38–39

Linde's service provides worldwide and round-the-clock coverage for uninterrupted operation. It supports users by optimising maintenance intervals and if necessary can even deliver spare parts overnight.

The perfect electric forklift truck for every application

# DIVERSE PRODUCT RANGE



Best suited to the short transport of different loads, tight turning manoeuvres in narrow aisles or loading and unloading of containers: no two forklift applications are the same. And Linde's range of electric forklift trucks is just as diverse. With a basis of 40 different models, trucks can be configured to suit any application, from the load-bearing capacity classes between 1.2 and 5 tonnes, different types of drives, battery capacities and charging options, to mast versions or a visually optimised seating position. With the right configuration and a wide range of Customized Options – i.e. application-specific solutions – the selected truck can perform the tasks assigned to it quickly, precisely and economically.

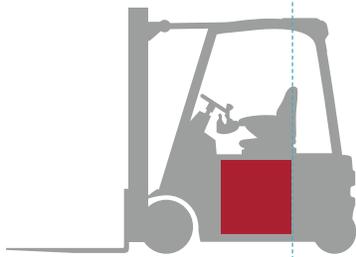
- over 40 model variants
- all common load capacity classes
- special design and wide range of Customized Options to suit any application



The right size, no matter the task

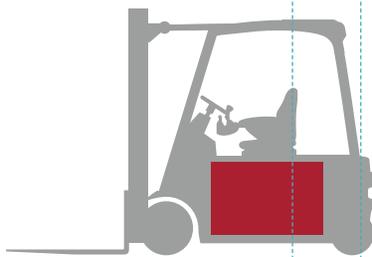
## BATTERY VARIANTS

In most cases, it is not only the lifting capacity of a forklift truck that proves decisive for a specific application, but also the truck's dimensions – and in turn also the size and service life of the installed battery. For this reason, Linde offers multiple truck types across an array of load classes with differing characteristics. The following configuration examples of the E16 truck in the 1.6 tonnes load capacity class offer just one insight into the wide range of differentiation options:



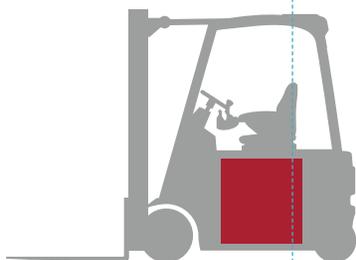
### E16 C – the compact one

Perfectly suited to narrow aisles. With a working aisle width of just 3,196 mm, the E16 C is the compact machine in this class. The low entry height also makes getting in and out of the truck particularly easy. Despite the truck's compact dimensions, the battery boasts a powerful 500 Ah.



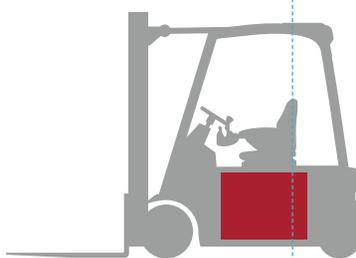
### E16 L – the bundle of energy

The long version of the 1.6-tonner is equipped with a larger battery (750 Ah) while remaining the same height as the compact model. This model combines the advantages of stepless entry and exit with a longer battery life.



### E16 H – the all-seeing

The high version of the E16 offers an even more powerful battery (775 Ah) than the L version with a narrower working aisle width. Another advantage is the improved driver's visibility thanks to the raised seating position.



### E16 – the all-rounder

The most versatile forklift in this capacity range. It is as flat as the G- and L-versions and therefore offers a comfortable low entrance and exit height. At 625 Ah, it still has a powerful battery and long battery life and, thanks to a working aisle width of 3,281 mm, it can be flexibly manoeuvred even in narrow aisles.

A solution for any load

# APPLICATION-SPECIFIC FORKLIFTS



## KEEP AN EYE ON EVERYTHING, WITH THE BEVERAGE VERSION

Seating heightened by 350 mm allows for a better view of the load, which in turn enables the driver to recognise obstacles more quickly while still safely and efficiently carrying heavy loads.



## SUPERIOR HANDLING IN CONTAINERS

Linde offers forklifts suitable for containers in all load capacity classes. Thanks to their compact dimensions, they can easily drive on standard containers.



## UNOBSTRUCTED VISION WITH THE ROADSTER

The Linde Roadster is constructed without an A-pillar and has an optional panoramic reinforced glass roof, allowing it to offer unrivalled all-round visibility.



## SMALL DETAILS FOR LARGE LOADS

From a load capacity class of 2 tonnes upwards, customers can choose between two load centres. The larger load centre of gravity of 600 mm instead of 500 mm enables a larger residual load capacity.

## LINDE ELECTRIC FORKLIFT TRUCK OVERVIEW

Linde offers a wide range of electric forklift trucks in various load classes, battery capacities and aisle widths as well as additional options for industry and application-specific requirements.

Models	Load capacity/load (t)	Load centre distance (mm)	Battery	Working aisle width (mm)	Height above protected roof (cab) (mm)	Available with Li-ION battery (kWh)	Available in beverage version	Available in container version	Available in comfort version (+80 mm headroom)	Available as Roadster
386 EVO SERIES: 3-WHEELED FORKLIFT/CENTRAL PIVOT AXLE/24 VOLT										
E12	1.2	500	5PzS 575 (625)	3,040	1,970					
E15	1.5	500	8PzS 920 (1000)	3,177	1,970					
386 EVO SERIES: 3-WHEELED FORKLIFT/CENTRAL PIVOT AXLE/48 VOLT										
E14	1.4	500	4PzS 460 (500)	3,177	1,970	● 13.1/39.2				
E16	1.6	500	5PzS 575 (625)	3,281	1,970	● 16.3/45.7				
E16C	1.6	500	4PzS 460 (500)	3,196	1,970	● 13.1/39.2				
E16H	1.6	500	5PzS 700 (775)	3,332	2,130					
E16L	1.6	500	6PzS 690 (750)	3,389	1,970	● 16.9/49.0				
E18	1.8	500	5PzS 575 (625)	3,305	1,970	● 16.3/45.7				
E18L	1.8	500	6PzS 690 (750)	3,394	1,970	● 16.9/49.0				
E20L	2.0	500	6PzS 690 (750)	3,397	1,970	● 16.9/49.0				
386 EVO SERIES: 4-WHEELED FORKLIFT/COMBI-STEERING AXLE/48 VOLT										
E16P	1.6	500	5PzS 575 (625)	3,355	1,970	● 16.3/45.7				
E16PH	1.6	500	5PzS 700 (775)	3,404	2,130					
E18PH	1.8	500	5PzS 700 (775)	3,409	2,130					
E20PH	2.0	500	5PzS 700 (775)	3,412	2,130					
E20PL	2.0	500	6PzS 690 (750)	3,470	1,970	● 16.9/49.0				
E20PHL	2.0	500	6PzS 840 (930)	3,520	2,130					
387 SERIES: 4-WHEELED FORKLIFT/COMBI-STEERING AXLE/80 VOLT										
E20	2.0	500	4PzS 460 (500)	3,638	2,080	● 24.1/60.3			●	●
E20/600H	2.0	600	4PzS 560 (620)	3,672	2,237	● 24.1/60.3			●	●
E25	2.5	500	4PzS 460 (500)	3,638	2,080	● 24.1/60.3			●	●
E25/600H	2.5	600	4PzS 560 (620)	3,693	2,237	● 24.1/60.3			●	●
E25L	2.5	500	5PzS 575 (625)	3,783	2,080				●	●
E25/600HL	2.5	600	5PzS 700 (775)	3,838	2,237				●	●
E30	3.0	500	4PzS 460 (500)	3,762	2,080	● 24.1/60.3			●	●
E30/600H	3.0	600	4PzS 560 (620)	3,700	2,237	● 24.1/60.3			●	●
E30L	3.0	500	5PzS 575 (625)	3,857	2,080				●	●
E30/600HL	3.0	600	5PzS 700 (775)	3,845	2,237		●		●	●
E35L	3.5	500	5PzS 575 (625)	3,911	2,080				●	●
E35HL	3.5	500	5PzS 700 (775)	3,845	2,237				●	●
388 SERIES: 4-WHEELED FORKLIFT/OSCILLATION AXLE/80 VOLT										
E35/600H	3.5	600	5PzS 700 (775)	3,954	2,360					
E40/600HL	4.0	600	6PzS 840 (930)	4,109	2,360	● 36.2/118.4				
E40/600H	4.0	600	5PzS 700 (775)	3,964	2,360		●			
E40/600L	4.0	600	6PzS 840 (930)	4,109	2,220	● 36.2/118.4		●		
E45/600H	4.5	600	5PzS 700 (775)	3,984	2,360					
E45/600HL	4.5	600	6PzS 840 (930)	4,109	2,360	● 36.2/118.4	●			
E45/600L	4.5	600	6PzS 840 (930)	4,109	2,220	● 36.2/118.4		●		
E50/500HL	5.0	500	6PzS 840 (930)	4,109	2,360	● 36.2/118.4				
E50/500L	5.0	500	6PzS 840 (930)	4,109	2,220	● 36.2/118.4		●		
E50/600HL	5.0	600	6PzS 840 (930)	4,109	2,360	● 36.2/118.4				
E50/600L	5.0	600	6PzS 840 (930)	4,109	2,220	● 36.2/118.4		●		

Powerful and agile load handling

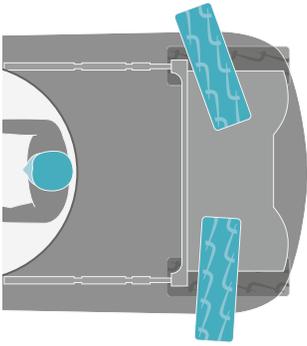
# DRIVE AND STEERING



The narrow aisle of a warehouse: there are only centimetres separating the shelves and the forklift. It precisely and dynamically turns on the spot, taking the load with it. In one fluid motion, it completes the transport to the HGV. Such manoeuvres are only possible with Linde electric forklift trucks with dual motor front-wheel drive and combi-steering plate axle. The unique combination of drive and steering, in line with the different requirements of the forklift truck, ensures that Linde trucks are agile and precise.

- dual motor front-wheel drive with traction control
- unique, patented combi-steering axle
- optimal manoeuvrability and precision





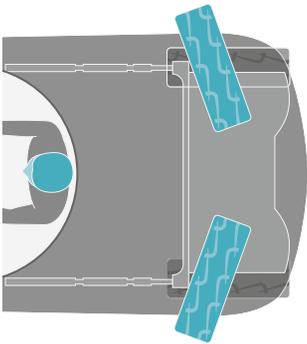
## Oscillation axle

When it comes to axles, the oscillation axle is a classic, well-suited to a wide range of different forklift applications.

- stable against tilting due to high suspension point
- optimal low ground clearance due to large swivel range
- reduced tyre wear

### Models available:

E35/600H, E40/600H, E40/600HL, E40/600L, E45/600H, E45/600HL, E45/600L, E50/500HL, E50/500L, E50/600HL, E50/600L



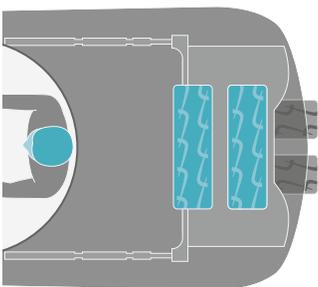
## Combi-steering axle

The patented combi-steering axle combines the agility of a three-wheeler truck with the stability of a four-wheeled forklift – the perfect solution when both manoeuvrability and stability are the order of the day.

- axle stub can be individually rotated through 175°
- truck can turn on the spot
- the wheels do not rub when turning, instead rolling gently without damaging the tyres
- reduced steering resistance and tyre wear
- increased tilt resistance
- reduced collision damage

### Models available:

E16P, E16PH, E18PH, E20PH, E20PL, E20PHL, E20, E20/600H, E25, E25/600H, E25/600HL, E25L, E30, E30/600H, E30/600HL, E30L, E35L



## Central pivot axle

Linde three-wheel forklifts use a proprietary central pivot axle. The forklifts are particularly suitable for applications where manoeuvrability is a priority.

- optimal manoeuvrability due to 180° steering angle
- truck can turn on the spot in even the tightest of spaces
- drive wheels roll in opposite directions without twisting
- reduced steering resistance and energy consumption
- lower tyre and floor load

### Models available:

E12, E14, E15, E16, E16C, E16H, E16L, E18, E18L, E20L

## Dual motor front-wheel drive with combi-steering axle

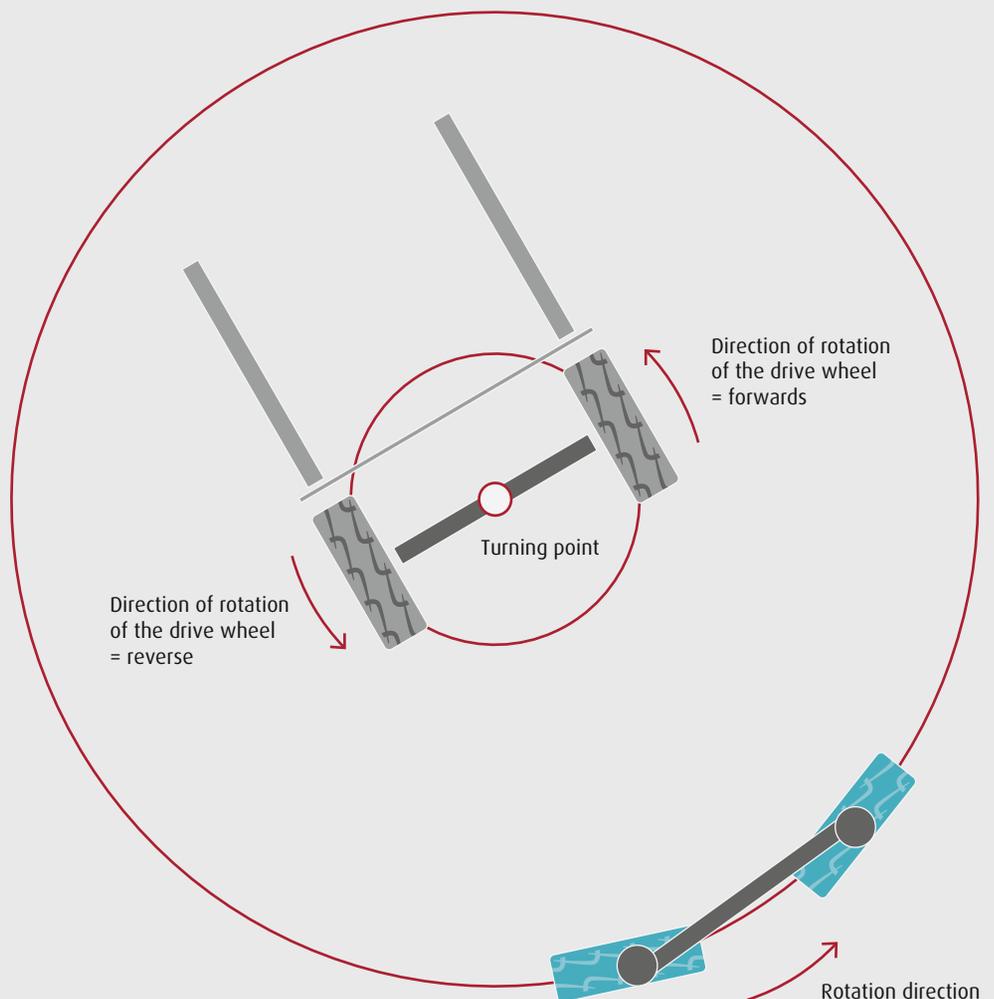
# AGILITY IN EVEN THE TIGHTEST OF SPOTS

Combined with the dual engine front-wheel drive, the combi-steering axle offers the two most important factors for efficient and safe forklift operation: high stability and maximum manoeuvrability. The separately operated front wheels rotate in opposite directions when the steering angle is full and actively steer with it, while the rear wheels can be turned by up to 175°. This enables on-the-spot turning while simultaneously protecting the tyres. The rear axle is particularly highly suspended and improves stability by 30% compared to conventional swing axles, enabling optimal turning manoeuvres in tight spaces.



### How does on-the-spot turning work?

The front wheels actively steer with counter-rotating motions, while the rear wheels are actively steered by turning sharply, which enables a small turning circle.



## Expertise in powerful drives

# POWER AND CONTROL – COMBINED

## DUAL MOTOR FRONT-WHEEL DRIVE

Linde electric forklift trucks use a powerful dual motor front-wheel drive as standard. The advantage is that the drive axle is actively controlled via the front wheels. All forklifts also have traction control. It distributes the power to both engines individually, allowing for optimum traction power even if a wheel is spinning on a slippery surface.

## ELASTIC AXLE SUPPORT

The frame and drive axle of the forklift trucks are connected with maintenance-free rubber-metal bearings. Equipped as standard, this material combination creates a damping effect in several areas. This improves driving comfort, as the bearings compensate for uneven road surfaces and reduce the noise level. At the same time, shocks are felt less strongly by adjacent components, meaning less stress is exerted on them.

## CS20 CONTINENTAL TYRES

Another element of the driving power of Linde electric forklift trucks is the CS20 tyres, developed in partnership with Continental. Its L-shaped tread pattern improves traction and reduces rolling resistance, while the closed shoulder flank ensures smooth running and less noise. The low rolling resistance is the basis for high mileage and low energy consumption.



Optimised for safe handling

# MAST



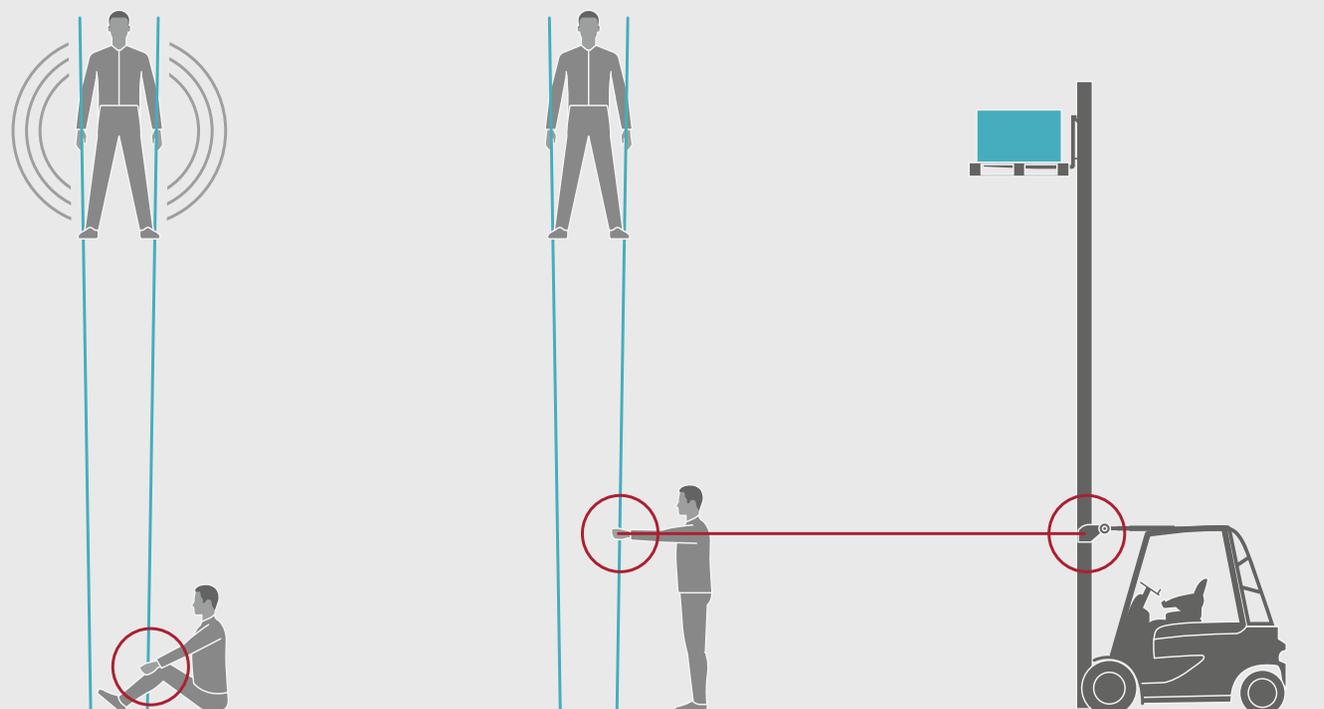
Five metres tall, 600 kilograms in weight: A forklift truck places its heavy load with millimetre precision, with only the faintest vibrations affecting the fully extended mast. Linde electric forklift trucks have a special mast design that makes load handling at great heights particularly safe. The tilt cylinders at the top of the mast provide greater leverage and thus greater mast stability, meaning loads can be lifted quickly and safely. Further mast features provide excellent visibility and improved handling.

- increased stability due to top mounted tilt cylinders
- electronic end position damping
- visually optimized construction
- attachments adapted to the truck ex works



**Wobbly stilts illustrate the principle of improved leverage:**

The higher you lift them, the more stable they stand. And this is exactly how the top tilt cylinders of Linde forklifts affect the mast.



## Shockproof and vibration-free

# THE ART OF PRECISE MOVEMENT

The condition of the mast is one of the most important factors for safe and efficient handling – one catered to by numerous equipment details in Linde electric forklift trucks.

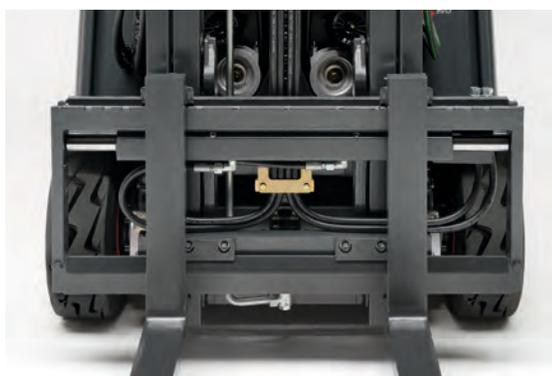
## MAKE THE MOST OF LEVERAGE

In Linde electric forklift trucks, the tilt cylinders on the lower end of the mast are moved upwards so that they attach directly to the stable structure of the roof of the driver's cab. This ensures that forces are dissipated through the forklift truck design. The longer lever length also makes the mast stronger and more stable.

**The result:** Reduced vibration and torsion when stacking at great heights. The driver can work more sensitively, safely and quickly. The lower leverage forces also protect the material and thus reduce repairs and breakdowns. The construction also allows slimmer mast profiles that improve visibility. This innovation has a significant impact on safety, performance and efficiency of forklift trucks.



Mast



## INTEGRATED SIDE SHIFTER AND FORK POSITIONER

On request, Linde can integrate attachments such as side shifters and fork adjustment devices into the truck ex works. This means that the forklift trucks can lift the full load despite the additional weight of the attachments.

## ELECTRONIC END POSITION DAMPING

To make handling even safer and more comfortable, all Linde electric forklift trucks are equipped with electronic end-position damping as standard. It gently absorbs movement when lifting and lowering the mast, thus reducing jolts and noises as well as vibrations and torsions. This in turn increases handling stability, protects the material and reduces noise pollution for the drivers.

## Efficient protection of people and materials

# SAFETY



Today, forklift drivers must work ever faster, more flexibly and more efficiently. Modern intralogistics demands a lot from drivers and trucks. As the demands increase, so does the risk of accidents. This is why Linde electric forklifts are equipped with a whole range of safety features as standard, which prevent accidents or reduce the risk of injury in the event of an accident. In this way, innovations from Linde help to protect people and materials and save costs.

- safety systems as standard
- protection of drivers, loads and environment
- efficient load handling
- numerous optional safety systems ex works and as retrofit solution

## OPTIMAL VISIBILITY AND SAFETY AS STANDARD

Optimal visibility is a basic requirement for safe load handling. Linde electric forklift trucks feature slim, nested lift mast profiles thanks to the top-mounted tilt cylinder. A- and B-pillars have been visually optimised. In addition, the driver can look past the load from the side, thanks to a slightly offset seat. The Linde Protector Frame contributes to passive safety. The solid roof and frame unit forms a closed protection zone for the driver in the event of an accident. Linde electric forklift trucks, for example, offer optimum visibility and high safety during load handling as standard. The optional use of an armoured proved glass roof further improves visibility of loads and the environment.



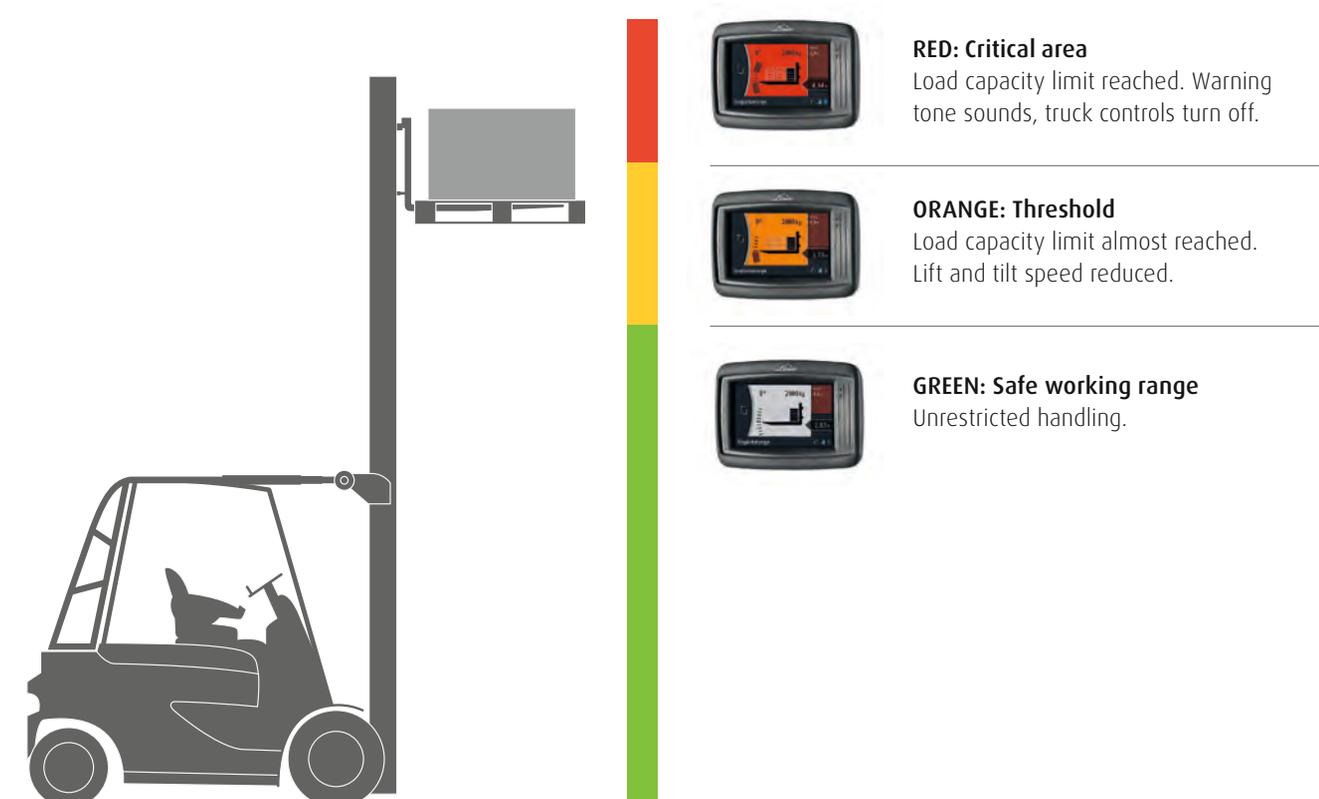
## The truck that thinks for itself

# LINDE SAFETY PILOT

Human errors cause 95% of all workplace accidents in material handling. Frequently changing loads and parameters that are difficult to estimate, such as weight, centre of gravity distance and the exact lifting height, make it difficult for drivers to handle them in accordance with safety regulations. The intelligent assistance system Linde Safety Pilot provides reliable support for drivers. The system displays the most important parameters and actively intervenes in the handling of loads to protect people and the environment. The result: safe and efficient intralogistics.

## GREEN LIGHT FOR SAFE HANDLING

The colour display of the Linde Safety Pilot supports the driver with an intuitive traffic light system. The driver only needs to check which of three colours is present in order to know whether their load handling is safe. The diagram shows how the Safety Pilot warns and intervenes in different situations.



## ADDITIONAL ADVANTAGES OF THE LINDE SAFETY PILOT

- ✓ **Pre-adjustable lifting height:** reduces damage to shelving and speeds up handling.
- ✓ **Lifting height restriction:** prevents collisions in doorways.
- ✓ **Lower limit:** reduced fork wear, especially on uneven ground.
- ✓ **Weighing and load add function:** prevents overloading of HGVs.
- ✓ **Adjustable speed limit:** reduces the number of accidents in high risk areas.

## Silent warning

# LINDE BLUESPOT™

The Linde BlueSpot™ increases safety in areas where people and forklifts work together in very close proximity. The LED light projects a blue warning point onto the floor, eliminating the need for acoustic signals that are often drowned out by other noise. This warns pedestrians and other forklift drivers of approaching forklift trucks, significantly increasing safety both in the driving area and at intersections where visibility is low.



## THE LIGHT: SMALL, BUT POWERFUL

The Linde BlueSpot™ consists of two glare-free, powerful LED lights that project a blue spot in front of or behind the truck, depending on the direction of travel. For better visibility, the BlueSpot can also blink and can be set to a red light or directional arrow. Despite the extremely high luminous intensity, LED technology operates with low power consumption and only needs to be changed after 20,000 hours.



## ADJUSTED TURNING SPEED

Sometimes things move very quickly in warehouses. The Linde Curve Assist ensures that the forklifts are still safe when turning, even during particularly risky driving manoeuvres. The speed while cornering is regulated depending on the steering angle.

## SAFE AT A STANDSTILL

Equipped as standard, the automatic parking brake ensures that the forklift truck holds its position securely on ramps and gradients, preventing the truck from rolling accidentally. When the driver presses down on the accelerator pedal, the brake disengages and the truck moves smoothly and without rolling back. If the brake is released accidentally or because of a fault, the truck brakes in a controlled manner.



## OPTIMAL LIGHTING

Linde uses robust, bright and economical LED technology in both its truck lighting and in the optional work lights. Thanks to an operating time of up to 20,000 hours, the LEDs are particularly reliable and economical. The light intensity of the LEDs provides optimum illumination of the working areas around the forklift truck, thus ensuring increased safety.

## DOUBLE SAFETY

The standard electronic control system is the heart of the Linde trucks. As such, the safety precautions here are high, too: all processors are redundant and monitor each other. If the system detects an error, it automatically switches off to prevent uncontrolled travel or lifting movements.

Optimally designed for the driver

# COMFORT AND ERGONOMICS



When unloading a load, the driver can control pinpoint-accurate lifting movements with their fingertips. Their arm leans on the arm rest which features integrated control elements of the Linde Load Control. Thanks to the rotatable driver's workstation, the driver has a clear view in the direction of travel when reversing, without needing to twist their body. This is how Linde's intelligent solutions and individually adjustable cabin components ensure an ergonomic workplace, forging a harmonious union between the driver and their ergonomic requirements. For forklift drivers, this means comfortable, fatigue-free and therefore efficient working. Plus, absences on health grounds will also decrease.

- ergonomic control layout
- efficient twin pedal drive
- sensitive control via Linde Load Control
- individually adjustable unit consisting of armrest and seat
- rotating driver's workplace



## Functionality and comfort in the driver's cab

# THE ERGONOMIC WORKSPACE

The driver is at the very heart of the workplace. Accordingly, all operating and display elements of Linde forklifts are ergonomically aligned with the truck. This means that they can be used with as little physical strain as possible and support precise, safe and comfortable control.

### Display

The display shows the driver all functions and safety parameters at a glance. It is designed for intuitive understanding and maximum visibility under all lighting conditions.

### Steering wheel and column

The particularly small and easy-to-grip steering wheel with a knob makes manoeuvring quick and simple. The steering column can be individually adjusted.

### Twin pedal drive

The patented twin pedal drive ensures particularly sensitive and precise control manoeuvres. It is not necessary to move the feet to switch between forward and reverse travel.

### Heater, air conditioning and radio

To ensure comfortable working conditions and depending on individual preferences, forklifts can be equipped with heater, air conditioning and radio.

### Integrated storage facilities

The forklift trucks have numerous storage compartments for working documents and the drivers' personal belongings, ensuring a more orderly, tidy driver's cab.



## Linde ergonomic driver's seats

# CUSTOM SEATING COMFORT

Every driver's idea of a comfortable workspace is different. Plus, the requirements may vary depending on the application conditions: is the floor uneven? What is the temperature like in the warehouse during the summer? How long are forklift trucks shifts? For this reason, users can choose the right driver's seat for them from a range of different seats and adjust it individually.



### Standard seat

The standard seat is suitable for the typical requirements of forklift truck applications. The surface is made of resistant and dirt-repellent PVC. A 60 mm suspension spring for drivers weighing up to 145 kg and the vibration-decoupled cab make the seat extremely comfortable even on uneven surfaces.



### Comfort seat

Compared to the standard seat, the comfort seat offers additional features for comfortable and fatigue-free working. Seat heating, a mechanical lumbar support and the shock-absorbing air suspension further increase seating comfort.



### Super-comfort seat

In addition to the features of the comfort seat, the super-comfort seat has air suspension for comfortable sitting. The back extension and the adjustable depth and inclination (from E35/600H) of the seat cushion provide individual adjustment options.



### Super-comfort Active

The Super-comfort Active offers a world first in the field of forklift trucks: active seat ventilation for the perfect seating environment. The activated carbon incorporated in the abrasion-resistant seat cover absorbs any moisture that may arise. This ensures that the seating area stays dry, which is especially useful on warm working days. The seat is available from model E35/600H and offers lasting comfort even under intensive workload.

## One unit: Linde Load Control and armrest

# PERFECT HANDLING AT YOUR FINGERTIPS

When it comes to load handling, millimetres count. This is why the sensitive Linde Load Control allows for intuitive control of the lifting movements at the user's fingertips. This allows even the heaviest loads to be moved quickly, precisely and safely. Linde Load Control can control the lift mast and up to three auxiliary hydraulics. All operating elements are integrated in the armrest, so that the arm can lean on the rest without fatigue during control movements. The armrest can be adjusted to any position horizontally and vertically to the driver. This ergonomic design helps to reduce driver downtime caused by overload, meaning drivers can still handle loads efficiently and safely even at the end of a working day.

### Benefits at a glance:

- sensitive controls at your fingertips
- fatigue-free, safe operation
- encourages healthy posture
- parallel lifting and tilting for maximum handling capacity
- integrated storage compartment



## Rotatable driver's workplace - relief for the driver

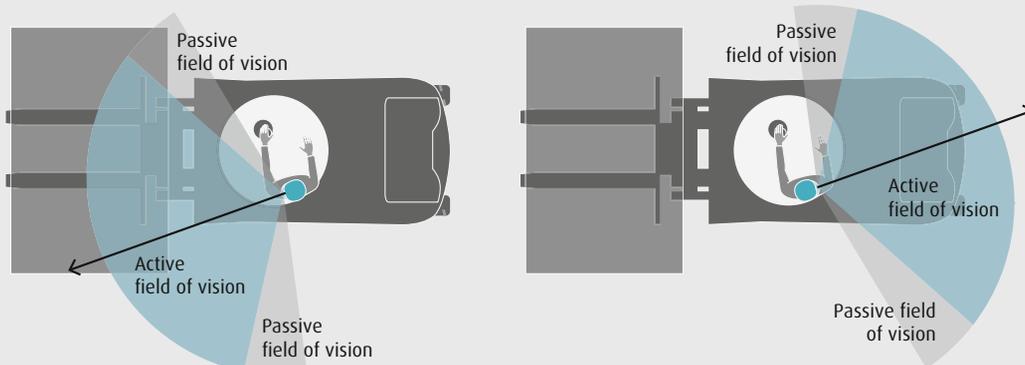
# CLEAR VIEW WITH PERFECT ROTATION

It is becoming all the more common for forklift drivers to have to drive loads backwards because the load restricts visibility. To do so, the driver must twist their torso in the direction of travel – a position which can damage the spine. The rotatable driver's workplace from Linde combines a clear view and ergonomic working conditions. Instead of the driver, it is the entire workspace that rotates. This improves visibility of the load and the route and relieves the driver's musculoskeletal system.

### Physical strain demonstrably reduced

Forklift drivers are particularly affected by back pain due to their often uncomfortable posture. According to a survey by the German Employer's Liability Insurance Association for Trade and Distribution of Goods (BGHW), the proportion of working time spent by drivers in an immovable seat in an overtightened back position is 43 percent on average. With a rotating driver's cab, body rotation is reduced to just eight percent, reducing lost working hours and the chance of errors due to fatigue.

### Field of vision at 70% seat rotation



Linde's rotatable driver's workplace provides an equally good view of the front and rear without the driver having to turn their back.

Intelligent power solutions

# ENERGY MANAGEMENT



High truck availability is essential for smooth operation. For electric forklift trucks, this means short charging times, long battery life and low maintenance. That's why Linde electric forklift trucks offer not only low energy consumption but also future-oriented solutions for smooth logistics: innovative technologies such as high-performance lithium-ion batteries, flexible battery replacement processes and practical solutions such as the Linde high-frequency on-board charger. Linde's energy systems enable continuous and efficient operation of electric forklifts with the best possible availability.

- minute-accurate remaining driving time indicator
- innovative high-frequency on-board charger for fast charging
- easy battery changing
- fast charging via lithium-ion batteries



## LITHIUM-ION BATTERIES ENHANCE ENERGY MANAGEMENT

While lithium-ion batteries have been used in small electronic devices for decades, the technology has only become available for heavy equipment such as industrial trucks in recent years. It offers numerous advantages for the operation of electric forklifts in terms of performance and service life. Thus, lithium-ion batteries increase the availability of electric forklift trucks. Especially in multi-shift applications the easy opportunity charging is a huge benefit for an efficient operation.

# ADVANTAGES OF LITHIUM-ION TECHNOLOGY



A major difference between lithium-ion batteries and lead-acid batteries is the increased efficiency and lower energy losses. The system efficiency is also increased due to the chargers. In addition, there are other general advantages and special advantages of Linde technology.

## GENERAL ADVANTAGES



**Short and fast interim charging:**  
battery can be charged during short breaks, resulting in higher truck availability.



**Reduced emissions:**  
no leaking of hazardous battery gases and acids.



**No more battery changes:**  
save time and cost as spare batteries and battery charging areas are no longer necessary.



**Maintenance-free operation:**  
no cleaning or filling with water required.

## ADVANTAGES EXCLUSIVE TO LINDE

In addition to the general advantages of lithium-ion technology, the Linde solution offers further advantages: The entire system – forklift, battery and charger – is CE-compliant. In addition, the practical charging via the rear makes the process particularly easy.

CAN bus communication adapted to the application ensures harmonised, complete system integration. This means that the performance of the truck can be adapted to individual requirements and a constant power supply is provided.

The multi-level safety concept offers safety features at the cell, module and battery trough level that are tailored to the system. As such, Linde offers the highest safety standards in the market.

A crash-tested tray with 25 mm thick steel protects both the battery and its surroundings.



## Five options for battery changing

# SWITCHING MADE EASY

Battery replacement must be done quickly and easily. That's why battery replacement for Linde electric forklift trucks is especially flexible. When changing the batteries of Linde electric forklift trucks, there are five different ways of replacing the battery, depending on the available auxiliary equipment and the conditions at the user's site.



### Battery change with overhead crane

The roof of the driver's cab in Linde electric forklift trucks is designed as a solid protection zone, i.e. without a battery change slot. With the use of a C-hook it is, nevertheless, possible to change the battery without any problems by using an overhead crane.

Possible for E12 to E50 models.



### Battery change with warehouse truck

If no overhead crane or additional forklift truck is available, the battery can also be easily replaced with a Linde warehouse truck.

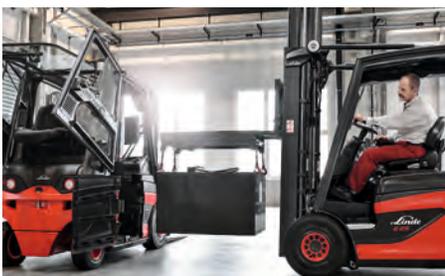
Possible for E14 to E20 (manual) and E14 to E50 (electrical) models.



### Battery change with second truck

Battery replacement can also be carried out with the aid of a second forklift truck. To do so, the driver simply drives the forks underneath the battery and lifts it out.

Possible for E12 to E50 models.



### Battery change with battery traverse device

Simply suspend the battery from the battery traverse device of a forklift truck and pull it out laterally.

Possible for E12 to E50 models.



### Battery change with hydraulic battery replacement system

The battery lifts out of the truck hydraulically by up to 60 percent at the touch of a button. The battery can then be removed using an overhead crane.

Possible for E14 to E50 models.

## Intelligent energy supply

# QUICK AND EASY CHARGING

### High-frequency on-board charger

For Linde electric forklift trucks, the battery charger can optionally be integrated in the truck. Space-consuming opening of the battery cover is not necessary. It is only required to connect the high-frequency on-board charger to the appropriate socket by means of a charging cable. Charging is carried out automatically for each type of battery with the correct charging characteristic. Further advantages of the high-frequency on-board charger are its high efficiency, the temperature-controlled, gentle charging as well as an automatic maintenance and/or equalisation charge.



### Active ventilation

To further simplify the loading process, Linde electric forklifts are optionally available with active ventilation. This conducts the generated battery gases out of the truck when charging to the rear. This means that the user no longer has to laboriously open the battery cover and the doors of the forklift.



### Minute-accurate battery charge display

The more forklift drivers can rely on the battery charge display, the better their ability to plan and execute operations. The standard battery charge display of Linde electric forklifts is therefore accurate to the minute.



All costs in overview

# COST-EFFECTIVENESS



As with every investment decision, the total costs are the purchase criteria – and forklift trucks are no exception. In addition to the truck's purchase price, it is above all the handling performance and the life-cycle of a forklift truck that is important. Linde forklifts offer a measurable competitive advantage here, as evidenced by a TÜV-Nord-certified performance test. Linde electric forklift trucks pay off, above all because of features such as low energy and service costs and reduced staffing costs due to streamlined handling.

- full cost control
- precise truck configuration
- application-specific driving dynamics settings
- optimal working conditions for drivers
- lower energy, service and staffing costs
- high handling capacity and productivity
- certified by TÜV-Nord performance guarantee test
- individual economic efficiency calculation of forklift trucks in operation



## Objective truck comparison in the performance guarantee test

# IT COMES DOWN TO PRODUCTIVITY

The actual cost of a forklift truck is only apparent in daily practice. But how can users be expected to compare the productivity of trucks? To this end, Linde has developed a TÜV-certified performance guarantee test, which measures the cost of a clearly defined workflow and thus allows meaningful productivity comparisons to be made. Linde will even provide an individual profitability calculation upon request. This shows that Linde trucks offer advantages right across the board.



### ENERGY COSTS

Energy costs have a direct impact on productivity. Thanks to modern technical and ergonomic concepts, Linde forklifts can move significantly more loads in less time than competitor trucks, which also affects energy consumption. Over thousands of operating hours, the savings add up to a considerable sum.



### STAFF COSTS

Staffing costs account for 80% of the total costs of a forklift truck. A good and fatigue-free working environment pays off in several ways, and Linde forklifts offer a high level of driving comfort and intuitive operating sequences thanks to their sophisticated ergonomics, increasing working speeds and reducing driver downtime. The bottom line: Just five Linde forklifts can often take the place of six standard forklift trucks – including staff.



### SERVICE COSTS

Service costs are considered 'hidden costs', as they only occur after a time delay. A high level of brake or tyre wear or frequent oil changes, however, can cost companies dearly. Linde forklifts are therefore designed with as few wear parts and as many low-maintenance components as possible: maintenance-free brakes, drive axle bearings and bearings for the tilt cylinders as well as reduced tyre wear. Optimally coordinated maintenance schedules also work to ensure the best-case scenario: that no major wear and tear even occurs in the first place.

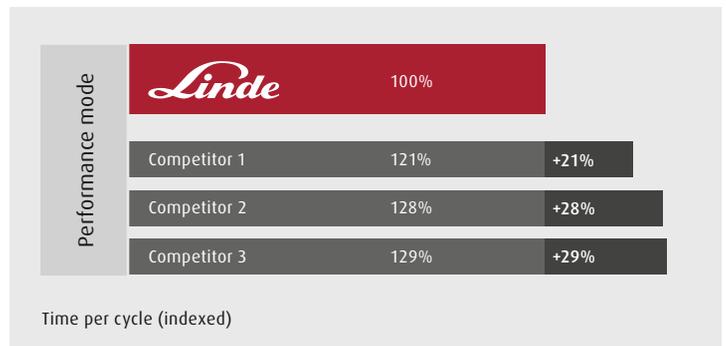
# Driving dynamics settings improve productivity

## FINE-TUNING PERFORMANCE

Short distances in continuous cycles or long journeys spread across a whole day: forklift trucks are used for very different applications. That's why users can customise Linde electric forklifts to suit the specific application at hand. Seasonal operations, such as those occurring in the beverage industry in the summer, for example, can be handled very quickly. Three different driving dynamics options allow the optimum performance to be set for each application. A comparison of performance with competitor trucks shows that Linde trucks boast lower energy consumption levels and are exceptionally productive.

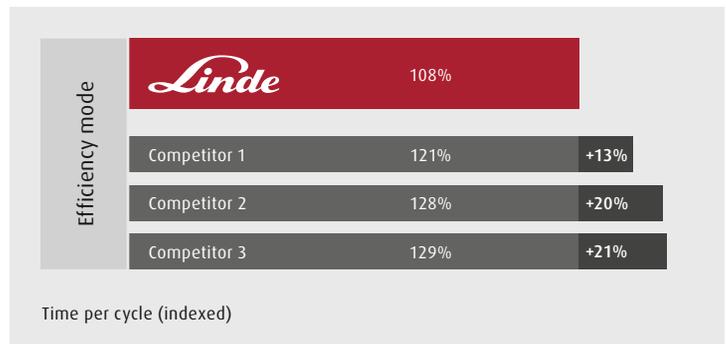
### Performance mode

High performance for maximum handling capacity. Ideal for trucks with attachments and long distances including ramps. Effectively exploits the advantages of the dual motor drive.



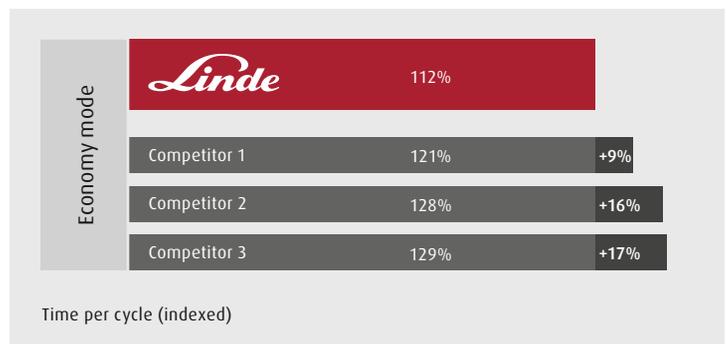
### Efficiency mode

By default, the Efficiency Mode offers a balance between performance and economy. If you want to keep an eye on energy costs but don't want to reduce the power significantly, this mode is the best way to drive.



### Economy mode

A good application example here is a scenario with time-limited pallet conveyors located centrally in production facilities with narrow lanes and speed limits. Economy mode allows for careful load handling with reduced energy consumption.



## Cost-effectiveness calculation finds in the favour of Linde trucks

# PERFORMANCE, BY THE NUMBERS



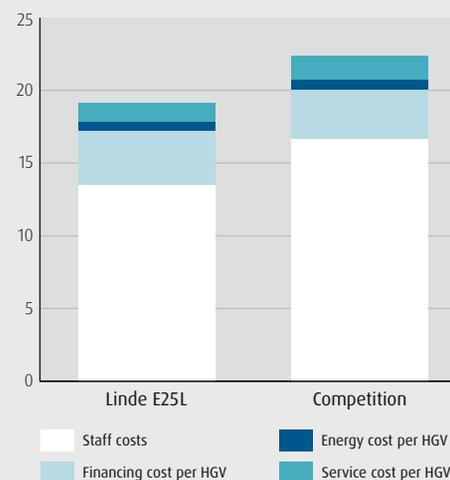
It has been proven through a detailed cost-effectiveness calculation: choosing Linde electric forklifts is a decision that pays off. Despite a higher purchase cost, the example shows that increased productivity means that companies can save approximately EUR 24,000 after just 60 months. This calculation is based on the average operating hours required for the typical loading and unloading of an HGV.

### Base data

	Linde E25L	Competition		Linde E25L	Competition
Duration	60 months	60 months	Time to load and unload an HGV	40.4 min	49.9 min
Days in operation per year	220	220		Consumption per HGV loaded and unloaded	2.94 kWh
Operating hours per year	1,000	1,235			
Energy cost per kWh	EUR 0.15	EUR 0.15			
Staff costs per hour	EUR 20.00	EUR 20.00			
Hourly service rate	EUR 2.00	EUR 2.00			
Net purchase price	EUR 35,000	EUR 30,000			
Residual value	20%	15%			

### Cost per HGV

	Linde E25L	Competition
Total cost per HGV	EUR 19.15	EUR 22.40
Service cost per HGV	EUR 1.35	EUR 1.66
Energy cost per HGV	EUR 0.56	EUR 0.67
Financing cost per HGV	EUR 3.77	EUR 3.43
Staff cost per HGV	EUR 13.47	EUR 16.63
Difference	—	EUR 3.25
Cost per pallet	EUR 0.34	EUR 0.40



## OVERALL RESULT

	Linde E25L	Competition
Total cost for 60 months	EUR 142,170	EUR 166,307
Saving per year	EUR 4,827	—
Saving over 60 months	EUR 24,137	—
Break-even	12.43 months	—

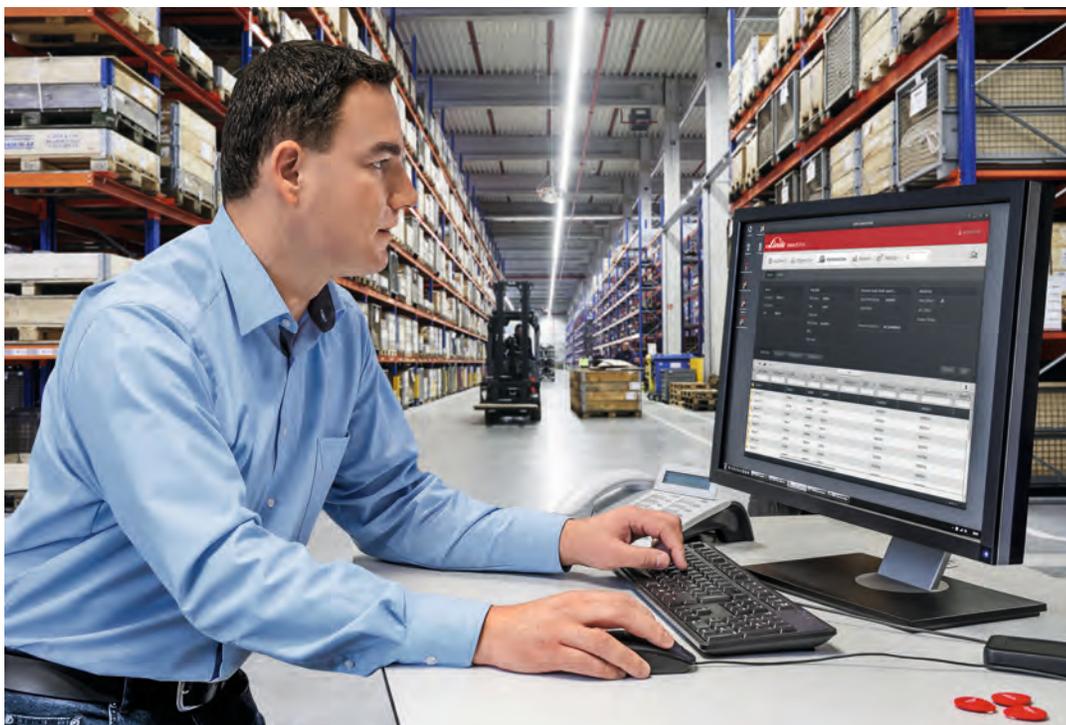
The fleet of tomorrow is networked

# FLEET MANAGEMENT



The fleet manager knows at all times which driver is controlling which forklift truck and how long it has been in use. They use software to determine who is allowed to drive in which areas and at what speed. With just one click, they can see the capacity utilisation and energy consumption of the entire fleet and when the next service is due. These are just a few examples of the functions of the Linde connect fleet management system. The hardware and software of the Linde connect family networks the forklifts and collects and analyses the truck data. This increases the availability, safety and productivity of the fleet.

- Comprehensive administration and information on all trucks in the fleet as well as drivers
- Data analysis and monitoring
- Ex works and as retrofit solution
- Secure transmission via Wifi, Bluetooth or mobile broadband
- Can be used independent of fleet size
- Modular software for individual requirements

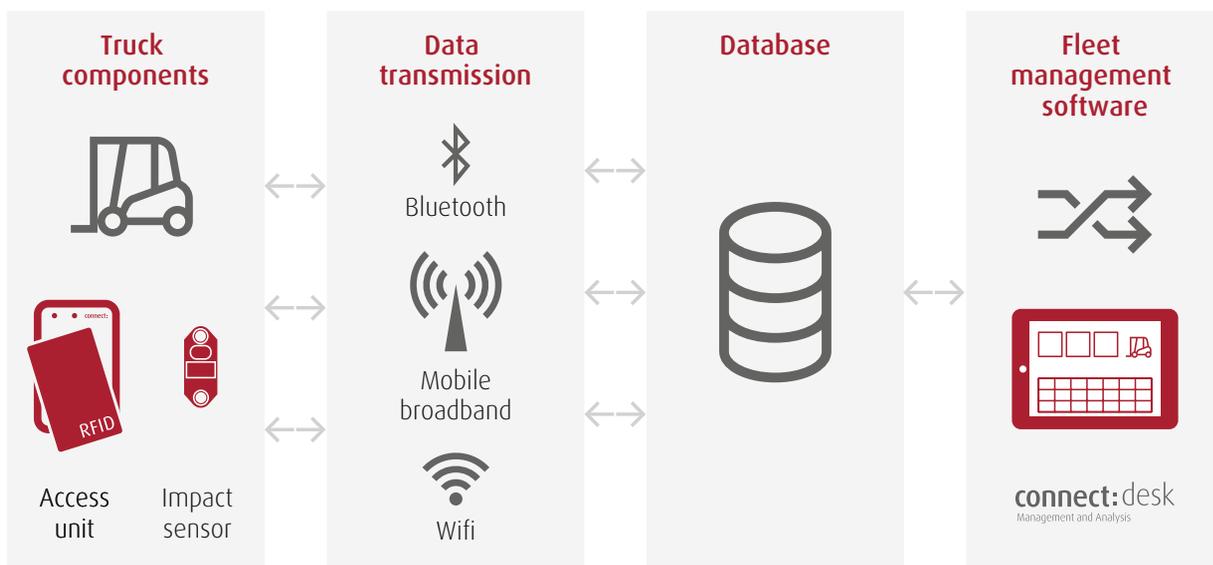


## How the truck learns to communicate

# NETWORKED INFRASTRUCTURE

The fleet management system Linde connect uses a series of sensors on the trucks to record important data, from charging status to possible collisions. Linde forklift trucks and trucks from other manufacturers can be equipped with the appropriate hardware for Linde connect either ex works or by retrofitting.

For access control, these are the Linde connect access units. This ensures that only authorised drivers can activate and use the forklift truck by means of a PIN or RFID chip. The Linde connect data unit handles data acquisition and transmission via Bluetooth, mobile phone or WLAN. The software connect:desk enables detailed evaluation and processing with the help of different modules.



## Linde connect functionality for fleet optimisation

# COMPREHENSIVE DATA ANALYSIS

The data collected is compressed into reports in the connect:desk software. Fleet managers, drivers or service technicians thus receive important information on the status and use of the trucks, allowing them to be best placed to plan further operations. The individual Linde connect modules each offer a number of specific functions for fleet management.

### Access control connect:ac

The access control function enables driver-specific access control via PIN or contactless RFID, thereby restricting unauthorised use. Another function is the app-based forklift check prior to the start of shift, which increases operational reliability and ensures that trucks can only be started once the checks have been successfully completed.

### Truck data connect:dt

The digital operating hours logbook records the operating hours and improves operational planning and fleet utilisation. The crash detection function can also be used to record accidents as well as potential hazards such as uneven ground. Trouble codes are a further feature which enable the early detection of malfunctions or damage to a truck.

### Usage analysis connect:an

The usage analysis gives the fleet manager an overview of the actual fleet performance. This enables the identification of underutilised trucks as well as the driving behaviour of individual trucks and drivers, visualising any potential for improvement. The battery management function documents the battery data display, detects possible operating errors and helps to prevent damage and loss of performance.

Support for day-to-day logistics

# SERVICE



After the purchase of a forklift truck, Linde Service supports companies in making the operation of the truck smooth, safe and efficient: from replacement forklift trucks, optimally combined maintenance schedules and improved cost-effectiveness, through to driver training and regular services. These include, for example, the prescribed safety tests, the FEM 4004 test and the annual charging device test.

The services which focus on technology, equipment, safety and efficiency of your electric forklift trucks ensure the best possible availability and performance.

- Comprehensive service with 8,500 service technicians and 700 locations
- Rapid assistance with the emergency service
- Centralised replacement parts warehouse delivers worldwide around the clock
- Maximum truck availability and operational safety
- Guaranteed conformity with legal requirements
- Consistent minimisation of safety risks
- Predictable and transparent costs for maintenance and service
- Increase in resale value



## Service network

# ENSURING UNINTERRUPTED OPERATION

## ALWAYS AT YOUR DISPOSAL

Anyone who chooses a Linde truck is able to rely on the service of highly qualified service technicians. They ensure that the service intervals are adhered to and carry out maintenance and repairs of more than 300 truck models quickly and reliably. Unnecessary repairs are avoided because damage is detected in the early stages and preventative measures are taken. Through predictive maintenance, immediate repairs on site and, where necessary, replacement trucks, Linde ensures maximum performance and availability. Regular maintenance also reduces operating costs and increases the resale value of industrial trucks.

## SAFETY SAVES COSTS

Linde's services help companies to comply with occupational safety requirements. Linde service staff are familiar with the applicable legal regulations, can advise on their implementation and, on request, can carry out appropriate service measures and statutory inspections in due time and in an orderly manner. A wide range of training sessions and courses will also make your drivers fit for the challenges thrown at them by day-to-day logistics work and able to help prevent accidents. Well-trained drivers increase efficiency, ensure smooth operation and thus lower costs.

## GLOBAL SPARE PARTS SERVICE

In an emergency, Linde's spare parts service makes the trucks ready for use again as quickly as possible. This is ensured by the world distribution centre in Kahl, Germany as the hub for spare parts logistics with regional distribution centres in Xiamen, China, for the Asia Pacific region and in Brno, Czech Republic, for the Eastern Europe region. Using the latest cutting-edge warehouse technology, employees can usually dispatch orders just a few hours after they have been received. Original spare parts ensure that the industrial trucks work with constant performance and precision.

## SERVICES FOR EFFICIENT ELECTRIC FORKLIFT TRUCKS

### Save money with battery checks

→ The battery accounts for about one third of the total cost of an electric forklift truck. Lack of care and cleaning can degrade the battery, shorten travel times and cause battery consumption to accelerate, inevitably resulting in time-consuming interim charging. Linde's battery service, including a charging device test, recognises defects at an early stage and prolongs the service life of the batteries.



### Energy consulting increases profitability

→ Linde has advised on energy consumption at numerous locations. Depending on the operating conditions on site, Linde's experts help to optimise the consumption costs of electric forklifts and to shape the energy supply in a future-oriented way: what is the best kind and size of battery in each case? And what is the optimal number of batteries and chargers for the application at hand? Depending on the working environment, it may be worthwhile to use a central charging station, for example.



Linde Material Handling develops high-performance material flow solutions customised to the individual client's needs, enabling them to achieve long-term competitive advantages. The company is one of the world's largest manufacturers of forklift trucks and warehouse handling equipment and has been setting standards in solutions for forklift trucks, fleet management, driver assistance systems and services for more than 50 years.

**Linde - for your performance**

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