LEM

Life Energy Motion

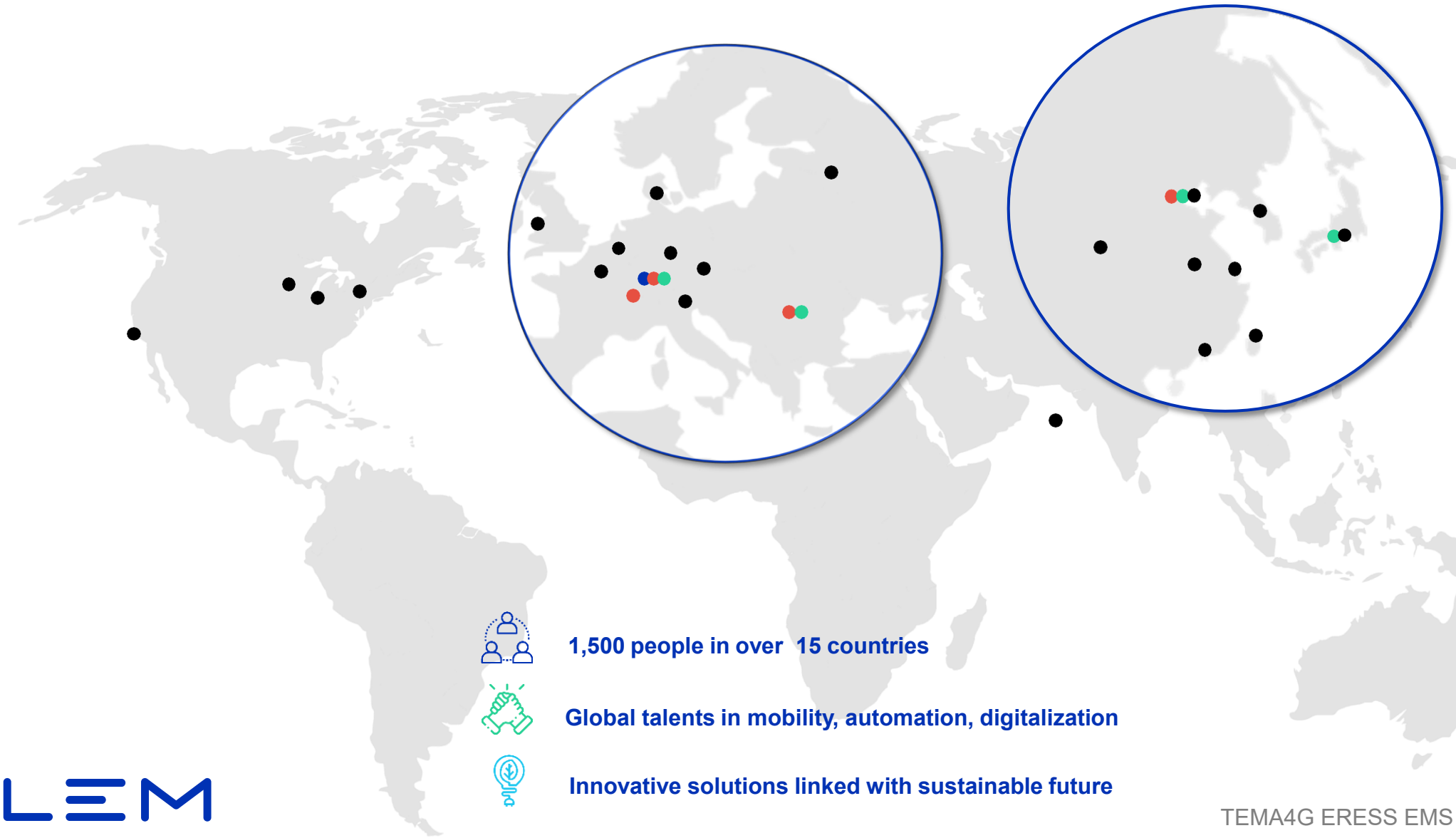
ERESS : EMS & DAS Day
2023 Oct 9th

TEMA4G
Energy Metering for Railways

G. Ré

LEM at a glance

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



LEM Headquarters
- Switzerland

R&D centers
- France
- Switzerland
- Bulgaria
- China

Production plants
- Bulgaria
- China
- Japan
- Switzerland

Sales

1,500 people in over 15 countries

Global talents in mobility, automation, digitalization

Innovative solutions linked with sustainable future

LEM applications

LEM sensors and solutions play a key role in 6 areas

Motor control

HC16

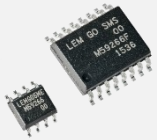
HOB

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

2010

TEMA4TPlus
EN50463:2012

2010

EM4TII+
EN50463:2017

2021

NEW TEMA4G
EN50463:2017

TEMA4G Energy metering on-board

Versatile solution, compliant with EN 50463:2017

BOARD

LEM

Sensors

TEMA4G

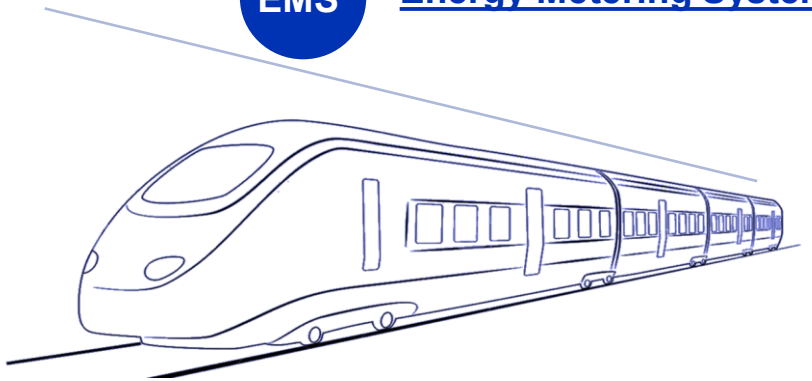
GPS

4G

+

Service Web Interface

EMS **Energy Metering System**



HTTP(S)

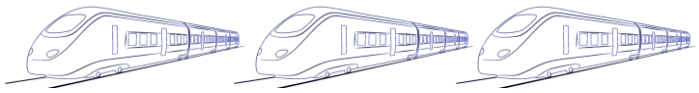
Metering data

GROUND

Data Collecting Systems

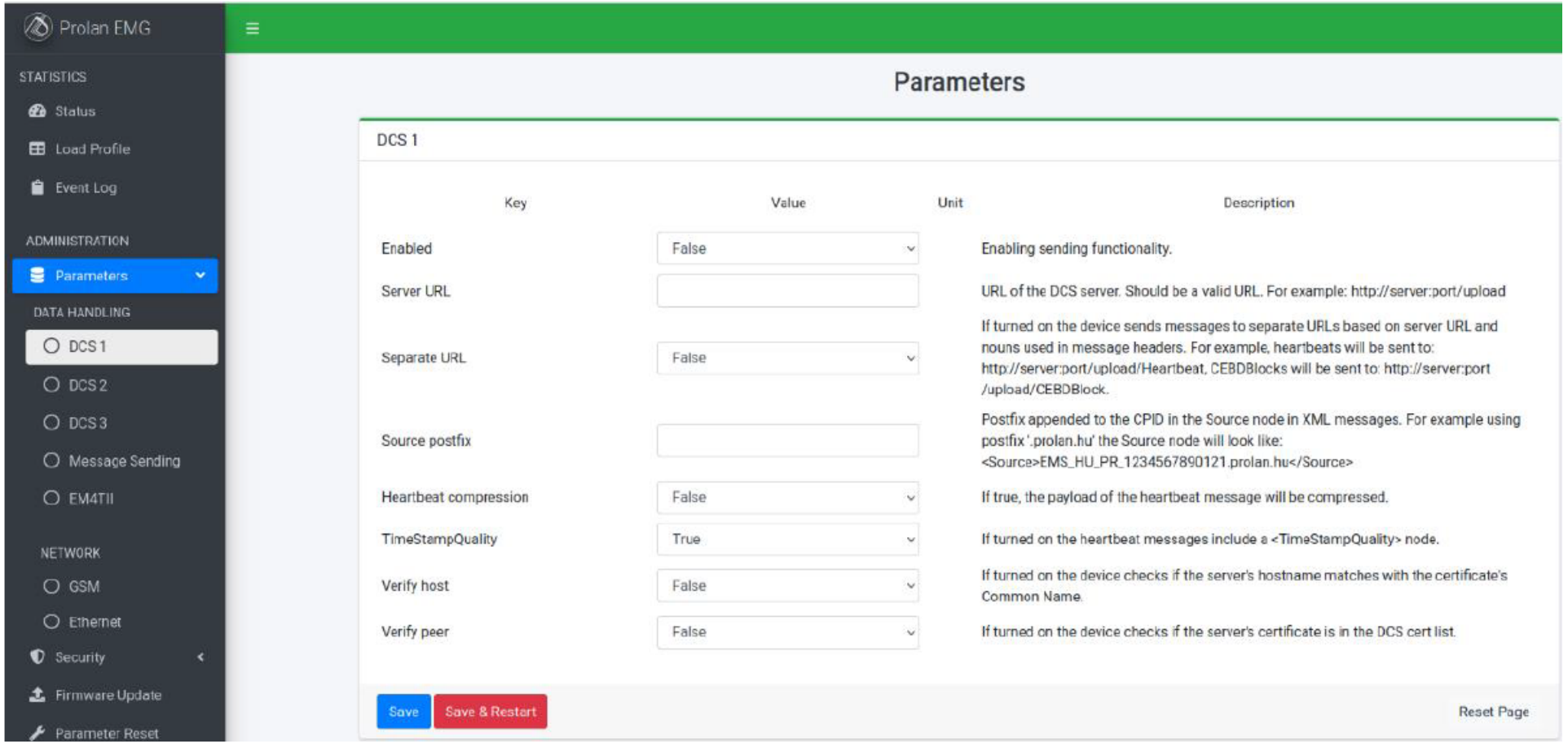
Energy billing

Railway companies



TEMA4G Commissioning

Web Interface : up to 3 different DCS



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!