

Profitable electric transport?

It's possible wit a smart energy management system.

Energy made Zympler.

The gist in short

Electric transport pays off, provided you keep the electricity price under control. Charge uncontrolled during peak hours and you shoot straight through the tipping point above which electric becomes more expensive than diesel. Charge smart and you stay comfortably below it.

The difference lies in the control. An Energy Management System (EMS) shifts charging sessions to cheap hours, shaves peaks, and structurally keeps you out of the danger zone. R. Nagel Transport achieves an all-in electricity price of 10 ct/kWh this way. This whitepaper shows how.

Three challenges in electrification

- **Grid congestion.** Limits the ability to roll out charging infrastructure on time and to expand contracted capacity.
- **Price volatility.** Makes energy costs unpredictable: the commodity price fluctuates, the grid operator's bill depends on your peak capacity, and regulations keep shifting.
- **Operational complexity.** Increases with the combination of charging infrastructure, solar power, batteries, and logistics planning.

Traditional EMS solutions are reactive: they give control but don't look ahead. Zympler steers proactively, based on forecasting, market position, and real-time control.



The business case: TCO over six years

Whether electric pays off is determined not by the purchase price but by the total cost over the vehicle's lifetime. Take a concrete case: a 40-ton tractor unit for national distribution transport, **78,000 km** per year, over six years, charged via a 150 kW fast charger at the company's own depot.

The purchase price is substantially higher than for diesel:

- **E-truck:** €300,000 gross, minus €63,000 AanZET subsidy (21% of the purchase amount). Net **€237,000**.
- **Charging station:** €45,000 including installation, minus €12,200 SPRILA subsidy. Net **€32,800**. The charging station is depreciated over twelve years, twice the truck's service life. Over these six years, therefore, half counts: **€16,400**.
- **Net investment: €253,400** for the e-truck plus charging station, versus **€120,000** for diesel.

Operationally the picture reverses. Lower maintenance costs, savings on the heavy vehicle levy (vrachtwagenheffing), and revenue from ERUs (emission reduction units, roughly €0.10 per kWh charged) push the e-truck below diesel.

Without smart control, TCO comes out at **€455,000**, versus **€493,000** for diesel. A difference of nearly €39,000 per truck.



What an EMS adds on top

An EMS saves an additional **€13,500+ per truck** over a six-year period by:

- **Shifting charging sessions** to the cheapest hours.
- **Shaving peaks**: a lower kW-max means a lower grid operator bill.

The advantage over diesel thereby rises to more than €50,000 per truck.

The tipping point: 35 ct/kWh

The e-truck advantage hinges entirely on the electricity price. At a conservative diesel price of €1.55 per liter, the tipping point lies at **35 ct/kWh**; above that, diesel becomes cheaper again. At a higher (more realistic) diesel price, this tipping point shifts further upward. The more expensive diesel is, the greater the margin for profitable electric driving, but this is often accompanied by a higher electricity price during peak hours too.

The price per kWh at your depot is not a fixed amount. It is built up from the commodity price plus energy tax, grid operator costs (of which the variable portion depends on your monthly peak), and ERU revenue. That composition determines how far you are from the tipping point, and therefore how much room an EMS has to capture gains.

Het risico van ongestuurd laden

The TCO case calculates with an all-in electricity price of 18 ct/kWh, well below the 35 ct tipping point. But that 18 ct is not a given. It stands or falls with *how* you charge.

Trucks that come in after their shift are often plugged straight into the charger. A logical approach, but also a costly one. Three mechanisms stack up:

- **Day-ahead peak.** Market demand peaks in the late afternoon while solar output drops. Charge at full power at that moment and you pay top price for every kWh.
- **kW-max.** A depot connection has a variable grid-operator component, determined by the highest measured 15-minute value of the month. Multiple trucks charging simultaneously at full power? That peak sets your grid bill for the rest of the month.
- **Exceeding your contracted capacity.** Structurally exceed the capacity you've contracted, and you don't get a higher contract in return. The grid operator can flag the overrun and ultimately hold you in default. Additional capacity has to be requested separately, and in congestion areas that puts you on a waiting list for years. Tonight's peak can thereby block next year's expansion plans.

What this does to the business case

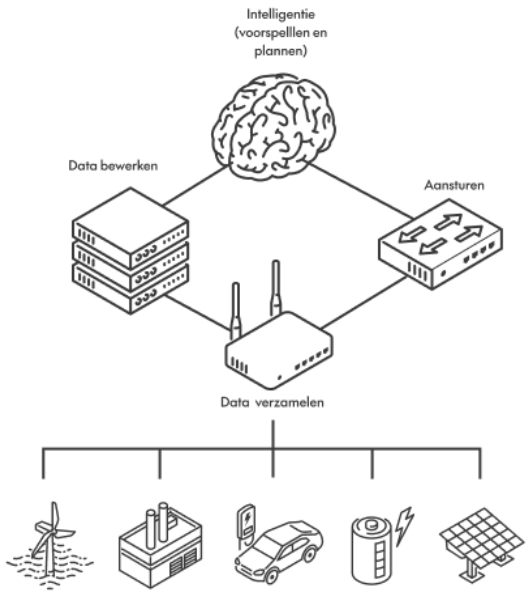
Each of these mechanisms eats into the margin between your actual electricity price and the tipping point. They stack up in a single charging moment: the truck you plug in now pulls in the day-ahead peak, sets your kW-max for the rest of the month, and pushes you toward the limit of your contracted capacity. The difference between profitable electric driving and being more expensive than diesel doesn't lie in the truck, it lies in *how* you charge it.

> *"It's essential that you can charge at home and keep the price per kWh under control. If you have to charge elsewhere at high commercial prices, the business model quickly turns out not to be profitable."*
>
> — **Erik Nagel**, Director R. Nagel Transport

Zympler. Energie in four building blocks.

Zympler orchestrates all assets, energy flows, and external factors as a single system. Not reacting to what already happened, but anticipating what's coming. This happens in four steps:

1. **Collect.** 15-minute values per meter point, charging status, generation, grid load, and prices come together in one system. The basis for both control and reporting.
2. **Forecast.** Generation, demand, and prices up to 72 hours ahead.
3. **Optimize.** Trade-offs between cost, reliability, and asset use, within the hard limit of the connection.
4. **Control.** Reality always deviates slightly from the plan. Real-time adjustment catches deviations before they hit your 15-minute peak.



On-site and cloud: the hybrid approach

Most EMS solutions choose either central cloud control or local on-site control. Both have clear limitations. Zympler combines the two:

	Cloud	On-Site	Zympler (hybrid)
Reliability during outages	✗	✓	✓
Scalability across locations	✓	✗	✓
Advanced optimization	✓	✗	✓
Direct local response	✗	✓	✓
Market optimization (day-ahead, imbalance)	✓	~	✓
Single point of contact for the whole chain	✗	✗	✓

The cloud thinks ahead, the gateway stands ready locally. In the event of a connectivity outage, the system keeps running independently on the 72-hour forecast and safety margins, so operations don't stall and market positions aren't lost.

Customer case.



R. Nagel Transport

Situation. By late summer 2026, transport company R. Nagel operates ten e-trucks on a charging plaza with chargers of 480 kW, 2×180 kW, and 30 kW, a battery of 1,400 kWh / 660 kW, and a 1.6 MW grid connection. The problem was in the control: a trader managed the battery, an EMS monitored the connection, but no one oversaw the whole. On top of that, vehicles had to charge in time for departure, without a linkable Fleet Management System.

Solution. Zympler brought charging stations, battery, and trading together into one system, with a fixed priority order:

- **Guard the connection.** The hard ceiling; the connection is never exceeded.
- **Guarantee charging sessions.** Vehicles charge in time for departure, with configurable priority per charger. No FMS needed as a starting point.
- **Minimize costs.** Only after that does remaining flexibility go toward cheap purchasing, battery trading, and the ERU market.

Result. Zero connection overruns, vehicles always on time, and an all-in electricity price of 10 ct/kWh — well below the 20 ct/kWh common in the market, and well below the 35 ct tipping point.

From diesel surcharge to electricity surcharge

In the transport sector it has long been standard practice to work with a weekly diesel surcharge, based on a forecast of fuel prices. The switch to electric raises a new question: how do you translate dynamic electricity prices into a transparent, predictable surcharge for customers and partners?

Zympler provides a standardized, automatic forecast that fulfills the same function as the classic diesel surcharge — but tuned to today's energy system:

- **Actual purchase prices** (day-ahead and intraday)
- **Network costs and taxes**
- **Charging losses and charging mix** (depot vs. public charging)
- **Optimization effects** from the EMS, such as peak shaving and smart price steering

The effect

- Predictable, explainable cost per kilometer.
- Direct link to the energy market: opportunities captured instead of avoided.
- Minimal imbalance costs, sometimes even imbalance revenue.

Regulatory support

Electrification brings new compliance requirements. Zympler supplies the underlying data for:

- **RED III (Renewable Energy Directive):** the EU directive behind the Dutch ERU system. Zympler supplies the per-charge-point charging data you need to register.
- **Zero-emission zones:** the requirement for emission-free urban logistics.
- **Demonstrably green driving:** tracking, per vehicle, the share of green energy consumed.
- **CSRD:** sustainability reporting for companies currently within scope. Even if you fall outside it yourself, you'll still encounter it via clients who must report on their chain emissions and pass that down through their procurement.

The next step

Every logistics operation is different. With a short simulation, Zympler calculates what your specific setup delivers:

- The optimal charging strategy for your fleet and connection.
- The savings potential in €/kWh and total TCO.
- A concrete implementation path from first truck to fully electric.

Schedule a conversation and discover, in a single session, how profitable electric can become for your operation.

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