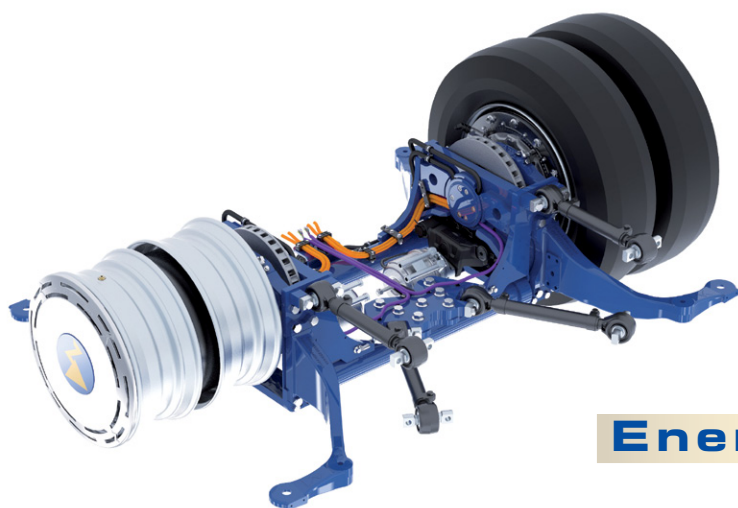


Movement by Perfection



The Royal League in ventilation, control and drive technology



Z wheel

Energy-savings-lifeline

For a lifetime of driving

ZA wheel

Become an energy ,conservationist‘ now

For bus fleet operators

With the unique, high-tech, electric in-wheel hub drive **ZA wheel** and its **energy-savings-lifeline**, your economy drive starts with the very first journey. **ZA wheel** is a leader in total efficiency (battery to wheel), noise characteristics, easy servicing and eco-friendliness whilst at the same time offering unparalleled low energy and consumption costs compared with other drive systems. By eliminating approx. 80% of the moving parts in the drive train which are subject to wear and tear, such as gearboxes, transmission ratios or differentials, maintenance costs are reduced to the absolute minimum. The major difference however lies in the actual drive as the drive power on the **ZA wheel** is delivered to the wheel itself. The targeted use of torque means that buses and commercial vehicles can be driven efficiently, silently and emission-free through city and urban areas. Reducing energy costs for any bus fleet by 75% compared e.g. to diesel vehicles. **ZA wheel** needs no internal combustion engine or gearbox and so is totally integrated into the available space. Especially in the rear passenger compartment, the continuous, barrier-free low-floor arrangement creates a totally new range of options for interior design, e.g. more seating and standing space for passengers, or additional barrier-free areas for wheelchair users. Buses equipped with the high-tech electric in-wheel hub drive **ZA wheel** and the **energy-savings-lifeline**, are in successful use with a wide operating range in many German and European cities.

So make the change now to climate protection from the Royal League.

We supply **ZA wheel** as a complete axle drive module in two performance versions – ready for installation.

ZA wheel

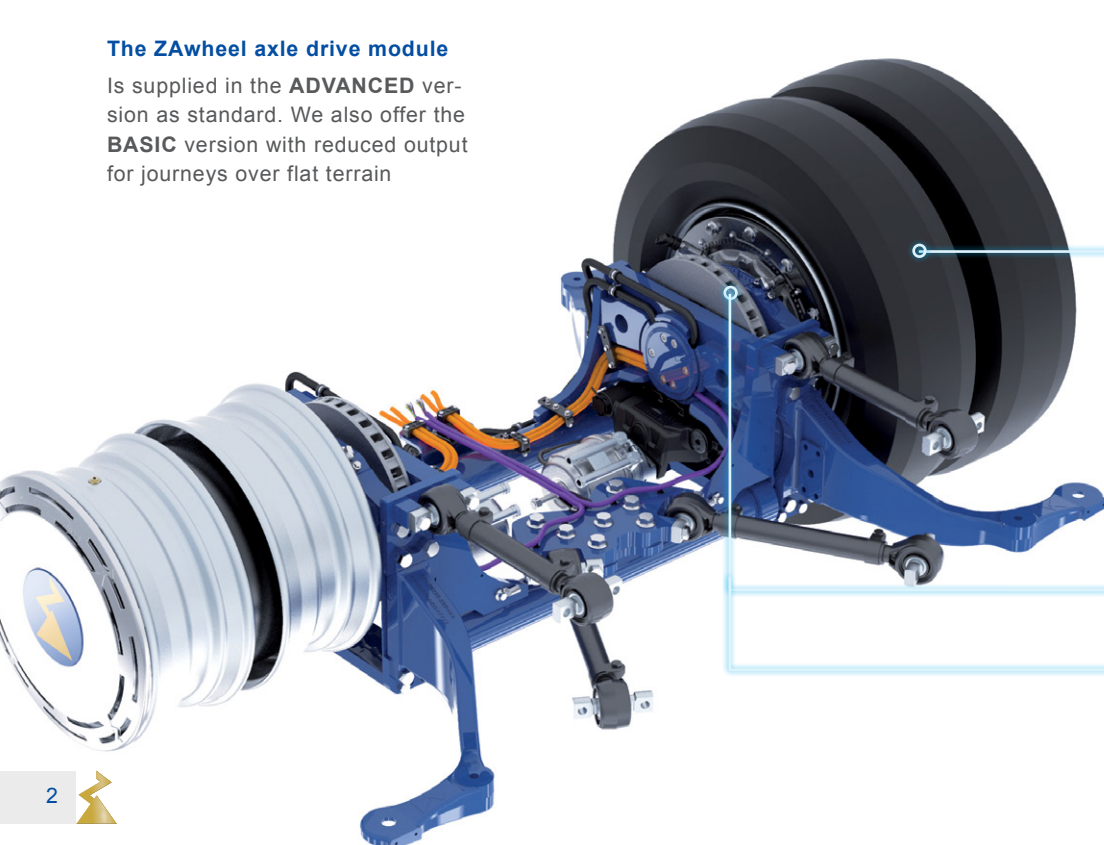
IT PAYS TO SWITCH OVER

To the most sustainable, high-tech, electric, in-wheel hub drive for your bus fleet.
With reduced battery needs, extra seating, minimal operating costs and increased range

ZA wheel The only high-tech, electric, in-wheel drive with

The ZA wheel axle drive module

Is supplied in the **ADVANCED** version as standard. We also offer the **BASIC** version with reduced output for journeys over flat terrain



The revolution – ZA wheel as single wheel drive

The newly developed concept for the future is synonymous with totally new spatial designs and travel comfort for vehicles designed to transport passengers and cargo.

rs - transport companies - municipal administrations:



Zero CO₂ emissions
and prevent 1,000,000 kg in CO₂ emissions*

*Calculated over the service life of one diesel bus
at 37.5 l diesel consumption per 100 km

energy-savings-lifeline for a lifetime of driving

Your savings drive starts from the moment you begin the very first journey!

e.g., sightseeing bus, installation of the ZAwheel axle drive module in the existing space



Highly intelligent control unit

Manages the complex interplay between the electric drive components, providing for even greater efficiency.

e.g. low-floor city bus, dispensing with central motor means floor height is reduced to the minimum possible, 100% disabled friendly

We're making our Earth

Incidentally:
Electric mobility
with ZAwheel is
included in the
European Commission's
funding programme

RETROFIT YOUR VEHICLE FLEET TO ZAWHEEL PLAY

0% CO₂
emissions

Maximum
range

75% lower
energy costs

90% reduction in
noise emissions

ZAwheel **GUILDED** your vehicle fleets with these highlights:

Cost benefits which no other competitor has:

- Reduced capital investment costs, for example smaller battery pack (approx. 10% smaller)
- Lower annual operating costs thanks to reduction in energy consumption (approx. 15% lower)
- Minimal maintenance costs as moving mechanical parts in the system are reduced to a minimum

Even more benefits with **ZAwheel**, the direct drive with integrated power electronics

- More space and increased aisle width > More seats and standing space > Barrier-free along the entire level
- Minimum noise levels > Quiet working conditions in the driver's seat > No noise pollution for residents and the environment
- Two motor power levels > Suitable for flat and difficult terrain
- Minimum total vehicle weight > Carry more passengers
- Sustainable motor concept > CO₂-free journeys for a cleaner environment
- Electromagnetic Compatibility (EMC) > no interference emission > no irritating whistling

a little bit more blue!

YOUR PART IN BUILDING THE CITY OF THE FUTURE



ZIEHL-ABEGG RETROFITBLUE

Reduce new capital investment and retrofit for long-term sustainability. Turning the old diesel-powered bus into a new electric bus

An investment in this economic method of modernisation with **ZAwheel** will be quickly recouped and turn old diesel-powered buses or commercial vehicles still in good condition, into eco-friendly, emission-free electric vehicles and immediately start to generate energy savings!

Previous diesel-powered engines on city, airport, sightseeing and double-decker buses as well as on commercial vehicles for transporting cargo and special vehicles can be replaced at the underground mining. The positive effect is immediately noticeable, not only in the reduction in energy costs or improvement in air quality but also in lower noise emission levels.

The „cleaner

90%
Efficiency

0%
Emissions

90%
Reduced
noise levels

**The ideal measurement of climate
control for any vehicle fleet**



ZAwheel

Electric in-wheel hub drive is
suitable for every environmental
zone, extremely economic and
can be fitted to any bus fleet

For the benefit of climate protection

We invite you to convert your bus fleet to **ZAwheel** and to the new economy drive because it all fits perfectly here: optimal life cycle costs (LCC), low operating costs and an energy-saving service life for a lifetime of driving.

The worldwide unique electric in-wheel hub drive with a minimum 90% efficiency (battery to wheel), whatever the intended purpose, every focus, every range, every road requirement, every climate zone – it's always all systems go!

ZAwheel is suitable for e.g.:

Class M3 utility vehicles (buses) e.g. city buses (solo buses / articulated buses / double articulated buses), intercity buses, city sightseeing buses, airport buses, Bus Rapid Transit (BRT) and Automated People Movers (APM)

Y O U R E C O N O M

Efficiently calculated! ZAwheel pays for

*per 1 million kms travelled, according to independent Life Cycle Costing (LCC)



“ bus fleet

ZAwheel

optimum **Life Cycle Costing (LCC)**

Reduced operating costs + energy savings thanks
to low consumption levels + high residual value



Achieves
all climate
targets



Reduces bus
fleet operating
costs by up to
20%



90 % efficiency
0 % emissions
90 % reduction in
noise levels



Your direct route
to the ZAwheel
economy drive

ZAwheel delivers the full drive output directly onto the road, reducing energy costs and saving money, to be more precise, more than 22,000 euros* from the start of the very first journey

Y D R I V E

itself in just 4 years



The Royal League

