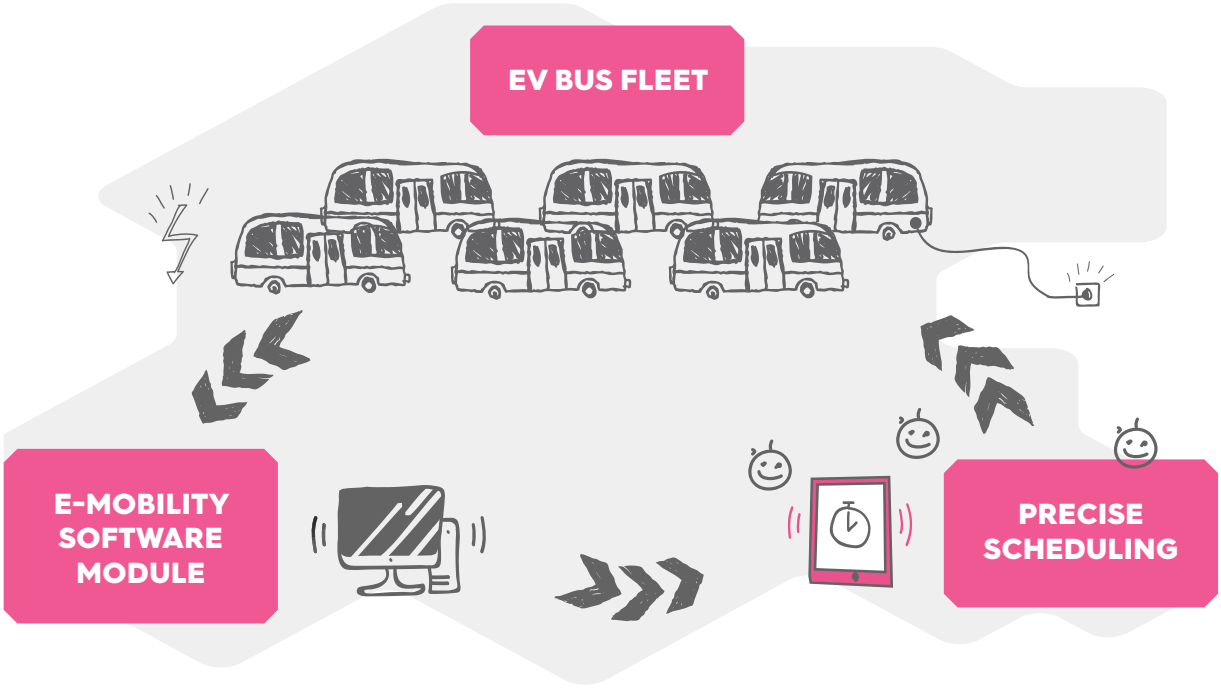
FACTSHEET R7

RUGGEDISED

Optimising the RET electric bus fleet

Rotterdam

Smart electricity grid and e-mobility



The objective of this solution is the large-scale deployment of zero emission e-buses - about 55 during project period - in Rotterdam. This solution includes developing and implementing planning software to effectively plan a bus fleet with a large number of e-buses, diesel buses and special vehicles like hydrogen buses. A DC network will also be installed to connect solar panels with a battery and charging point for buses. A feasibility study will point out the most effective way to build this charging solution.

Main partners involved:

City of Rotterdam

Eneco

RET

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Optimising the Electric-bus fleet of RET

How does it work?

A special e-mobility software module is being developed to interact with an overall software upgrade of planning software for buses. The software is able to identify and quantify relevant technical and operational aspects of a full zero emission bus fleet operation - such as range, charging locations, energy consumption and route characteristics - and transform this into efficient schedules. Simulation models developed by the Erasmus University Rotterdam will be used to optimise the software infrastructure and explore the effect on the city infrastructure. The first step is to identify the parameters for e-bus operation; then to compare the current conditions for diesel bus operation with these e-bus parameters to identify the constraints of operating the entire fleet with only e-buses. The new software must help identify and solve constraints in scheduling. In addition, intelligent charging infrastructure will be installed with solar panels on the metro station, a DC cable connecting the panels to a battery, and an e-bus charging station. The DC cable allows the solar panels to feed the battery and charge e-buses with solar energy.

Estimated impacts

By making the bus fleet more sustainable and installing innovative charging infrastructure in the south of Rotterdam, this knowledge can and will be used in the rest of the RET's public transport portfolio. In total, about 270 conventional buses will be replaced. This should result in an improvement of the air quality in the entire city and region, as well as a reduction in the carbon foot print of RET operations of about 20-25%.

Replication potential

Other cities can learn from the scenarios RET is able to develop with the new planning software. And the relationship between input of e-bus operation parameters with the output in a schedule could also be very useful for other European cities that are also planning to replace their diesel bus fleet for zero emission buses. The end users are very important and should be closely involved in these developments - so the risk they will not accept the solutions remains low.

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