

How Nike Reached 100% Electric Drayage on Its Shanghai Port Routes

An EDA Case Study in Shanghai

Between Shanghai's container terminals and Nike's China Logistics Center in Taicang, every container, which is weight around 10-11 tons, now moves on an electric truck. What began as a 2022 pilot has become scaled commercial operation: 100% electrification across three port-to-warehouse routes, operated by carrier partner and logistics service provider (LSP) Rokin Logistics, with one-way distances from 30 to 170 km.

The model rests on two mutually reinforcing mechanisms: a long-term strategic partnership and a fixed annual freight contract that de-risks the carrier's investment in electric trucks. On top of that, a 100% renewable-energy logistics park that powers the fleet with green charging is in place. The outcome is rare in heavy-duty electrification where annual cost is at parity with diesel and approximately 229 tCO₂e is avoided every year.

The decisive factor for scaling was "long-standing partnership with Nike, combined with maturing technology and improving policy support."

– Operations Manager, Rokin Logistics

Partnership at a glance

Nike	Rokin Logistics	Shanghai Envision
Provides the fixed annual freight contract and renewable charging at Taicang	Operates 50–80 JAC electric tractors across the three port routes	Supplies 100% renewable power at reasonable price

Three routes, one operating rhythm

The Nike China Logistics Center in Taicang are connected to three ports in Taicang: Yangshan Port (Route 1), Waigaoqiao Port (Route 2), and Taicang Port (Route 3). Route 1 is 170 km. Carrying only 2% of the annual volume, this is the longest route and used much less than the other two Port routes. Route 2 is the busiest route. It is a 75 km route with high-frequency round trips, carrying about 80% of total volume and two round trips per day. In total, that is approximately 90,000 km per truck per year. Since Taicang Port is the closest Port to Nike's China Logistic Center in Taicang, Route 3 has only 30 km one way and is used for 18% of the annual volume.

Route	Start & End point	One round trip distance	Operation Characteristic	Share of volume
Route 1	Yangshan Port to Nike China Logistics Center in Taicang	170 km	Medium-short round trips, once daily	2%
Route 2	Waigaoqiao Port to Nike China Logistics Center in Taicang	75 km	High-frequency round trips, main cargo routes	80%
Route 3	Taicang Port to Nike China Logistics Center in Taicang	30 km	High-frequency round trips, short-distance routes	18%

The batteries are heavy, but not that heavy

In comparison to diesel trucks, electric trucks are 2-3 tons heavier due to the batteries. As such, their payload capacity is reduced. Apparel and footwear containers of Nike have an average weight of 6.3 tons per container, adding this on top of the empty container and truck weight, it is still below the gross weight limit of 42-ton. Therefore, the fleet does not have the range-versus-payload trade-off that complicates heavy-freight electrification. Fleet deployment is aligned with the retail calendar, with approximately 50 electric tractors in regular months and up to 80 during peak demand periods.

The trucks and the partner behind them

Rokin operates JAC 4×2 electric tractors with 457–513 kWh LFP batteries. Drivers plug in once or twice a day at Nike China Logistics Center in Taicang or nearby public stations, and it would be enough to complete one round-trip of any of the three routes without charging on route. Both Nike's depot and public charging offer a 240-480 kWh charger allowing the trucks a 20–80% fast charge within 45 minutes. Since moving from diesel to electric trucks for their pickups, Nike reports no impact on operational efficiency or on-time KPIs.

For Rokin Logistics who purchase its own trucks and has its fleet, the key decision point for scaling up electric truck purchases comes down to four factors: (i) the growing coverage density of charging infrastructure, (ii) gradually maturing technology of electric trucks and the charging infrastructures (such as shorter charging time), (iii) a favourable policy environment, and (iv) the deep cooperation with Nike on green and clean energy use. Sustained demand gives carriers greater confidence to invest in electric vehicle assets and allows them to extend the experience gained from the Nike program to other clients and scenarios. Economically, the annualized cost of a battery-electric tractor is now broadly on par with its diesel counterpart.

Green power closes the loop

Nike China Logistics Center in Taicang is 100% covered with renewable electricity. The renewable electricity is not only utilized for electric trucks charging stations, but also the operation of the logistics center. On-site chargers (two dual-gun 240 kW units and one quad-gun 480 kW unit) are provided to Rokin, with public stations at CNY 1.0/kWh covering overflow.

The structure is deliberately circular: green energy allows for green charging which results into green transport. With that, Nike secures verifiable Scope 3 reductions. At the same time, Rokin gains a CNY 0.4/kWh energy-cost advantage by charging at Nike's Logistic Center in Taicang, which offsets the higher vehicle purchase price and creates a cost per mileage price at parity with diesel. This creates a win-win situation for both Nike and the trucking carrier Rokin.

What the program delivered since 2022

Annualized lifecycle cost now stands at CNY 273,500 for an electric tractor versus CNY 266,150 for diesel. Although the lifecycle cost remains 2.8% higher for electric, annual operating cost are 21.5% lower. Factor in Nike's self-generated green power and rising diesel prices, and the electric truck comes out ahead.

- TCO parity achieved: Annualized lifecycle cost within 2.8% of diesel (CNY 273,500 vs CNY 266,150) and annual operating cost is 21.5% lower. The advantage is expected to widen further as diesel prices continue to trend upward.
- ~229 tCO₂e avoided per year: a 15.7% reduction per truck against the diesel baseline
- Direct contribution to Nike's target of a 30% Scope 3 reduction by 2030 vs 2015 baseline

What we learned

Long-standing partnership de-risk carrier investment. Guaranteed volume and operating days turned Rokin's truck purchases into calculable investments, the single most important enabler of scale-up.

Reasonable green charging closes the economic gap. A CNY 0.4/kWh energy advantage offsets the vehicle premium without distorting market pricing, which is a textbook win-win.

The payload penalty does not apply to light-weight container transport. Battery weight only causes a penalty where adding the container exceeds the maximum allowable weight of the vehicle. At 6.3 tonnes per container, this does not apply to Nike. It is important for LSPs and carriers to analyze shipment weights before identifying suitable lanes.

Fixed routes + high mileage = TCO parity. At 90,000 km per year per truck on repeatable routes, energy savings amortize the electric premium within the vehicle's 5-year lifecycle. TCO parity is not a future promise — under the right conditions, it is already here.

Electric drayage is scalable

The case study of Nike China Logistics Center in Taicang and Rokin Logistics shows that zero-emission drayage is scalable. The operation of Nike China Logistics Center in Taicang brings together the core conditions required for replication: predictable and recurring freight demand, a long-term partnership that gives carriers confidence to invest, fixed routes with high vehicle utilization, and renewable-powered charging infrastructure. Together, these elements form a practical blueprint for applying electric drayage beyond a single logistics center. Where similar corridor conditions exist, the model can be adapted, scaled, and repeated, offering the sector a new pathway to move green port logistics from demonstration to everyday commercial deployment.