

ERESS : EMS & DAS Day

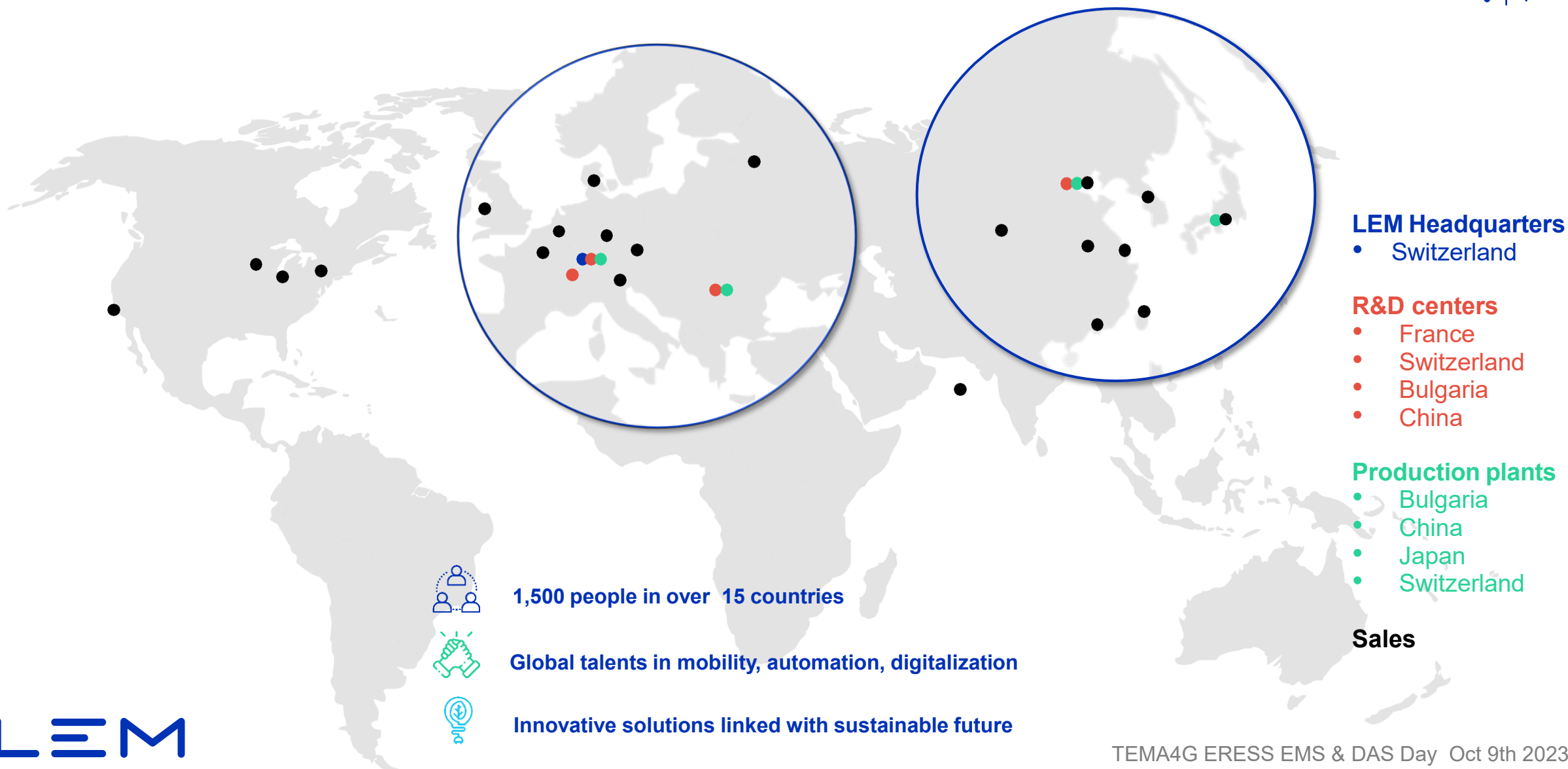
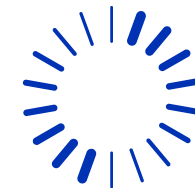
2023 Oct 9th

TEMA4G Energy Metering for Railways



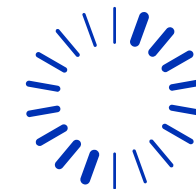
LEM at a glance

Headquarters in Geneva, Switzerland, a strong presence in Europe & China



LEM applications

LEM sensors and solutions play a key role in 6 areas



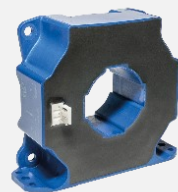
Motor control



HC16



HOB



LF



HAH3DR

Power conversion



LWSR



GO



HMSR

Electrical safety



CDSR

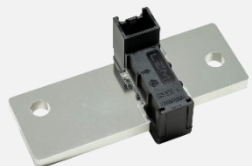


CDT

Battery management



HBCT



HSBBV



CAB 1500

Energy monitoring



HTRS



ART

Energy metering



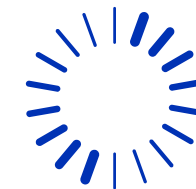
DCBM



EM4TII+ / TEMA4G

EM4TII+ & TEMA4G evolution of know how

More than 10.000 LEM/EMH Meters in operation in Europe!

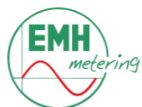


EM4TII
EN50463:2012

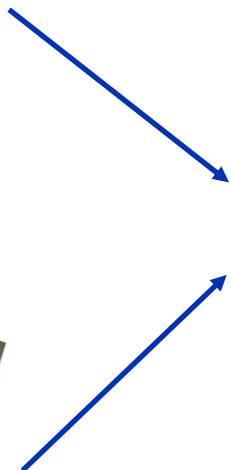
TEMA4TPIus
EN50463:2012

EM4TII+
EN50463:2017

NEW TEMA4G
EN50463:2017



2000



2010



2010

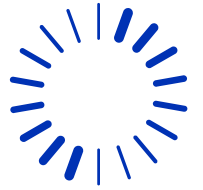


2021



TEMA4G Energy metering on-board

Versatile solution, compliant with EN 50463:2017



BOARD

GROUND

LEM

Sensors



+

TEMA4G



GPS



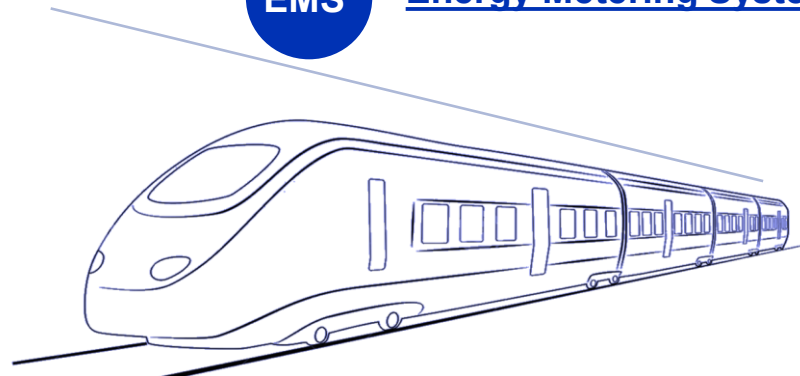
4G



Service Web Interface

EMS

Energy Metering System



HTTP(S)

Metering data

Server



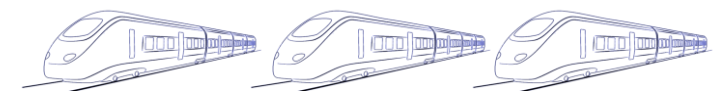
DCS



Data Collecting Systems

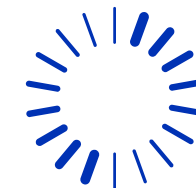
Energy billing

Railway companies



TEMA4G Commissioning

Web Interface : up to 3 different DCS



Prolan EMG

STATISTICS

- Status
- Load Profile
- Event Log

ADMINISTRATION

- Parameters

DATA HANDLING

- DCS 1
- DCS 2
- DCS 3
- Message Sending
- EM4TII

NETWORK

- GSM
- Ethernet

Security

- Firmware Update
- Parameter Reset

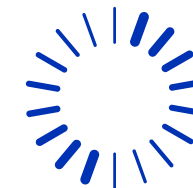
Parameters

DCS 1

Key	Value	Unit	Description
Enabled	<input type="checkbox"/>		Enabling sending functionality.
Server URL	<input type="text"/>		URL of the DCS server. Should be a valid URL. For example: http://server:port/upload
Separate URL	<input type="checkbox"/>		If turned on the device sends messages to separate URLs based on server URL and nouns used in message headers. For example, heartbeats will be sent to: http://server:port/upload/Heartbeat, CEBDBlocks will be sent to: http://server:port/upload/CEBDBlock.
Source postfix	<input type="text"/>		Postfix appended to the CPID in the Source node in XML messages. For example using postfix '.prolan.hu' the Source node will look like: <Source>EMS_HU_PR_1234567890121.prolan.hu</Source>
Heartbeat compression	<input type="checkbox"/>		If true, the payload of the heartbeat message will be compressed.
TimeStampQuality	<input type="checkbox"/>		If turned on the heartbeat messages include a <TimeStampQuality> node.
Verify host	<input type="checkbox"/>		If turned on the device checks if the server's hostname matches with the certificate's Common Name.
Verify peer	<input type="checkbox"/>		If turned on the device checks if the server's certificate is in the DCS cert list.

TEMA4G Specifications

Embedded energy metering solution for trains



Parameter	TEMA4G
Railway networks	Multi-systems AC and DC
Measurement accuracy	< 0.5R EN50463-2
Connectivity	3G, 4G / GPS
Communication	HTTP(S)
Standards	EN50463:2017, EMC EMV-06
Features	Transmission of CEBD data, Event logs, Power down management Ethernet service interface
Recalibration	10 years
Operating temperature	-40°C to +70°C



Thank you!

LEM