



ERESS Customer Forum 2011, BRUSSELS, 16/06/2011

Workshop 1:

Implementation and verification of Metering solutions

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The EMS Certification and Re-Verification

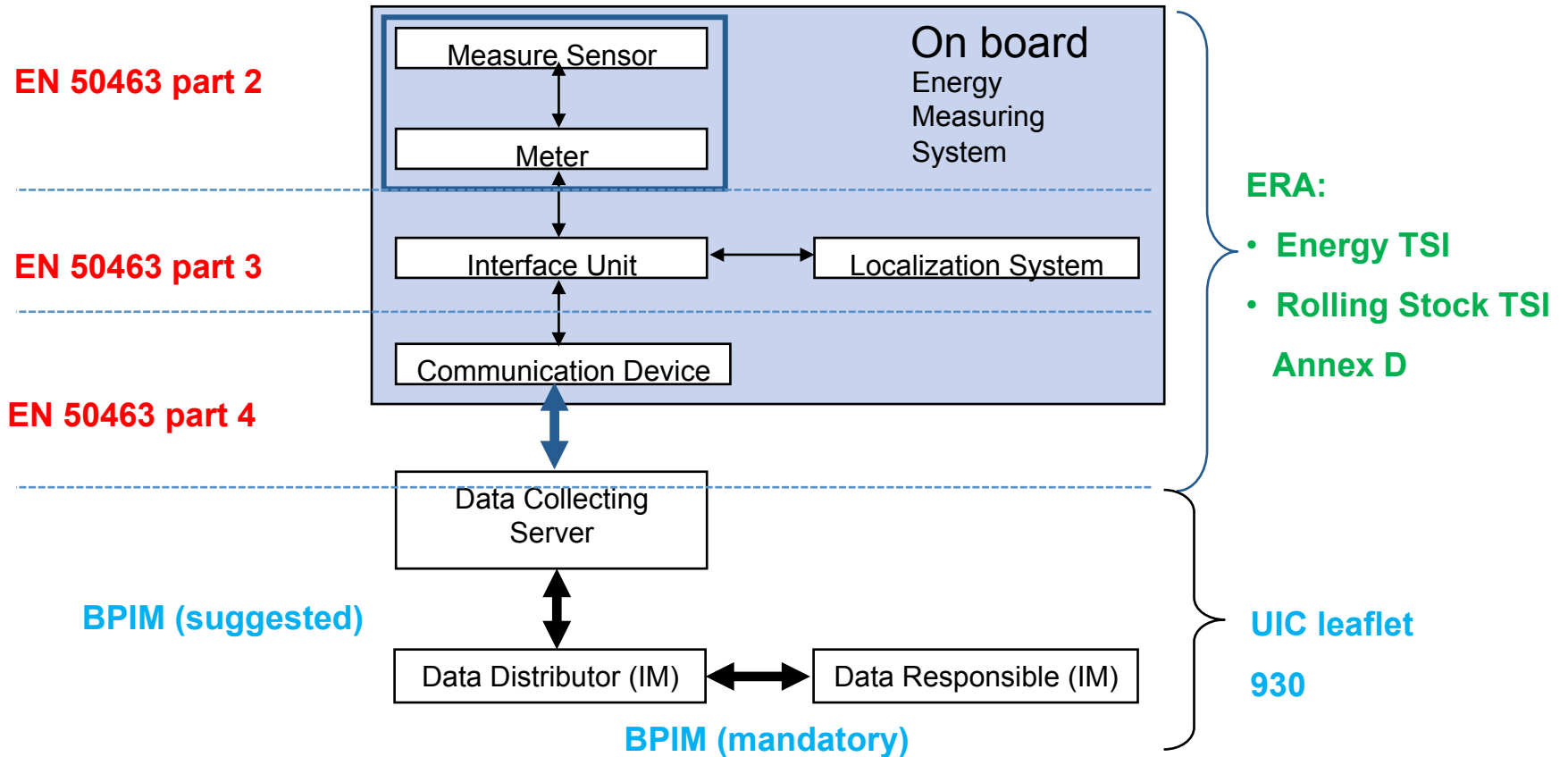
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EMS SPECIFICATIONS CONFORMITY MAP





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EMS CERTIFICATION PROCESS

The EMS certification is obtained under TSI, EN50463 and other EN norms.

- Functionality including metrological requirements and basic parameters, interfaces, communications, software: according to Energy TSI, Rolling Stock TSI and ***EN 50463-2/3/4***;
- Safety aspects: according to EN50126, EN 50128 and EN 50129;
- Reliability, Availability, Maintainability: according to EN 50155;
- EMC: according to EN 50121

The conformity is checked at:

- Component level
- System level
- Installation level



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EMS CERTIFICATION ACCEPTANCE AREAS

Sensors and calculation unit

Safety aspects and Metrological functions

Communication

Local and external ports and their protocols
Specific requirements (user defined protocols)
Security mechanism

Software

Identification of functions
Influence of software on the metrological parts
access and control of data and parameters (authorization
and protection capabilities)

Installation

Verification of safe on-board assembly and testing of proper
working EMS.



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RE-VERIFICATION and NoBo SURVEILLANCE

The party that submit the EMS to the homologation process shall provide a Maintenance Plan indicating the basic parameters that are subject to periodical verification during the EMS life. This is the case of accuracy values.

The EMS Maintenance Plan is included into the Maintenance Plan of the vehicle which the EMS is installed on.

The parameters to be verified and the frequencies of verification are defined and established according to the RAMS norms.

The operator is in charge of the execution of the Maintenance Plan and consequently of the basic parameters re-verification.

The NoBo, which has issued the certification, has the task of surveillance of the execution of the Maintenance Plan.



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CERTIFICATE VALIDITY and RENEWAL

There is no experience and examples to decide on the certification expiring period.

The Italian NoBo and the ANSF have the opinion that the EMS can be assimilated to a signaling system regarding this aspect, so the certificate validity can range from 3 to 5 years with a surveillance periodicity of 2 years.

When the certificate expires, the renewal is obtained if the NoBo inspection and verification are generating a positive verdict.



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THE T TEM (*Test Tool for Energy Meter*) **equipment**

The T TEM equipment is intended to provide an adequate solution to the execution of the Conformance Test Procedure specified by the TSI-RST and the set of European Standards EN50463 for the Energy Measurement System (EMS) installed on board.

The T TEM is designed in order that it is possible to execute the test procedure:

- **reducing the modification to the high voltage circuit relevant to the sensors under test as less as possible;**
- **shortening the test duration as much as possible;**

nevertheless assuring the validity of the test results.





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The equipment includes two functionally separated units even though they are integrated in the equipment:

- **The Reference Energy Meter(*)**
- **The power generators to be used to inject voltage and current into the Reference Energy Meter and the Energy Measuring System under test (IUT).**

() the Reference Energy Meter can be easily removed from the equipment in order to be delivered to a metrological laboratory for the periodic certification.*

The equipment includes a wireless remote terminal that controls and programs the value of the current and voltage injected during the test procedure.

The measured data produced by the IUT are compared with the data produced by the Reference Energy Meter.

The sensors of the Reference Energy Meter are connected in series /parallel to TEM cable outputs that are attached to the IUT. The Reference Energy Meter records the injected values with an accuracy higher than the accuracy specified by the European norm for the IUT.



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TECHNICAL SPECIFICATION

Supply voltage: 230 Vac 50 Hz
Maximum supply power: 6 kVA

Test Voltage Generator range:

- DC: from 250 to 5000 Volts
- AC: from 2.5kV to 32 kV (50Hz – 16Hz)

Test Current Generator range:

- DC: from 0 to 1500 Amps
- AC: from 0 to 500 Amps





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THANK YOU FOR YOUR KIND ATTENTION

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