

ELECTRO MOBILITY: CHARTING THE ROADMAP

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On the road

In the city



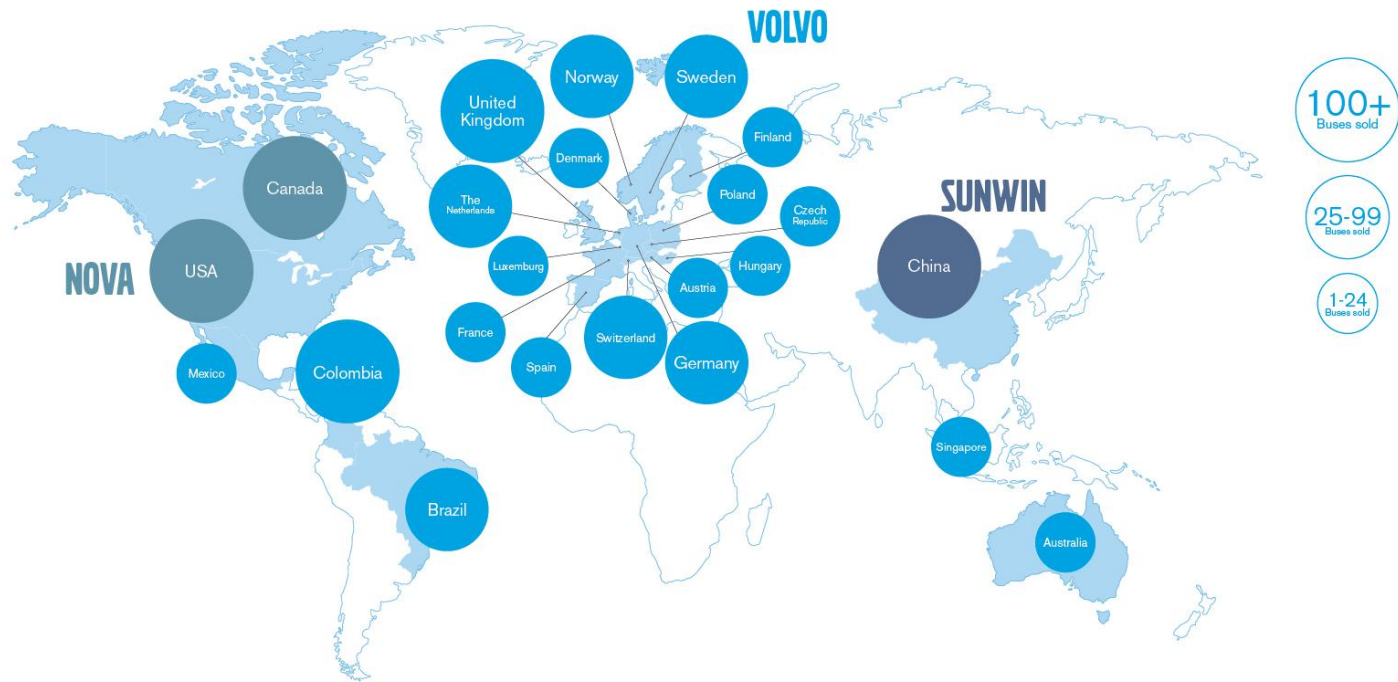
**WHAT
WE
DO**



Off road

At sea

GLOBAL LEADER IN ELECTROMOBILITY



More than 7000 hybrid and electric buses sold

Three cornerstones of Volvo Buses' e-mobility strategy

Product portfolio

The future will be a mix of:

- Hybrid
- Electric Hybrid
- Electric



Complete system offering

- Buses, infrastructure & services
- Battery charged by km
- Competitive Life Cycle Cost vs Diesel



Open interfaces

- One open and standardized interface for charging infrastructure
- Enable buses from other suppliers
- Driving standardisation together with Siemens & ABB



A complete product offer of electrified buses

Hybrid buses



- 30-40% fuel reduction
- Silent take-off
- 40 % lower on road emissions

Electric hybrid buses



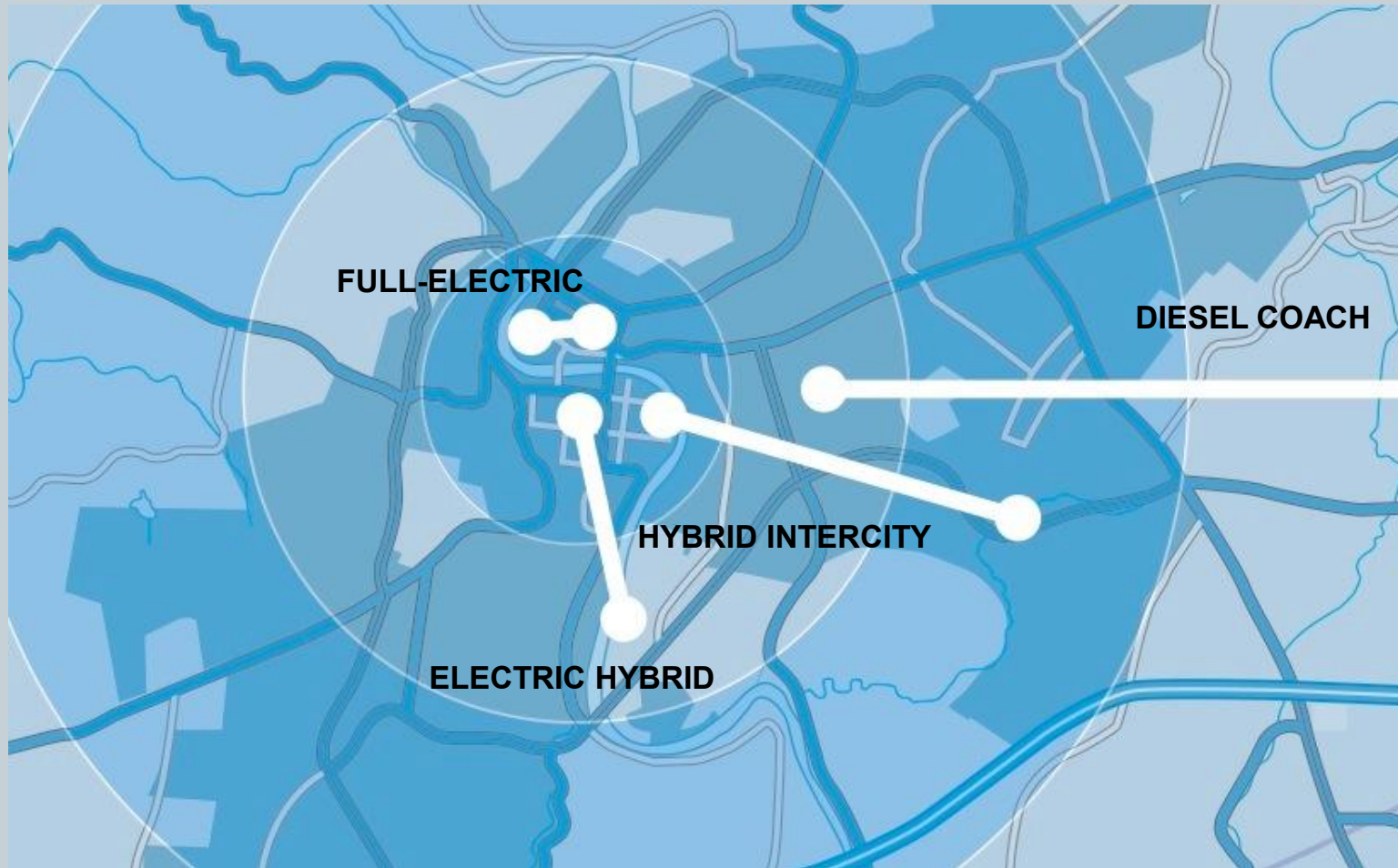
- 75% fuel & 60 % energy reduction
- Electrical drive 70 % of route
- Silent
- 75% CO₂ reduction*
- Charging 3-6 min at end stations

Electric buses



- 80 % energy reduction
- Electrical drive 100 % of route
- Silent
- Minimum local emissions
- 100 % CO₂ reduction*
- Charging 3-6 min at end stations

Hybrid, Electric Hybrid, Electric – Three tools for different levels of electrification



City Mobility approach for sustainable public transport

Engage multiple stakeholders

- Regulators & Mayors' office
- PTAs & Utilities
- Operators & Passengers

Understand context

- Objectives of cities
- Regulatory changes
- Identify opportunities for collaboration

Analyze E-mobility opportunities

- Electric vehicles in cities
- Implications for buses, refuse trucks & distribution trucks

Develop projects

- Perspective on the entire value chain
- Business opportunities



Creating new opportunities for urban planning

- Bringing **buses closer to passengers**. Opening up possibilities bus routes in new areas
- **Silent mode of public transport improving quality of life and increasing real estate values** eliminating noise from diesel or rail solutions
- **Enabling indoor bus stops** in shopping centers, hospitals and living houses **improving passenger comfort and safety**



Indoor bus stop with cafeteria, Gothenburg

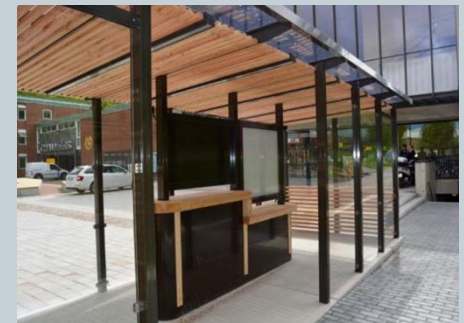
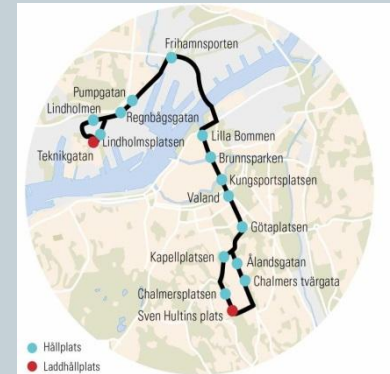


Bus stop in real library during Volvo Ocean Race

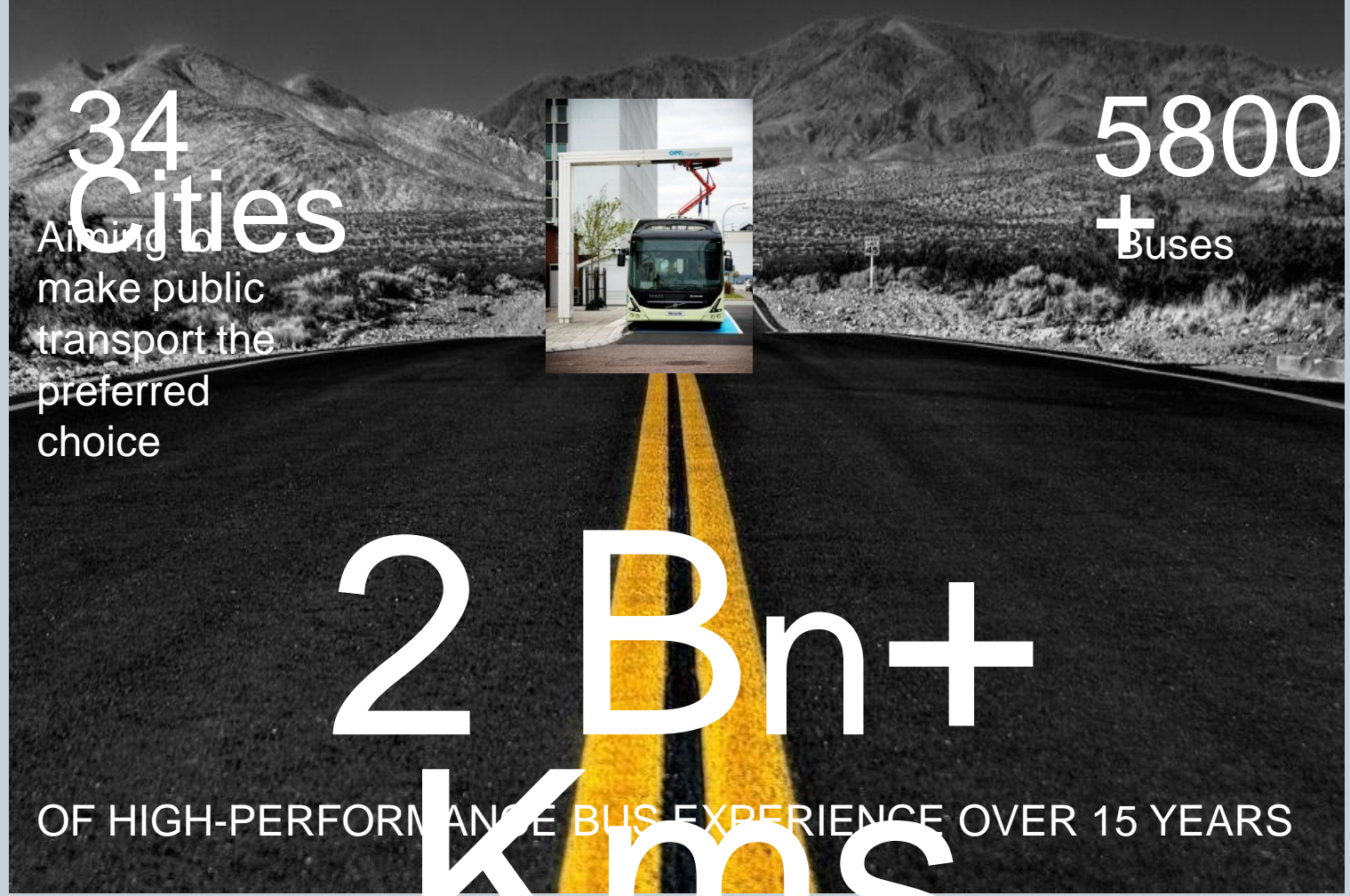
Line 55 in Gothenburg, Sweden

ELECTRICITY

- New line started in June 2015 as a demo arena and research platform with 15 partners.
- 8km, 25min drive, Avg. speed 18km/h, fast charging in both ends (300kW, max 6min), 100k passengers per month.
- 7 electric hybrids and 3 electric buses, non emission zones
- New modern bus stop including one indoor bus stop.
- Modern workshop and Monitoring centre with real time information
- Very good feed back from passengers and drivers



Exciting journey - the future is electric!



34 Cities
Aiming to make public transport the preferred choice

5800+
Buses

2 Bn+
Kms

OF HIGH-PERFORMANCE BUS EXPERIENCE OVER 15 YEARS

Hybrid buses – First for India – Made in India



- Two hybrid buses in operation since May 2016.
- 30 percent reduction in fuel consumption and emissions.
- No incremental investments needed for infrastructure
- Volvo Euro VI engines made in Pithampur





TOGETHER WE MOVE THE WORLD