The key to decarbonizing transport is **electrification.**

Transport – whether driving the car to work, transporting the goods we consume, or off-highway vehicles constructing the city – depends on vast amounts of energy. Transportation accounts for 37% of CO2 emissions from end-use sectors and has the highest reliance on fossil fuels[1].

The key to decarbonizing transport is electrification of vehicles. The relevance of electrification spans far beyond electrifying passenger cars. According to the International Energy Agency, heavy trucks accounted for 1,776 Mt CO2 in 2020[2]. The technology for the electrification and decarbonization of buses, trucks, and excavators, as well as marine equipment and vessels such as cranes, straddle carriers, city boats, work boats, and ferries already exists.

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Danfoss and **Volvo** is pioneering **sustainable electric transport** operations.

Recently it was announced by Danfoss and Volvo, that additional 9 fully electric trucks will be on the road in Denmark. They are some of the world's first heavy duty line haul electric trucks. The e-trucks will operate in fixed routes between the Danfoss sites in Denmark, and one of the trucks will operate 24 hours a day, five days per week, without significant charging downtime.

Three e-trucks are already on the road today and is part of a larger partnership between Volvo Trucks and Danfoss, focusing on pioneering sustainable electric transport operations. All nine electric trucks are set to be in operation before 2024. With this transformation, Danfoss will be the first company in Denmark to have a 24-hour truck in operation. When fully implemented, the e-trucks will reduce Danfoss' scope 1 and 2 emissions in Denmark by 10-15% with the added benefit of next to zero noise and air pollution, thereby ensuring a drastically improved working climate for drivers.

The partnership between Volvo Trucks and Danfoss is the culmination of a wider strategic collaboration between Volvo Trucks and Danfoss to pioneer electric sustainable transport operations.

Danfoss joined the Climate Group's EV100 initiative in 2019 and is committed to transitioning the entire company car fleet to electric vehicles by 2030 at the latest. The transition from diesel-powered vehicles to fully electric vehicles is an important step to becoming carbon neutral in scope 1 and 2 emissions by 2030. Volvo Trucks has set a global target that in 2030, 50% of all new trucks sold will be battery or fuel cell electric. The transition to electric is being led by Europe, where Volvo has an ambition for around 70% of all new trucks sold in Europe in 2030 to be electric.

Advanced **charging technology**

The new 24-hour e-trucks will operate on a route between the Danfoss sites in Denmark. Customized super chargers will be utilized to rapidly charge the truck's battery during offloading and onloading at each stop – usually around 15 minutes. The trucks are charged by charging infrastructure from the Danish company GodEnergi.

The advanced charging technology and the relative shortness of the route allows the electric truck to be continuously in service for 24 hours a day, up to five days per week, with a longer overnight charge only needed during weekends when there is no business need for the truck to be operational. Since Danfoss has signed Power Purchase Agreements for its sites in Denmark, a substantial part of the power will be sustainable.

Danfoss Editron is supplying the On-Board Charger and Electric Power Supply (OCEPS) to all Volvo electric trucks, which enables fast overnight AC charging and is a key enabler to electrifying on-highway trucks and buses as well as off-highway vehicles. The OCEPS' dual functionality provides 43 kW of power to charge a truck overnight (8-9hrs) while using readily available AC power outlets. This enables the quick deployment of EV trucks while minimizing the charging infrastructure costs for the end-users.

While DC charging is more rapid and usually the preferred option, the ability to rapidly charge with AC power (that is to plug directly into the utility grid for charging) is crucial to providing flexibility for heavy duty electric vehicles. Rapid AC charging is necessary to eliminate range anxiety for commercial vehicles doing deliveries on variable routes or vehicles at construction sites where it is not possible to access DC charging.

This unique product also acts as a 43kW electric Power Take-Off (ePTO) to power work functions on off-highway vehicles such as excavators and wheel loaders.
Semikron Danfoss, the newly merged SEMIKRON and Danfoss Silicon Power, is delivering SKAI2HV traction inverters designed for bus, construction, marine and truck applications to Volvo Trucks.

[1] Source: Global CO2 emissions from transport by subsector, 2000-2030 – Charts – Data & Statistics - IEA
[2] Source: IEA (2021). Greenhouse Gas Emissions from Energy