FABRIC

Feasibility analysis and development of on-road charging solutions for future electric vehicles

# FABRIC Charging Solutions and Prototypes

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# Agenda

1. Introduction to Charging Solutions
2. Description of SP3 work packages
3. Description and status of prototype 1
4. Description and status of prototype 2
5. Description and status of prototype 3
6. Description of prototypes 4&5

# TRL

## TRL – Transport Research Laboratory www.trl.co.uk

Est. 1933 (RRL Harmondsworth)

Independent Privatised company since 1996

320+ staff including many world recognised experts

Head office in Crowthorne, UK,

Offices in Manchester, Scotland, Wales and the Middle East, Nigeria

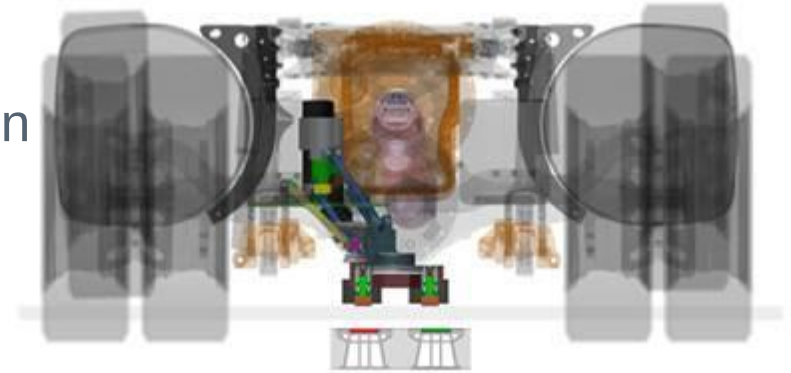
TRL is an internationally recognised centre of excellence providing world-class research, consultancy, testing and certification for all aspects of transport.

TRF, which owns TRL, is a non-profit-distributing foundation with >80 sector members and no shareholders.

# Introduction to the Charging Solutions

1. Definition, Specification, Build and Evaluate dynamic charging
2. 3 systems to be built and tested specifically for FABRIC
   - VeDeCom-Qualcomm dynamic wireless system in France,
   - Polito, SAET dynamic wireless systems in Italy


3. 2 existing systems only to be included in theoretical evaluation
   - Scania wireless
   - Volvo conductive

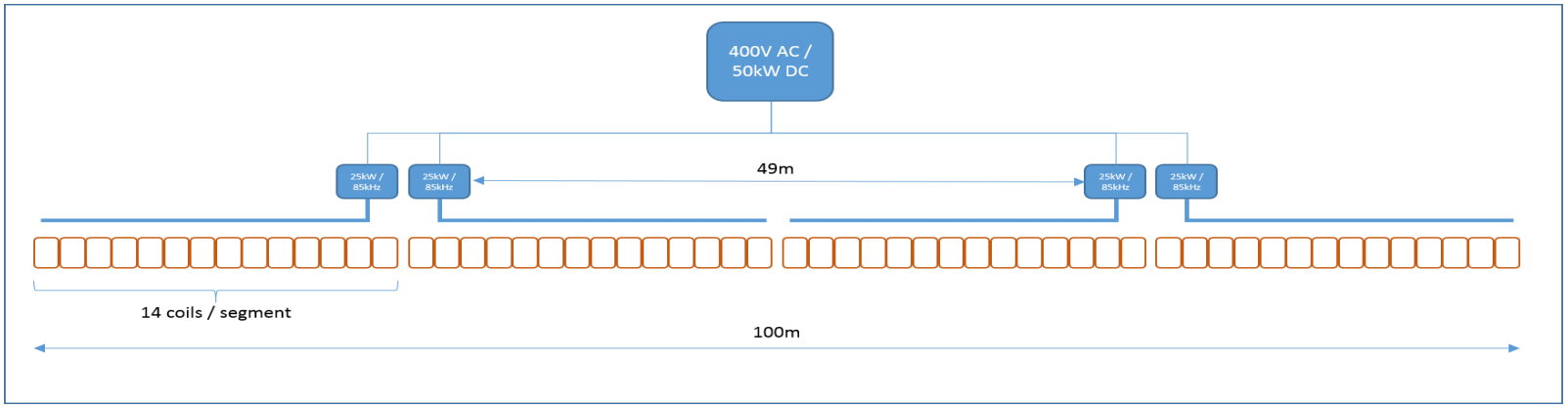


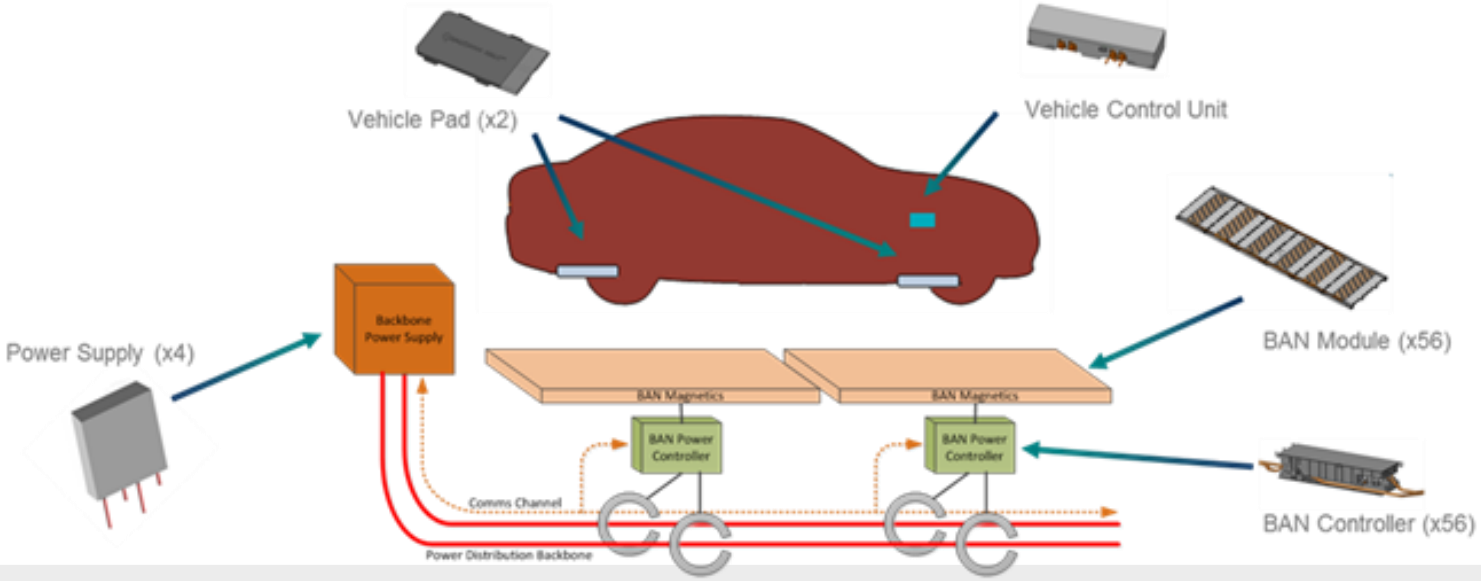
# Description of Charging Solutions work packages

- 3.2: User needs and requirements (TRL)
  - D32.1 Technical and User Requirements (Complete)
- 3.3: Technical benchmarking (TRL)
  - D33.1 Review of existing systems (Complete)
  - D33.2 Gap analysis (Complete)
  - D33.3 Interoperability considerations (Complete)
- 3.4 Specifications (CIRCE)
  - D34.1 Specifications (Complete)
- 3.5 Define architecture (AMET)
  - D35.1 Architecture Definition (In final review)
- 3.6 Design (Vedecom)
  - D36.1, D36.2 Prototypes
  - D36.3, D36.4 Feasibility of applying other prototypes to use cases
- 3.7 Technological verification (ICCS)
  - D37.1 Verification methodologies
  - D37.2 Verification and evaluation

# Prototype 1 – Vedecom/Qualcomm HALO

1. Installed in a concrete trench with removable covers for ease of access



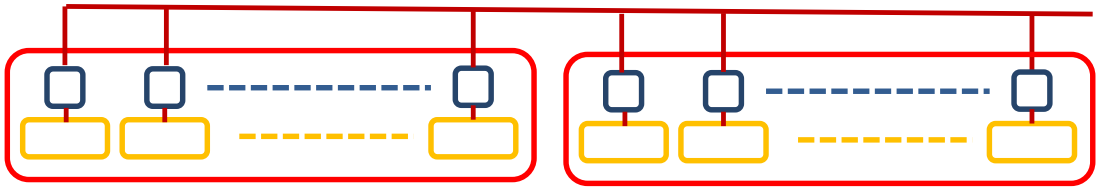



# Prototype 1 - Status

1. Test track and trench built
2. Covers undergoing structural testing
3. First prototype ground coil built, undergoing acceptance testing
4. Power transfer at 3m/s has been demonstrated on a pre-prototype track in New Zealand
5. Static power transfer using the dynamic track prototype parts has been demonstrated at Qualcomm's Munich laboratory
6. Communications / control software is under development
7. Vehicle integration discussions are in progress – packaging, shielding, high voltage electrical, logic/control, instrumentation
8. Manufacturing planning is almost complete. Long lead items have been ordered.
9. Completion expected Q4, 2016

# Prototype 2 – Polito

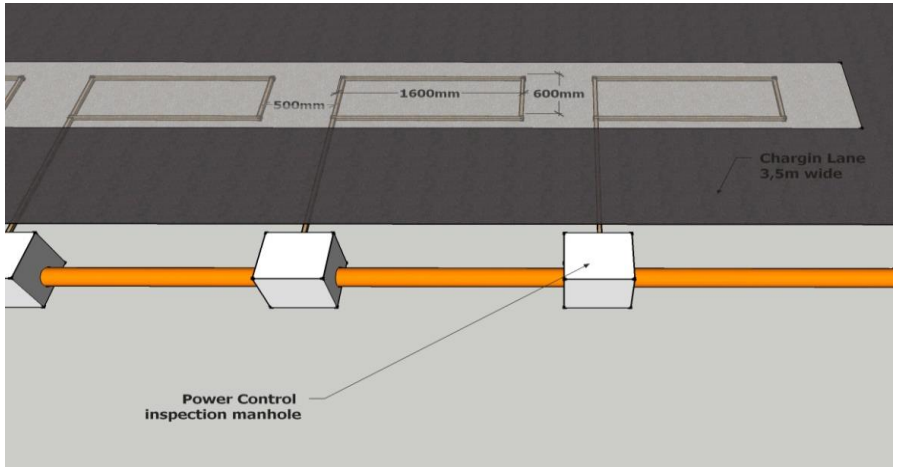
1. To be installed in the road at Italian test site
2. Consists of two 25m segments of 25 coils each
3. Each coil separately fed by HF converter containing compensation capacitors



600vdc

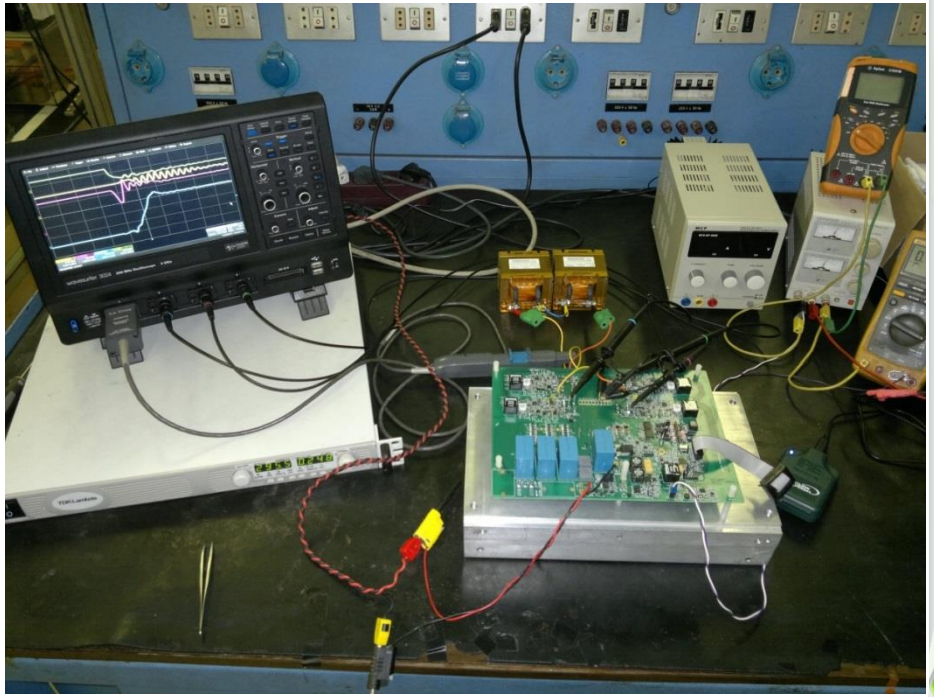
CD-HF converters

Coils & caps



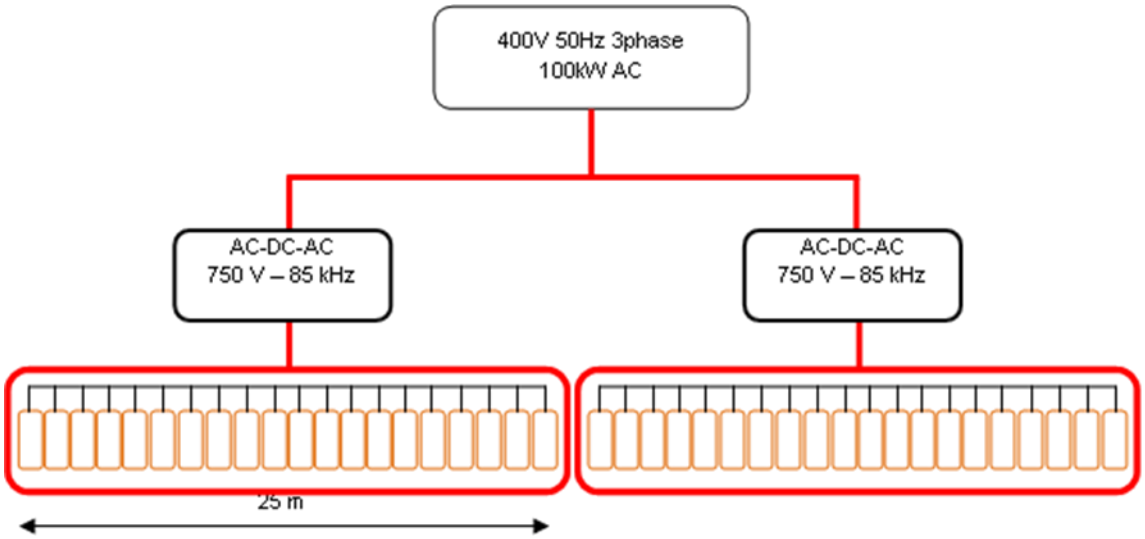
# Prototype 2 - Status

1. Electronic controller prototype under test
2. First prototype coils expected this week
3. Power receiver ready and under test
4. In-road construction to start in Q2 2016
5. Construction complete Q4 2016



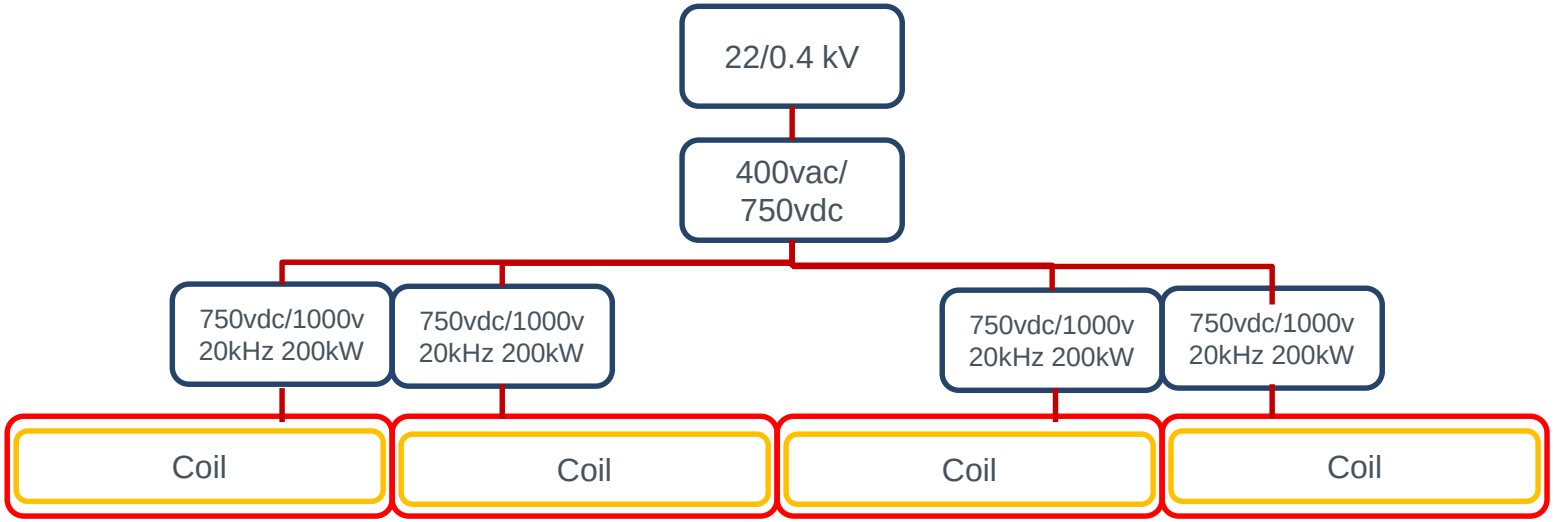
# Prototype 3 – SAET

1. To be installed in the road at Italian test site
2. Consists of two segments each with 20 coils
3. 2-3 coils powered at any one time
4. Only one vehicle per segment can be powered
5. SAET only building ground segment, will use common vehicle with Polito/CRF
6. Status: Technical specification is complete, but build not yet started



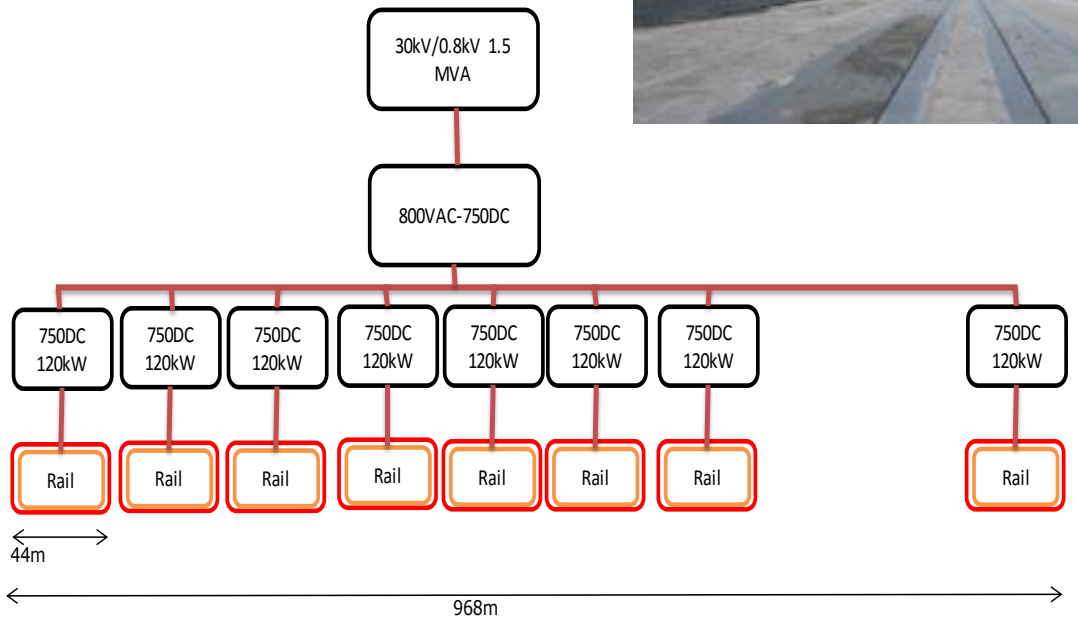
# Prototype 4 - Scania

1. Inductive wireless power transfer
2. Installed at Scania test track in Sweden
3. Consists of 4 x 20m segments, each with 1 coil



# Prototype 5 – Volvo ERS

1. Conductive in-road flush mount system
2. Power collected by twin sliding pads
3. Build at Volvo test track in Sweden



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# Thank you!


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