Creating cross-border routes for

40

09

longer distance EV driving

Martin Borgqvist

Agenda



1. Intro

- a) The E-mobility NSR Project
- b) Work package 4
- 2. Vehicles, infrastructure & route planning
- 3. Examples from reality







The project







European Union



The work package



WORKPACKAGES

MANAGEMENT AND ADMINISTRATION

To set up and carry out a sound management and administration scheme enabling the proper implementation of the project Led by: **HAW Hamburg (GER)**

INFORMATION AND COMMUNICATION

To communicate the project information and results in the NSR as well as Europe-wide Led by: **HAW Hamburg (GER)**

INVENTORY OF STATE OF THE ART AND STAKEHOLDER ANALYSIS

To provide a state-of-the-art knowledge base for the project To make an in-depth analysis of the role of public and private stakeholders and consumers of e-mobility

To encourage discussion, knowledge exchange and learning between project partners and relevant stakeholders Led by: **Delft University of Technology (NL)**

DEVELOPMENT OF A TRANSNATIONAL E-MOBILITY PLAN

To attract the attention of policy-makers, industry, academy and public for cross-border e-mobility travel To create a virtual e-mobility route in the NSR Led by: **Lindholmen Science Park (SE)**



SMART GRID SOLUTIONS

To develop an NSR smart grid concept with charging points Led by: **Flanders Region represented by TransEnergy (BE)**

SET UP TRANSNATIONAL ELECTRIC MOBILITY INFORMATION CENTRES (EMIC)

Set up virtual or physical information centres in the partner cities to inform the stakeholders about e-mobility in their region

Led by: Høje-Taastrup Municipality (DK)

PROMOTING EFFICIENT & EFFECTIVE URBAN FREIGHT LOGISTICS SOLUTIONS IN ENHANCING REGIONAL ACCESSIBILITY

To integrate the urban freight logistics into the e-mobility network

Led by: FDT - Association of Danish Transport and Logistics Centres (DK)





Work package 4 Content:



- Fast charging
- Transnational travel









Outcomes











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ATUBOLAGE

+4

40 J.

The infrastructure

Vivian

Lunchrestaurang Öppet 7.00 - 15.00

Route planning

he vehicles



120 – 400 km e-range

EV:

nge on fuel



Normal charging GATUBOLAGET Televisie Service Wall side Car side Not really designed for EV-charging EV connector/plug \rightarrow slower than Type 1 3 normal charge ... Vivia ABE 0 0 0 0 0 0 0 Depet 7.00 - 1 STATION ELBILAR connector/plu voe

Fast charging

Wall side





e-mobility NSR

Standardization of EV Recharging Infrastructures

Report written within the framework of Activity 4.4 of the Interreg IVB project E-Mobility NSR

Sjoerd Bakker | December 2013 | Delft



www.e-mobility-nsr.eu

Car side anubishi Chademo

Tesla Supercharger



Magroperability...



Interoperability: Intercharge







European Union





Interoperability: Tesla Superchargers









www.teslamotors.com





Strong growth in some markets but from loneleverliscles

A. F.

Standard solution for Themiafrest solution for Themiafrest solution for the standard solution for the soluti

Vivian

Lunchrestaurang

Interoperability issues are being Reddressening

_onger distance EV driving?

YES, but will we need it?



The Interreg IVB North Sea Region Programme



| Stp. | Date: | SoC (kWh) | Leaving (Local) | From: | gentle. | Bo GRESCEME | Road time | Arrival (CET) | Distance (km) | kWh consu | SOC @ arrival | Est. Charge | Actual charge | Charger capacity | Actual charged | SoC@ dept. | Range (safe | 1 |
|------|--------|--------------|--------------------|--|-----------------------|---|--------------|------------------|------------------|--------------|------------------|----------------|---------------|---------------------|----------------|---------------|----------------|--------|
| | | depart. | | | | | 1 | | | med | | (hours) | (hours) | kW 10 | kWh 26.00 | (check) | 319 | 1 |
| 1 | 07-apr | 85 | 08:45 | HTK | | Odense (Bo) | 1,5 | 10:00 | 165 | 41 | 44 | 2,29 | 2,00 | 18 | 19.00 | 59 | 235 | 1 |
| 2 | 07-apr | 80 | 12:00V | Munkehatten 16, Odense, | DK | Flensborg (Supermarkt) | 2 | 14:00 | 155 | 439 | 41 | 2,15 | 1,00 | 10 | 18.00 | 38 | 150 | F |
| 3 | 07-apr | 6059 | 15:00 | Free charger Flensborg | | Tesla Service, Hamburg | 2 | 17:00 | 158 | 40 | 20 | 2,19 | 1,00 | 10 | 80.10 | 85 | 338 | 1 |
| 4 | 07-apr | 38 | 18:00 | Tesla Service, Hamburg | | BREMEN, Hotel w/charger | 1,5 | 19:30 | 132 | 32 | 5 | 1,85 | 4,45 | 10 | 00,10 | | | 9 |
| 5 | 1000 | 1000000 | - | OVERNIGHT | T. | 7THINGS - my basic hotel Bremon | | | | | | | | | 60.00 | 70 | 211 | 4 |
| 6 | 08-apr | 85 | 08:00 | Hotel Bremen (evt. | sepiched | Tesla Supercharger, Zevenaar | 3 | 11:00 | -267- | 67 797 | 18 20140 | 0,56 | 0,50 | 120 | 60,00 | 18 | 511 | 1 |
| 7 | 08-apr | 78 | 11:30 | Tesla Supercharger, Zeven | laar | Tesla Supercharger Oosterhout (Tilburg, Tesla fabrik) | 1,5 | 13:00 | 124 | 31 | 47 | 0,26 | 0,30 | 120 | 36,00 | 83 | 331 | - m |
| 8 | 08-apr | 83 | 13:30 | Tesla Supercharger Ooster Tesla fabrik) | rhout (Tilburg, | ThePluginCompany, BE, Wilrijk | 1,5 | 15:30 | 126 | 32 | 51 | 1,75 | 2,00 | 18 | 36,00 | 87 | 349 | - |
| 9 | 08-apr | 87 | 17:30 | ThePluginCompany, BE | KEA* | Gent (RWE) (over Antwerpen, evt. Wilrijk) | 1 | 18:30 | 71 | 18 | 70 | 0,99 | 1,00 | 18 | 18,00 | 88 | 350 | - |
| 10 | 08-201 | 88 | 17:00 | Gent lover Antwerpen, ev | t. Wilrijk) | Calais, Frankrig | 1,5 | 19:30 | 148 | 37 | 51 | 37,00 | 1,00 | 1 | 1,00 | 52 | 206 | |
| 11 | ou api | 00 | 20:00 | Eurotunnel Calais | 0000 | Folkstone | 0,6 | 21:00 | - | | - | 20.00 | 1.00 | 1 | 1.00 | 25 | 90 | 4 |
| 12 | 08-apr | 52 | 21:00 | Eurotunnel, Folkstone | | LONDON, Hotel w/charger | 1,5 | 22:30 | 112 | 28 | 24 | 28,00 | 1,00 | 1 | 1,00 | 63 | 50 | |
| 13 | 09-apr | 201 8 | 1 | CONFERENCE | 15 and and | A DECEMBER OF | - | - | - | | - | | | | | + | | - |
| 14 | 10-apr | 1 and a | | CONFERENCE | | | 1.0 | 10.00 | 112 | 20 | 57 | 28.00 | 1.00 | 1 | 1.00 | 58 | 232 | - |
| 15 | 11-apr | 85 | 17:30 | Opladning i London v/kont | ference | Eurotunnel, Folkstone | 1,5 | 19:00 | 112 | 20 | 51 | 20,00 | 1,00 | - | | 59 | 222 | |
| 16 | 11-201 | 58 | 19:00 | Eurotunnel | A STREET STREET | Calais | 0,5 | 20:00 | - | 0 | 58 | 0 | 0 | 10 | 39.60 | 51 | 242 | - |
| 17 | 11-201 | 58 | 20:00 | Calais | | Ghent, Hotel w/charger | 1,5 | 23:00 | 148 | 37 | 21 | 2,06 | 2,20 | 18 | 39,60 | 48 | 193 | - |
| 18 | 11-apr | 58 | 20:00 | Calais | | Bruxelles, Hotel w/charger | 2 | 23:00 | 197 | 49 | 9 | 2,14 | 2,20 | 10 | 33,00 | 10 | 1.50 | - |
| 19 | | | S. Carrier | OVERNIGHT | and the second | | | 12.20 | 126 | 22 | 20 | 0.26 | 0.45 | 120 | 54.00 | 83 | 332 | |
| 20 | 12-apr | 61 | 10:00 | Ghent | 1 martin | Tesla Supercharger Oosterhout, cars meet up from GNT+BRX, w/Lunch | 1,5 | 12:30 | 120 | 34 | 40 | 1.07 | 2,00 | 10 | 36.00 | 84 | 334 | Sec. 1 |
| 21 | 12-apr | 83 | 13:00 | Tesla Supercharger Ooste | rhout | Heerhugowaard - SHARP DEADLINE | 2 | 15:00 | 167 | 42 | 40 | 2 37 | 1.00 | 18 | 18.00 | 60 | 239 | 5 |
| 12 | 12-apr | 84 | 17:00 | Heerhugowaard | | Groningen (RWE) | 2 | 19:00 | 107 | 42 | 14 | 2,52 | 3.90 | 18 | 70.20 | 84 | 335 | 5 |
| 3 | 12-apr | 60 | 20:00 | Groningen (RWE) | | Bremen Hotel w/charger | 4 | 22.00 | 105 | 40 | | 2,01 | 5,50 | 10 | 10/100 | | | |
| 4 | | No. | | OVERNIGHT | The second | 7THINGS - my basic hotel Bremen | 1.5 | 11:00 | 132 | 33 | 51 | 1.83 | 1 75 | 5 18 | 31.50 | 82 | 329 | 9 |
| 5 | 13-apr | 84 | 09:30 | Bremen | | Hamburg - SHARP DEADLINE | 1,5 | 15:00 | 158 | 40 | 44 | 2.19 | 1.00 | 18 | 18,00 | 62 | 249 | 9 |
| 6 | 13-apr | 84 | 13:00 | Hamburg | | Flensborg (Supermarkt) | 12 | 14:00 | 155 | 39 | 24 | 2.15 | 1.50 | 0 18 | 27,00 | 1 | | 2 |
| 7 | 13-apr | 62 | 12:30 | Flensborg | 12 minutes | Odense (BO), Frokost? | 12 | 17.30 | 170 | 43 | 8 | 42.50 | 1.0 | 0 1 | | | | 1 |
| | 2.201 | 51 | 15:30 | Odense | and the second second | København | 2 | 17.50 | | | - | | -1 | | | | | |









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