

ERESS Customer Forum 2011

**German legal framework for type approval and
verification of components for an onboard EMS –
present and future situation**

Brussels , 16th of June 2011

Structure

- 1 Testing & verification of onboard energy meters and instrument transformers - present situation in Germany
- 2 Intended adoption of (pr)EN 50463 into the German legal framework - future situation in Germany
- 3 Running project - EMS installation on a DC suburban train in accordance to EN 50463 drafts

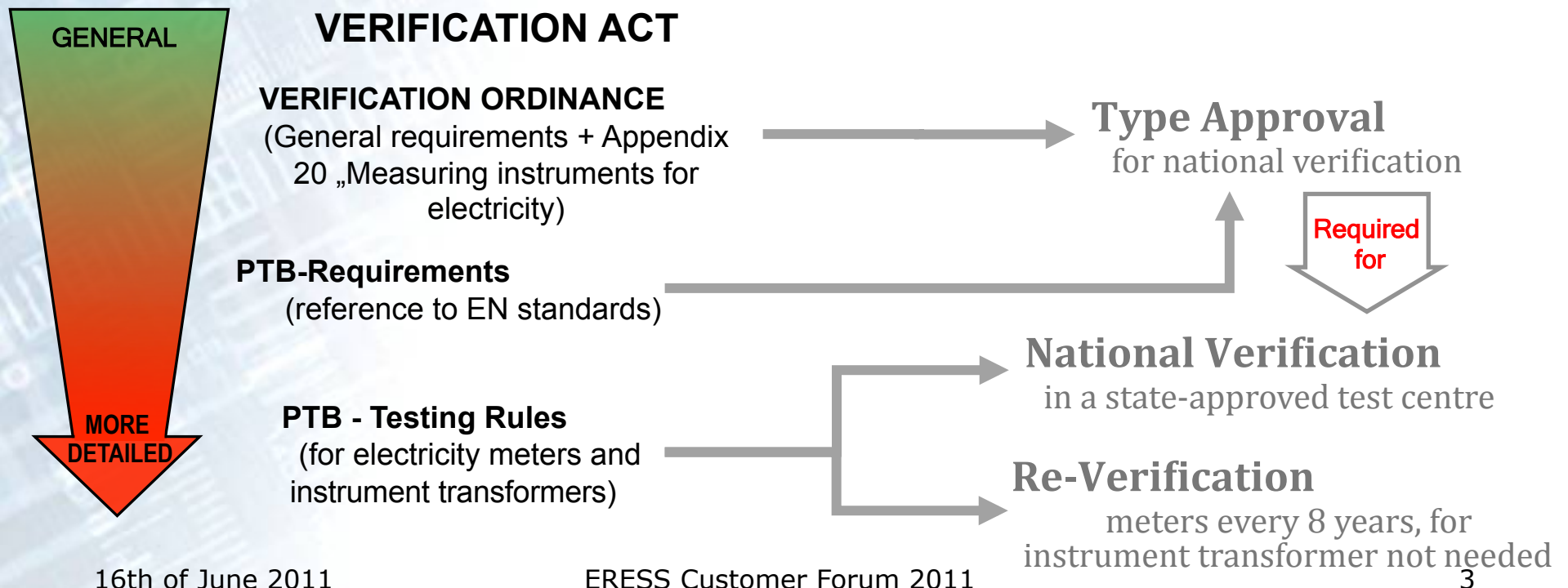
1 Present situation in Germany

Type approval, verification, re-verification of :

- electricity meters
- instrument transformers

**Applicable only
for AC 16,7 Hz**

Applied acts, requirements and rules



2 Future situation in Germany

Type approval, verification (re-verification if applicable) of:

- sensors,
- meters
- data handling and communication

**Applicable for all traction
supply systems (AC 16,7 and
50 Hz, DC)**

FUTURE-DECISION

Type Approval, Verification,... will be

**Part of
LEGAL METROLOGY**

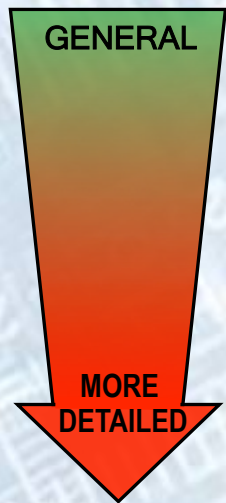
or

**Part of
FEDERAL RAILWAY AGENCY**



➔ **Intended adoption of (pr)EN 50463**

Acts, directives and requirements



DIRECTIVE 2008/57/EC of the European Parliament and of the Council

Draft TSI 'Rolling stock' Sub-System for conventional rail "Locomotives and Passenger rolling stock" – ANNEX D ENERGY METER

Requirements according to harmonized standards **prEN 50463**

Conformity Assessment

by Notified Body

Type Testing

Routine Testing

Re-Verification (if applicable)

Interval according to **CAC**

Conformity Assessment Certificate (CAC)

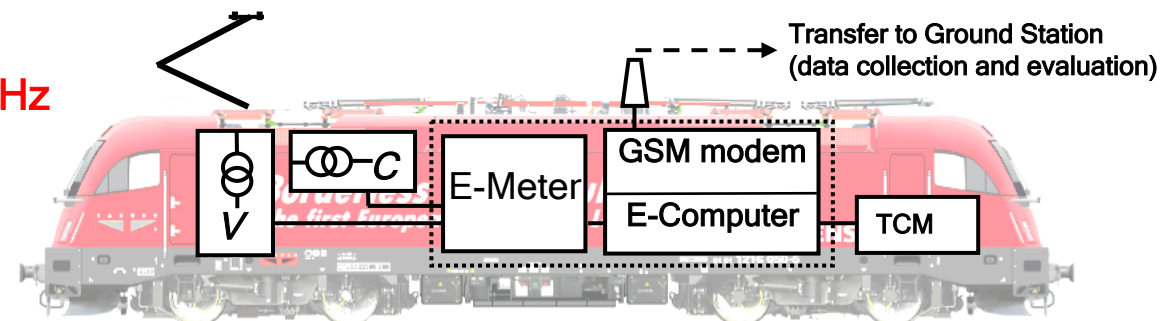


3 Running project - EMS installation on a DC suburban train in accordance to EN 50463 drafts

Onboard Energy Measurement in Germany today

- Till 2001 calculation of the energy requirement of each traction unit with a special programm
- Since 2001 onboard energy measurement with the TEMA-Box
 - The TEMA-Box measures the **energy and power consumption** onboard the traction unit
 - only imported and exported **active energy** is measured
 - Recording of 15 min load profiles

Calibrated **ONLY** for AC 16,7 Hz



Cooperation



Concept of an onboard Energy Measurement System for a DC suburban train

- ➔ suitable for calibration
- ➔ in accordance with the new EN 50463 standard

- **Design of a prototype with components (sensors, meter) which are available on the market**
- **Installation und testing at S-Bahn Hamburg**
- **Development and design DC-metrology for type approval and verification of the EMS components**

3 Running project - EMS installation on a DC suburban train

Why installation on a DC-suburban train?

➔ ‚Worst case‘ for the installation of an EMS

Main line Locomotives and multiple-units (DC and AC)



- 1 or 2 pantograph(s) for the same power supply system

Suburban train for a real suburban railway network (DC)



- 4 up to 8 pantographs at one traction unit
- The pantographs don't supply the same busbar

Challenge: number, position of sensors and meters and their connection

Thank you for your attention.

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