E/NRIDE

FUTURE-PROOF YOUR FLEET IN THREE STEPS

HOW TO REDUCE TRANSPORT COSTS BY 50% AND FLEET EMISSIONS BY 90 % IN 3 STEPS

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INTRODUCTION

The road freight industry is ripe for revolution. It accounts for up to 7 percent of global CO2 emissions, and beyond the environmental toll, the cost of transport is increasing 2 to 3 percent year-over-year as the world faces a shortage of truck drivers, fuel costs are increasing, and more shoppers move online. These are problems that require a full-scale solution, but that solution must be smart, sustainable, and most importantly, cost-effective. As factories and warehouses become increasingly automated, shouldn't the transportation of goods between them be as well? Great strides have been made to bring self-driving vehicles closer to reality. In 2019, ***Einride became the first company to operate a fully-autonomous, electric truck on a public road in Sweden with its driverless and cabin-less Pod.*** But to change the system, every aspect of the supply chain needs to be considered. ***That means optimizing current fleets for cost and environmental efficiency, introducing zero-emission vehicles, and ultimately getting the driver out of the vehicle entirely.***

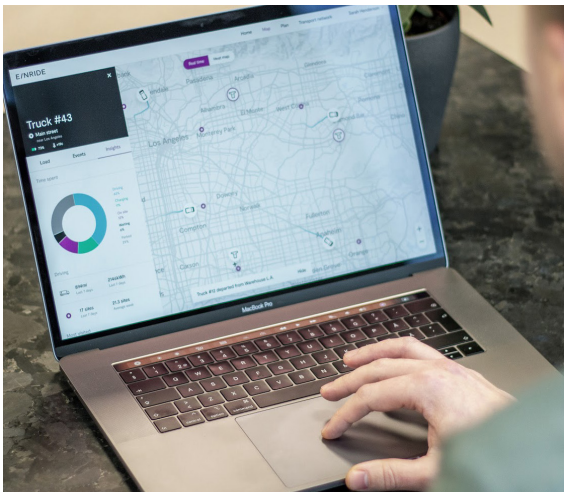
It's only a matter of time before self-driving vehicles hit roads on a global scale, but the switch to Autonomous Electric Transport (AET) won't happen overnight. Companies like Einride are leading the transition with an increasing number of partners, but there are crucial steps that need to be taken before this future can become a reality. Here we'll explore what this transition means in more detail, highlighting our planned operations with a leading sustainable food producer in Sweden.

Einride's roadmap for the implementation follows three distinct phases: ***digitization, electrification, and automation.*** Following this roadmap, customers in the FMCG industry and beyond can make the necessary changes to future-proof their transport for the coming AET revolution, transforming freight networks to be sustainable, safe, and smart.

STEP1: DIGITIZATION

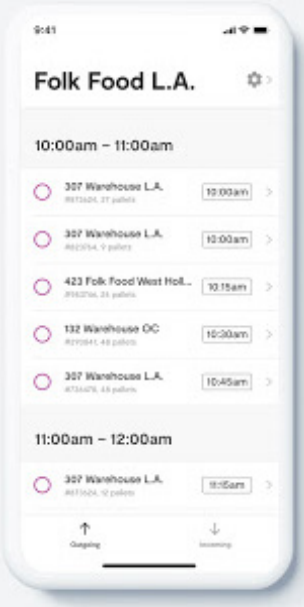
TAKING YOUR TRANSPORT NETWORK ONLINE

The first step to make your fleet future-proof is digitization; in other words, ***taking your transport network entirely online.*** Without an intelligent, interconnected ecosystem working constantly behind the scenes, the transition to an electric and autonomous fleet will be nearly impossible. Einride's Freight Mobility Platform links all vehicles operating in your network and provides optimized, dynamic route planning based on shipping demands, loading slot availability, and more. But most importantly, the platform is built to handle the transition from diesel to electric vehicles on a massive scale, and as soon as possible. Using an advanced telematics system, we can collect and provide accurate data on vehicle location, time of arrival, and current CO2 emissions information. This not only optimizes your current network for both cost and emissions, but provides recommendations on where to swap diesel vehicles for electric trucks, reducing operating costs and your business's overall environmental impact. For electric vehicles, the platform can report the current charge state of each vehicle, estimate range based on individual load, recommend charging as needed, and adjust projections according to changing road and weather conditions, all in real time.



So how does this work from a customer perspective? With our partner in food production, Einride is collecting historical transport data for use on our platform, and to build a basis upon which to provide recommendations for electrification.

This involves looking beyond just the diesel vehicles to be replaced but the system as a whole, including making use of available charging infrastructure and determining where new chargers can be installed, either along transport routes or at customer facilities. The platform also provides analysis on how to adjust hours of operation for electric trucks, as a higher vehicle utilization is comparably more important for an electric truck than diesel. For example, in the case of our partner, vehicle utilization is expected to increase to two shifts per day, moving more than 10,000 pallets a month between production and distribution facilities. To date, vehicles tracked by our Freight Mobility Platform have logged over 101,000 kilometers driven, 2,000 different sites, and 3 million pallets moved. As electric vehicles are introduced to the fleet, the platform will be able to provide accurate updates on power grid capacity and mix, battery health of individual vehicles, and most importantly, help transform the whole transport system to be ready for AET.



STEP2: ELECTRIFICATION

INTRODUCING ELECTRIC VEHICLES TO YOUR FLEET

The Einride Freight Mobility Platform builds the foundation for a transition to fleet electrification, but the next step is actually introducing electric trucks into the mix. Fleet electrification has the potential to reduce fuel costs by up to 90 percent, dropping CO2 emissions from 1.87kg/km to nearly zero (for a 24 ton payload). This translates to a nearly 15 percent reduction in transport costs when your network is fully electrified. Working with manufacturing partners, Einride is developing e-trucks to replace diesel vehicles on applicable routes, accelerating the transition to emissions-free transport. The trucks will be offered with a rigid platform as well as in tractor-trailer configuration, and are designed for a 24 ton payload. The trucks will also have a range of up to 200 km, and will require far less frequent (and less expensive) service for powertrain components.

Each e-truck will also be equipped with expanded telematics capability, providing real-time information to the platform on battery status and health, as well as the amount of CO2 emissions being saved by operating an electric vehicle instead of diesel, not to mention the algorithmically-adjusted operation protocols mentioned earlier. In the case of our food production partner, ***this transition to electric trucks will save more than 2,000 metric tonnes of CO2 over the span of the partnership. To put that in perspective, that's equivalent to the emissions of one heavy duty diesel truck driving around the Earth 63 times.*** As the platform learns more about the transport network, it can optimize vehicle utilization, improve charging schedules, and more to become increasingly energy efficient. And this isn't some far-off solution: Einride's implementation timeline for sourcing these vehicles as well as installing charging infrastructure is just six months. Transitioning from diesel to electric vehicles is an important step on the way to a fleet consisting entirely of AET, by making sure the infrastructure is ready for Pods to take over routes with progressive complexity and further reducing costs while significantly improving efficiency.

STEP3: AUTOMATION

MAKING YOUR FLEET SMARTER AND SAFER

Einride's groundbreaking Pod is 100 percent electric and completely driverless, meaning ***there is nowhere on board for a human operator to sit***. Instead, the Pods are capable of autonomous drive both in closed environments like transport hubs and on certain public roads and byways. For more complicated maneuvers, the Pods can be controlled remotely by a trained operator at a separate location.

PODS CAN BE CONTROLLED REMOTELY.

To manage the transition to fully-autonomous vehicles on public roads, Einride has developed a proprietary five-step framework, ranging in complexity from 1 to 5. Levels 1 and 2 require limited regulatory oversight and represent highly controllable environments such as fenced facilities or nearby deliveries on public roads. ***Today, Einride is operating Pods in this environment with customers in Sweden, preparing them for levels 3 to 5, which feature more complicated rural, highway, and eventually urban environments.*** Beyond the safety benefits of autonomous vehicles, Einride's remote operator system has the potential to revolutionize what it means to drive a truck, making it more attractive to a wider population. Giving a team of remote operators the ability to oversee and control several vehicles at once can also take the average working day of a fleet of vehicles from 8 to 24 hours, representing an increase in productivity of up to 200 percent over current fleets.

WHAT CAN YOU DO TO GET STARTED

Before you can take the steps to revolutionizing your supply chain, you have to have the tools to hit the road in the first place. Einride is offering free expert consultations and opportunity analysis on how our solutions will best work with your business, so reach out to ***sales@einride.tech*** for more information.

The future of transport is already here. Make sure your business is ready for it.

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