Green Energy Logistics

With continued growth in global trade and ecommerce fueling parcel delivery volumes, there is a growing need for environmentally and neighborhood friendly solutions to last-mile delivery in cities and logistics operations. This development coupled with an increasing shift towards renewable or 'green' energy sources (solar, wind, etc.) is propelling the development of electric mobility and facility solutions for logistics, helping the industry go green.

KEY DEVELOPMENTS & IMPLICATIONS

The growing shift towards sustainability is driven largely by consumer demand and by regulations requiring companies to reduce carbon emissions and production waste. Governments are also setting ambitious targets. For example, Germany has launched a campaign to put 1 million e-vehicles on the road by 2020.[8] Translating this awareness into logistics, renewable technologies will be leveraged for further 'electrification' and energy autonomy in the supply chain. Widespread adoption will also soon pave the way for new smart energy logistics services.

Green highways are becoming reality as large trucks use eco-friendly fuels to reduce emission and noise levels. With increased battery reach and faster battery charging technologies, e-trucks are becoming an attractive option. Established automotive manufacturers (e.g., Volvo, Navistar) as well as new market players (e.g., Tesla, Thor) are currently working on developing hybrid and full-electric trucks over the next 5 to 10 years. In future, e-roads equipped with overhead lines that transmit electrical energy to trucks are an option for electrification in the realm of road freight.

Electrified last-mile vehicles are a promising solution to reduce local emissions in cities – with no limits on creativity for the electrified fleet: from handcarts and trikes to medium-size and large delivery vans (e.g., DHL StreetScooter). The eco-factor is highest when fleets generate their own power, or their overnight recharging comes solely from renewable resources. Due to city center toll charges and vehicle bans, eco-friendly means of transportation are becoming increasingly popular. In some European countries, cargo bikes already handle up to 60% of inner-city delivery routes (e.g., DHL Cubicycle).

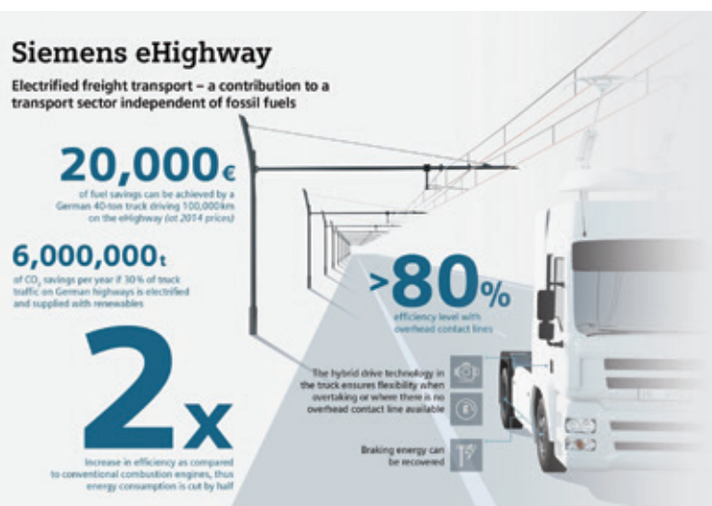
Eco-sustainable facilities result from improving the ecological footprint through new measures and adjustments, such as switching to hydroelectric sources or state-of-the-art solar panels with high-frequency battery chargers. Green warehouses also use intelligent electrical systems with smart motion sensors to illuminate only areas in use, as well as charging forklifts in off-peak hours.

KEY OPPORTUNITIES

- Increase sustainability from emissions reduction and greener fleets
- Savings in fuel and power, and other economic factors (e.g., maintenance, wear-and-tear costs)
- Quiet, electrified fleet can enable night-time delivery

KEY CHALLENGES

- Fragmented e-infrastructure, and limited e-vehicle manufacturers
- High capital investment costs and additional supply chain complexity with micro-depots
- International e-highway standards need to be defined (e.g., voltage level, height/spacing of wire lines)
- Government and regulatory support required to invest in freight e-vehicles and charging stations



Electrification of Road Freight Transport on e-Highways – Siemens

- The world's first e-highway with electricity provided from overhead wire lines is now operational on a public road
- A roof-mounted pantograph (an electric current collector) means that each hybrid truck is independent from fossil fuel
- If used 30% of the time, e-roads can save 6 million tons of CO_2 each year, and cut energy consumption in half, compared with traditional roads

Source: Siemens

Trend Assessment **Timeframe:** < 5 years **Impact:** High **Sector Relevance:** AUTO E&M TECH ENERGY LSH RET&CON

8. http://www.handelsblatt.com/politik/deutschland/eine-million-e-autos-bis-2020-merkel-nennt-regierungsziel-unrealistisch/19806768.html?ticket=ST-184059-Set4JKfFbcSfcZyNcBpS-ap4