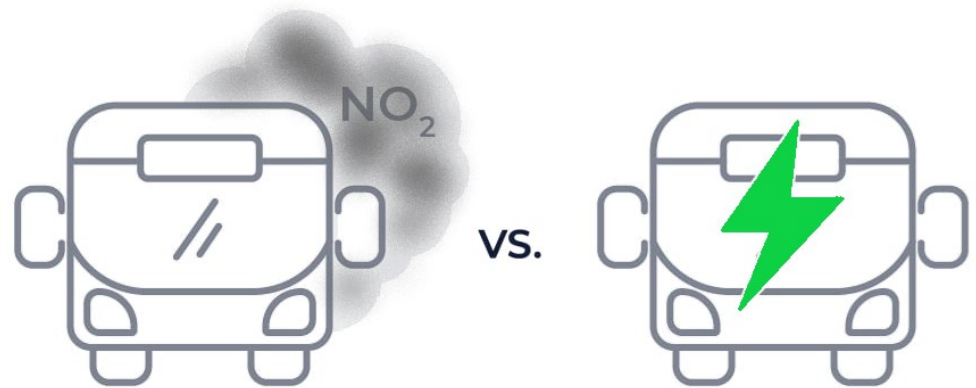


# How E-Bus Maintenance Differs from Diesel Bus Maintenance

Nick Curran

Volvo Bus Aftersales & Service Manager

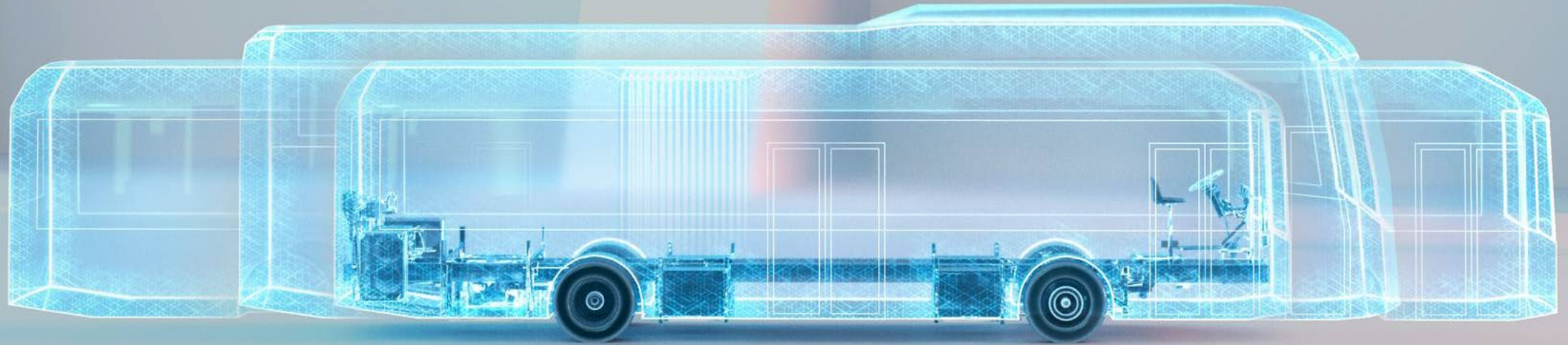


# Maintenance Comparison

**E-Buses typically require less maintenance than conventional buses because:**

- The battery, motor, and associated electronics require little or no regular maintenance
- Fewer fluids, such as engine oil, that require regular maintenance
- Brake wear is significantly reduced due to regenerative braking
- There are far fewer moving parts compared to a conventional fuel engine.
- No emission components, ad blue, DPF, fitted to E-buses





## Engine Maintenance

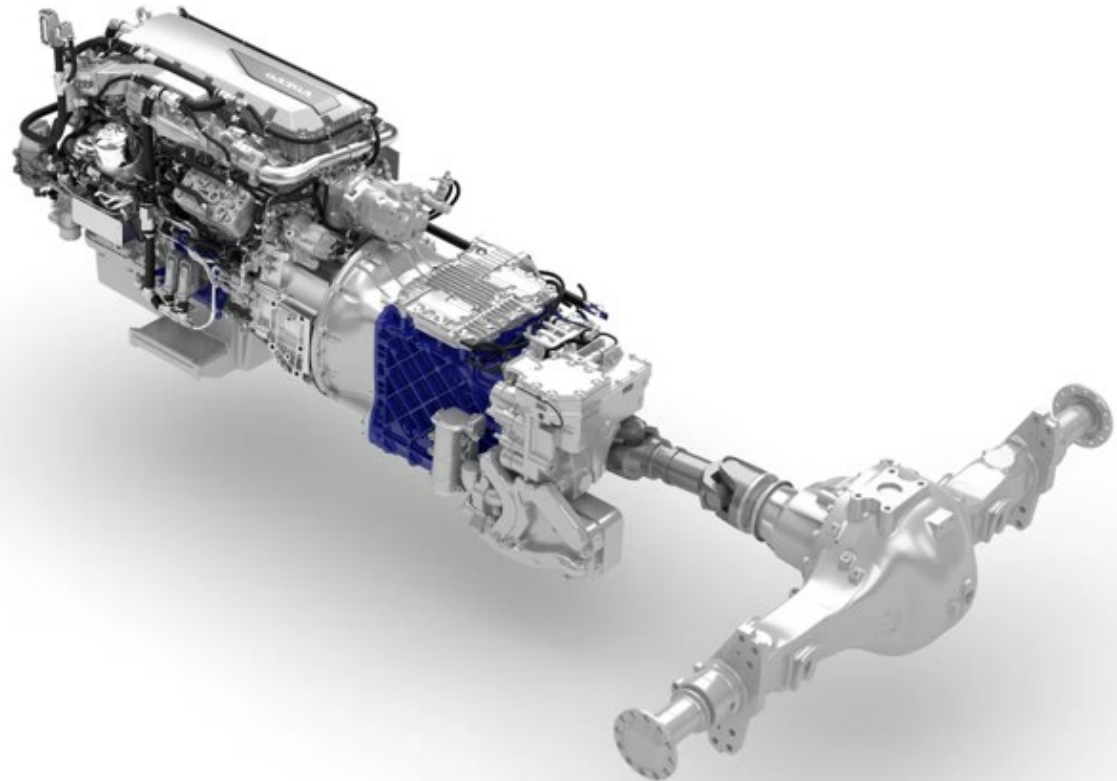
The main difference in engine maintenance between diesel and E-Buses is that diesel buses have an internal combustion engine that requires regular maintenance.

In contrast, E-Buses have an electric powertrain with fewer moving parts and require less maintenance.

# Engine Maintenance Diesel Vs Electric

## Diesel buses

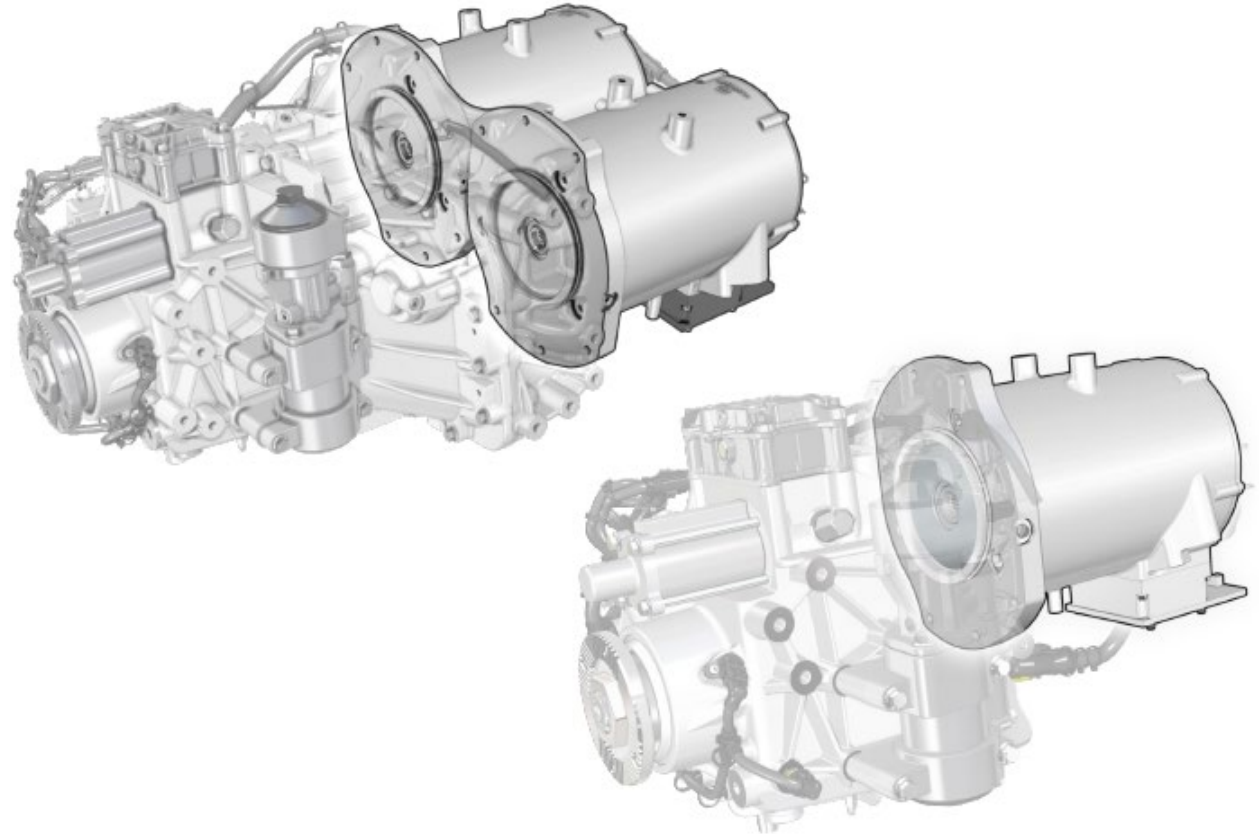
- Engine oil and oil filters- every 20k to 60k kilometres
- Fuel filters - every 20k to 60k kilometres
- Euro 6 Diesel particulate filter (DPF) & NOx sensors 120k to 200k kilometres
- Engine tune ups - every 60k to 120k kilometres
- Starter 500k and Alternators 120k to 200k kilometres
- Engine replacements /overhauls – 800k to 1 million kilometres
- Turbocharger 800k to 1 million kilometres



# Engine Maintenance Diesel Vs Electric

## Electrics buses

- Annual decommission and inspection of electric motor(s)
- Electric motor replacements – 800k ?





# Brake Maintenance

Brake maintenance for E-Buses and diesel buses may differ in some ways due to the differences in brake systems, driving conditions, and other factors.

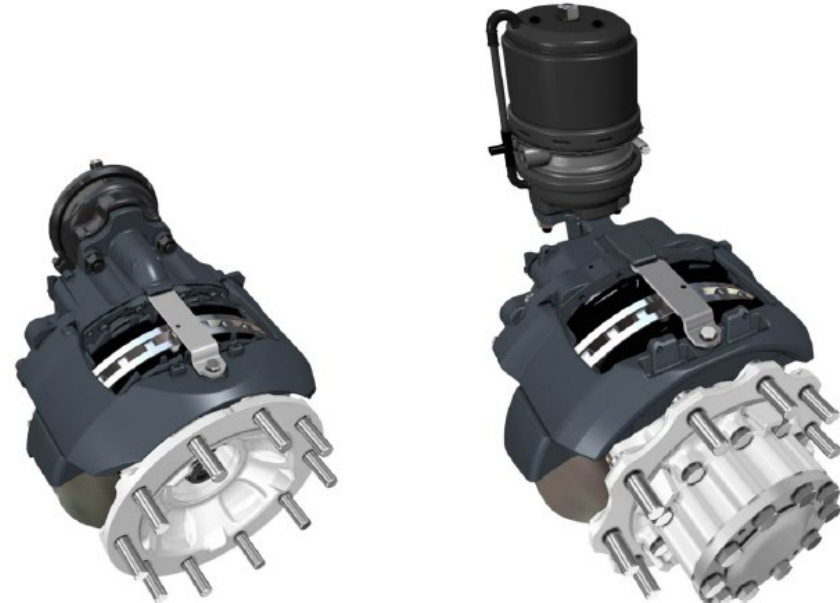
# Brake Maintenance Diesel Vs Electric

## Diesel buses

As Diesel buses traditionally use engine and transmission retarders, the brake wear may be similar to electric buses. But also causing wear on these retarder components.

## Electric buses

Electric buses use the electric motors to retard the bus while braking and also generate electricity back into the battery packs.





## Tyre Maintenance

There are some differences in tyre requirements between E-Buses and diesel buses, mainly due to the differences in weight distribution and operating conditions.



# Tyre Maintenance

## Diesel Vs Electric

### Diesel buses

As Diesel components.

### Electrics buses

E-Buses are typically heavier than diesel buses due to the weight of the battery pack. This weight can put more stress on the front tires, and as a result, E-Buses may require broader and stronger front tires.

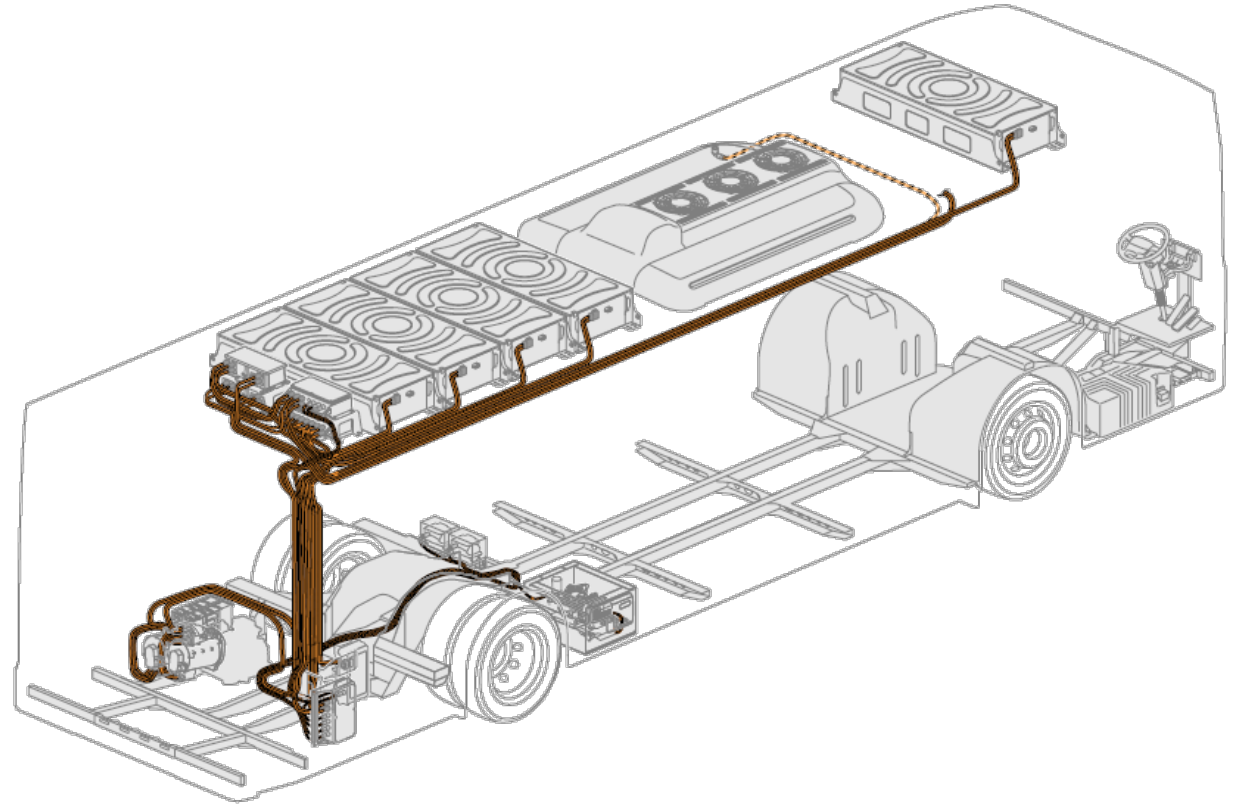
E-Buses use regenerative braking, which can result in less wear on the tires as well.

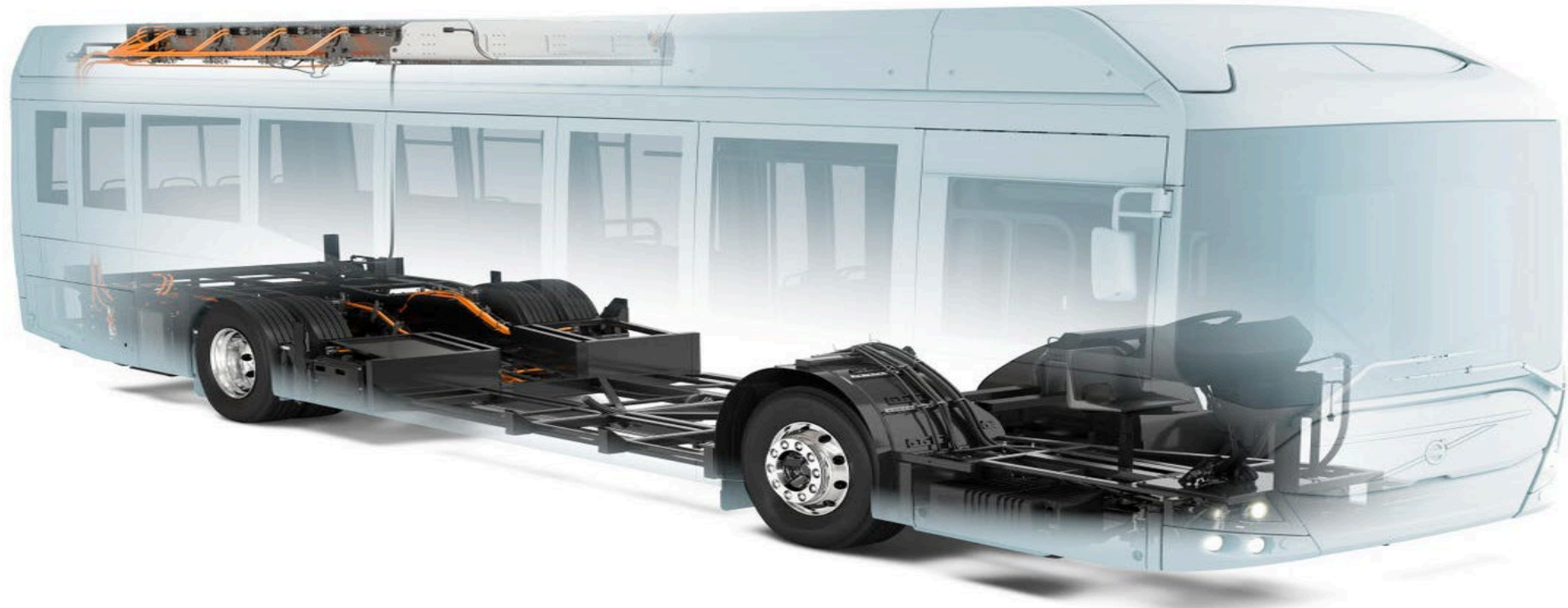


# Weight Distribution

E-Buses are typically heavier than diesel buses due to the weight of the battery pack.

This weight can put more stress on the front tires, and as a result, E-Buses may require broader and stronger front tires

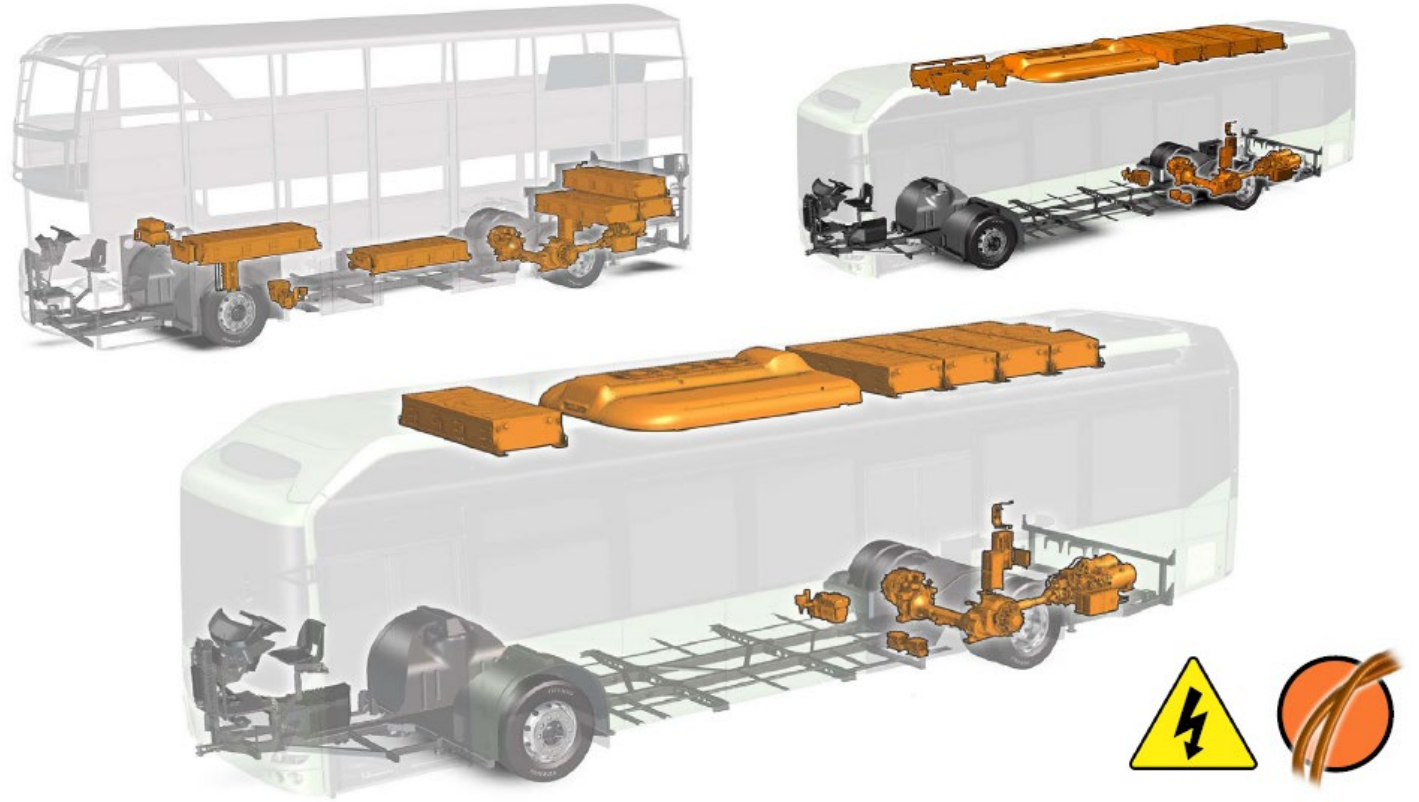




## E-Bus Specific Maintenance Requirements

# E-Bus Specific Maintenance Requirements

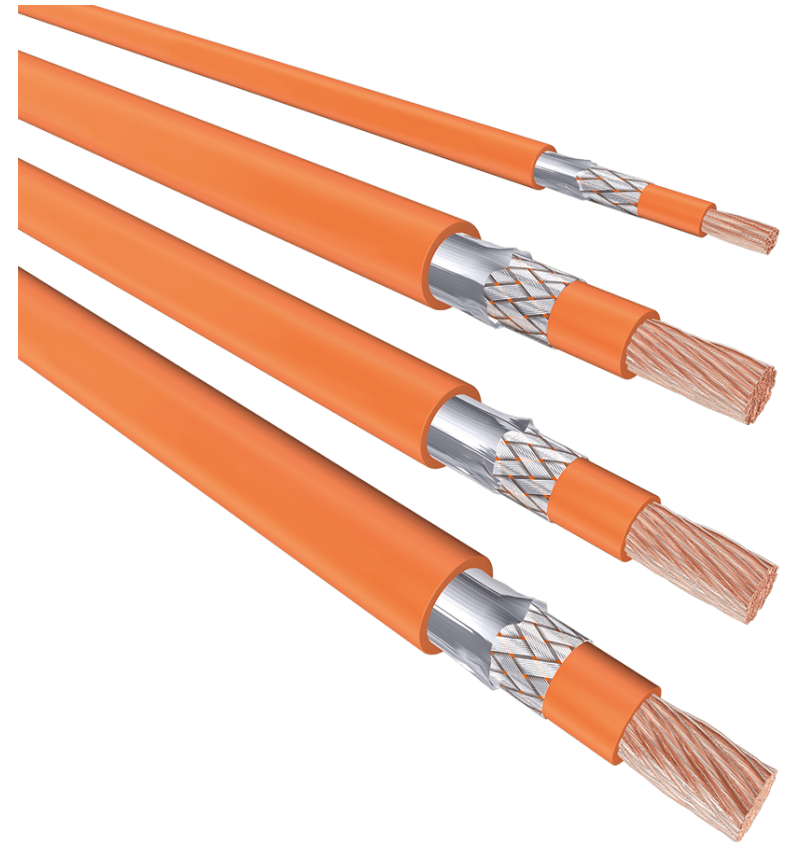
- Traction Battery maintenance
- EV Charging infrastructure
- Software updates
- Traction cables
- Electric driven air compressors



# E-Bus Specific Maintenance Requirements

Inspection of Traction cables

Inspection of Traction connectors



# Cooling System Maintenance

- E-Buses may have a cooling system to regulate battery temperature, which requires regular maintenance.
- Diesel buses do not have this requirement as they do not have a battery or cooling system.

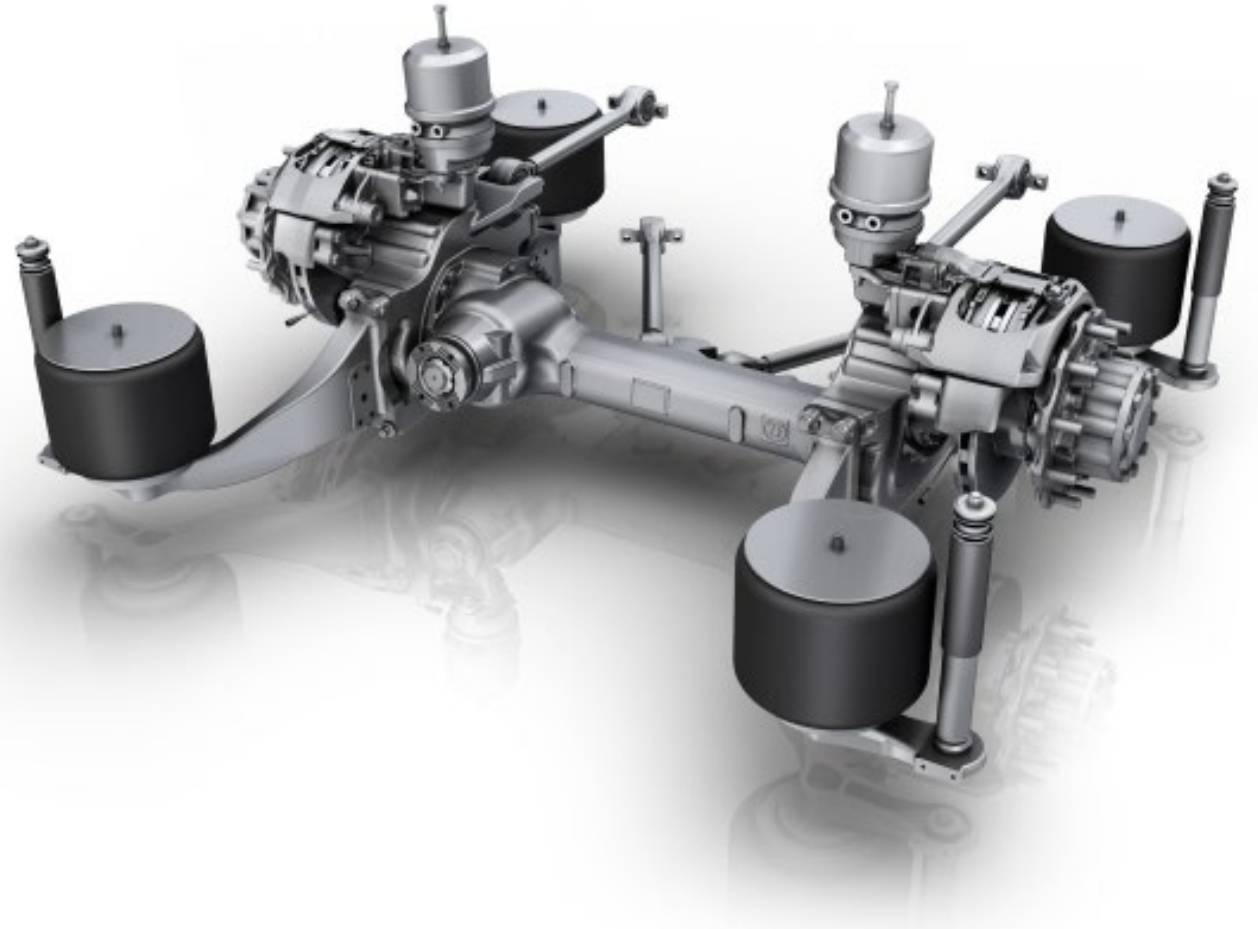




## Common Maintenance Items

# Common Maintenance

- Coolant replacements
- Power steering oil
- Suspension components
- Annual Air conditioning servicing
- Transmission oil
- Differential oil







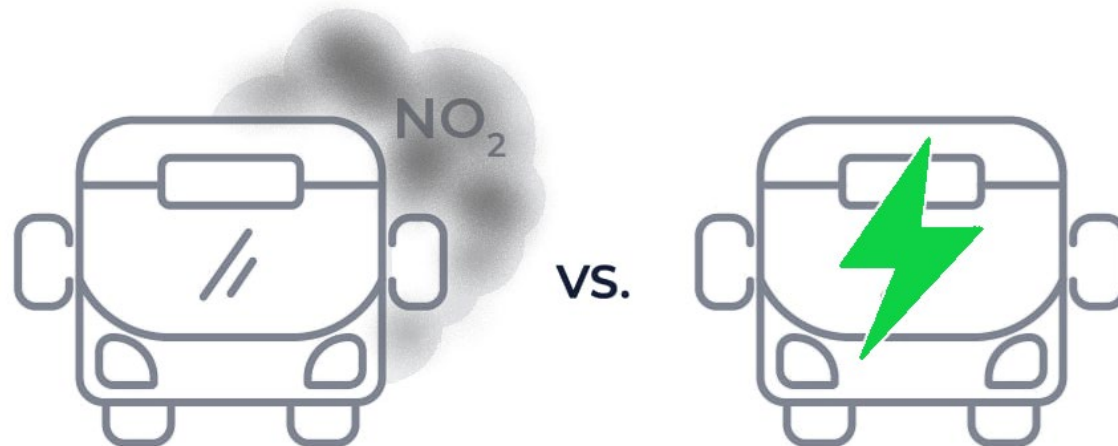
## Conclusions

# Conclusion

E-Buses have distinct maintenance advantages over diesel buses due to their simpler design, absence of oil changes, or exhaust system upkeep.

The regenerative braking system in E-Bus also prolongs the lifespan of brake pads.

Nevertheless, E-Buses necessitate additional maintenance for their battery systems and charging infrastructure compared to diesel buses





Thank you

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