IElectrix Project – Results and lessons learned from the Indian demonstration in Delhi

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Coordinator ENEDIS

15 European partners from 8 different countries

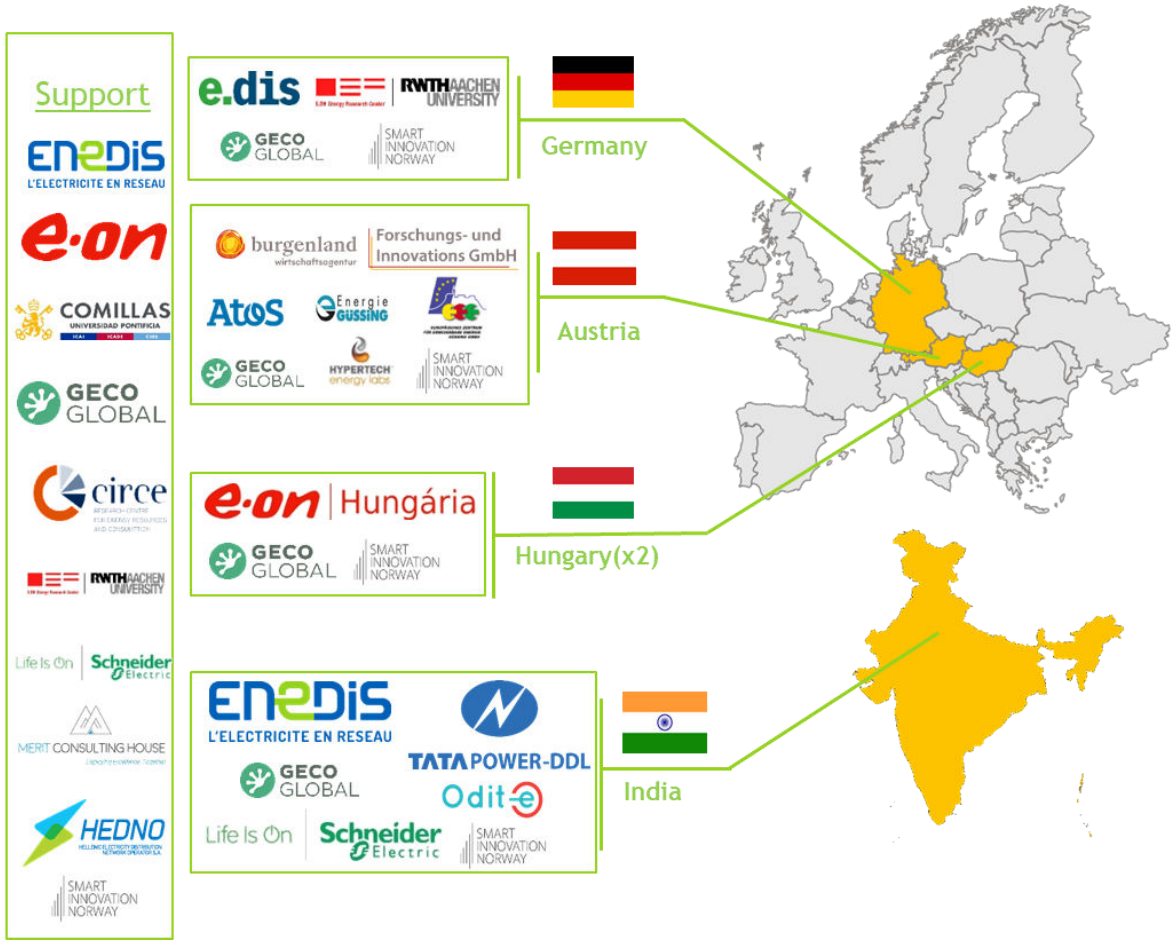
1 Indian partner TATA POWER-DDL

10.7 M€ total budget

46 months duration
May 2019 – February 2023

DSO-coordinated real-scale demonstrators implementing embedded electric island systems and microgrid

5 Demonstrations in 4 countries



Shakti, the Indian demonstration

Shakti demo: Smart Grid serving customers through 3 LV public feeders

Location: St Xavier School, north of Delhi

Energy Community: School of 4,000 students + 34 prosumers & customers (smart meters)

Transformer: 630 kVA
PV Panels: 200 kWp
Battery Energy Storage System: 200 kVA/270 kWh

Rooftop PV panels

Monitoring & control system (SCADA)

Battery Energy Storage System

MV/LV Smart transformer wth OLTC

Energy control center

Energy Management System

LV network digital twin

Local monitoring of Tata Power-DDL LV grid

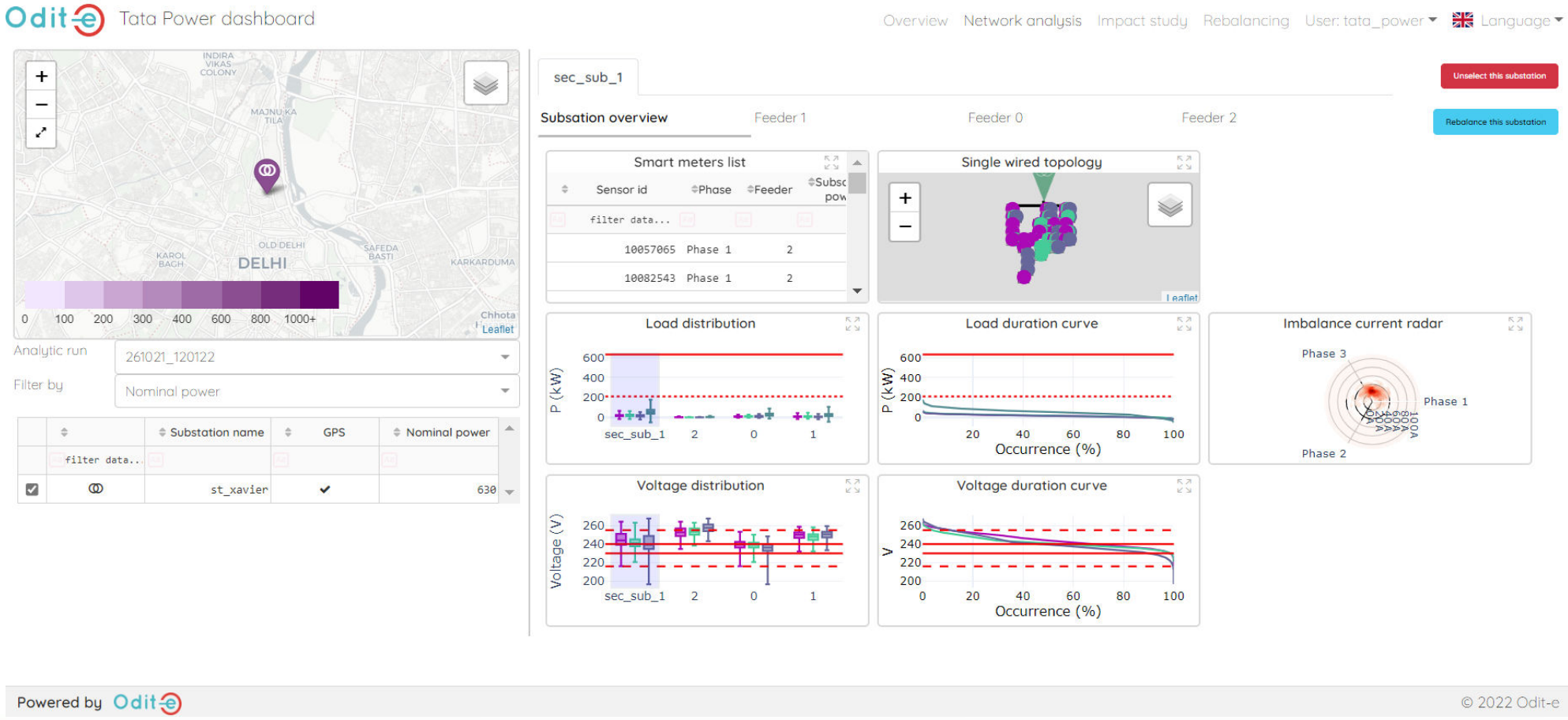
Local monitoring through the SCADA system

SCADA HMI overview

Local monitoring of Tata Power-DDL LV grid

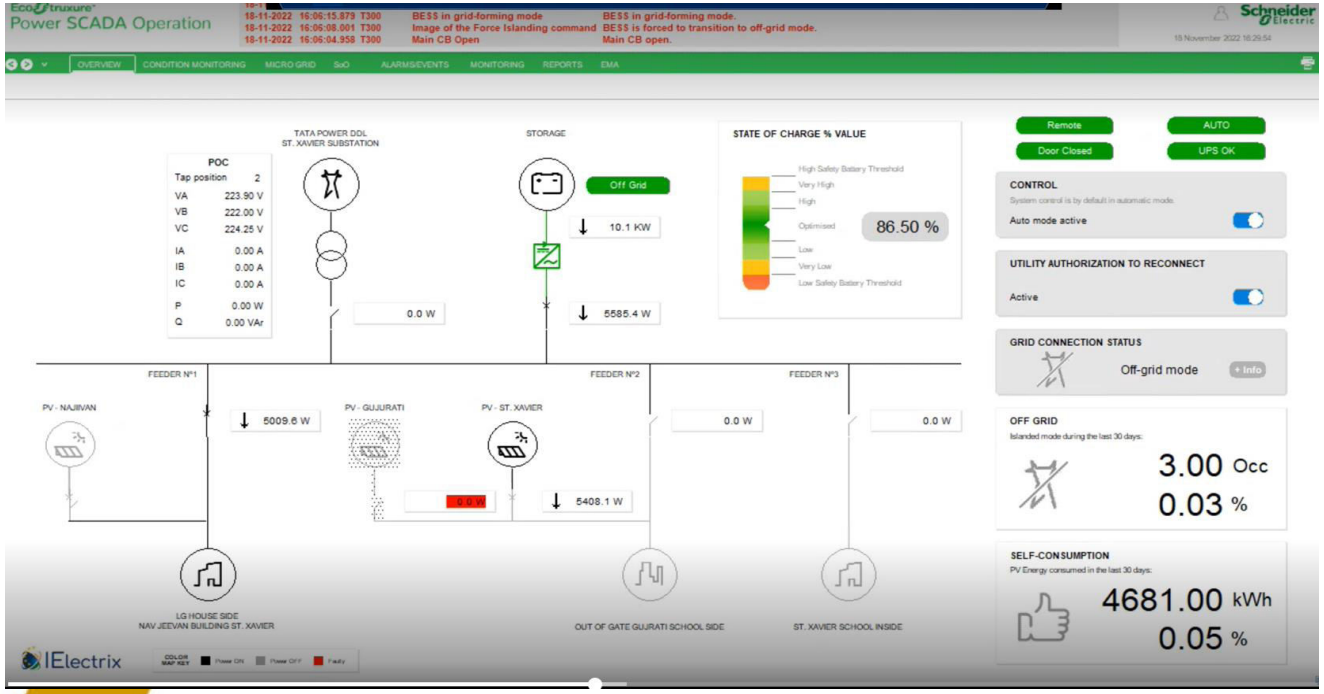
Local monitoring through the LV grid observability system

Odit-e webapp



Improvement of the resilience of the local energy system

Islanding facility of the microgrid



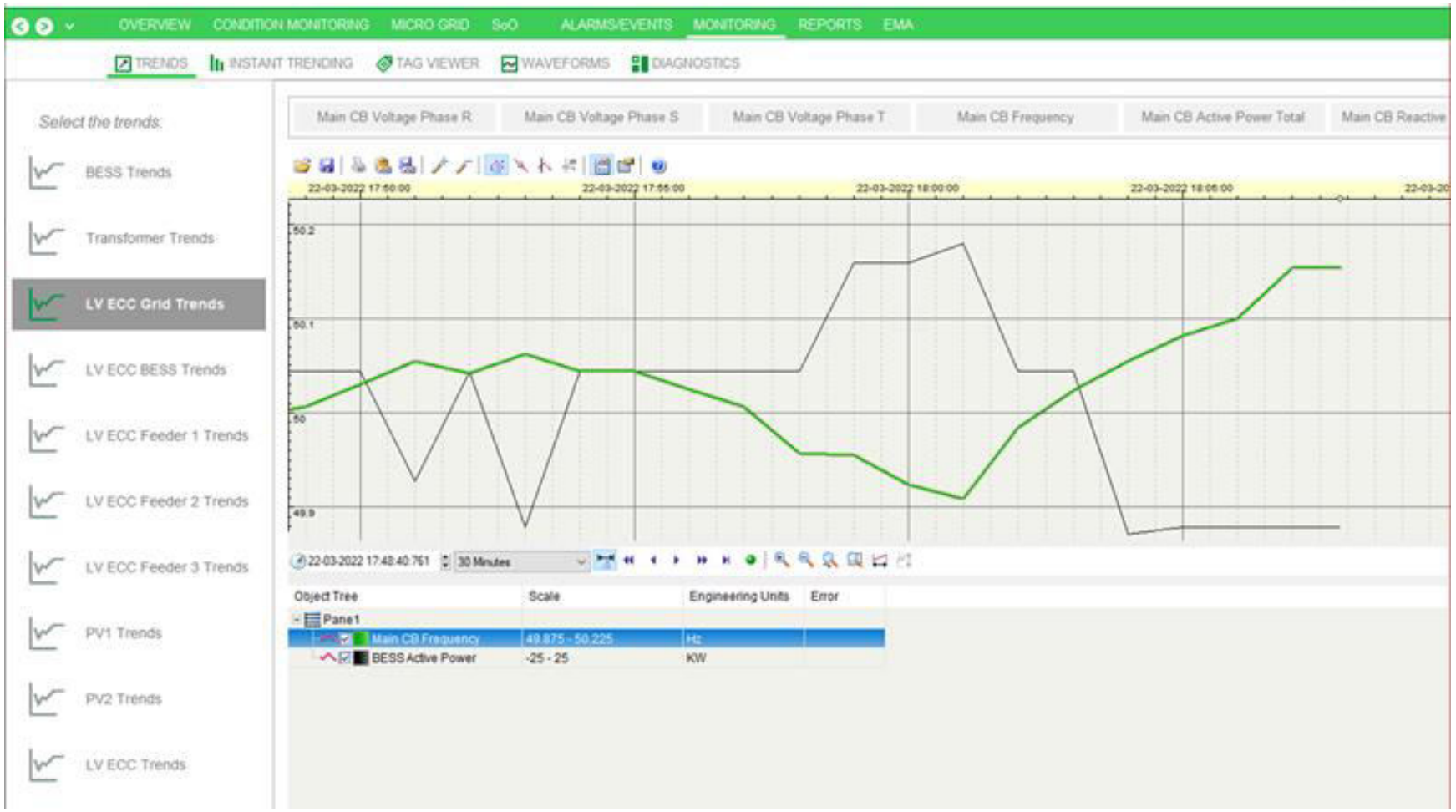
Microgrid in islanding mode

Voltage profile during the islanding mode of the microgrid

Improvement of the quality of electricity supply

Frequency management

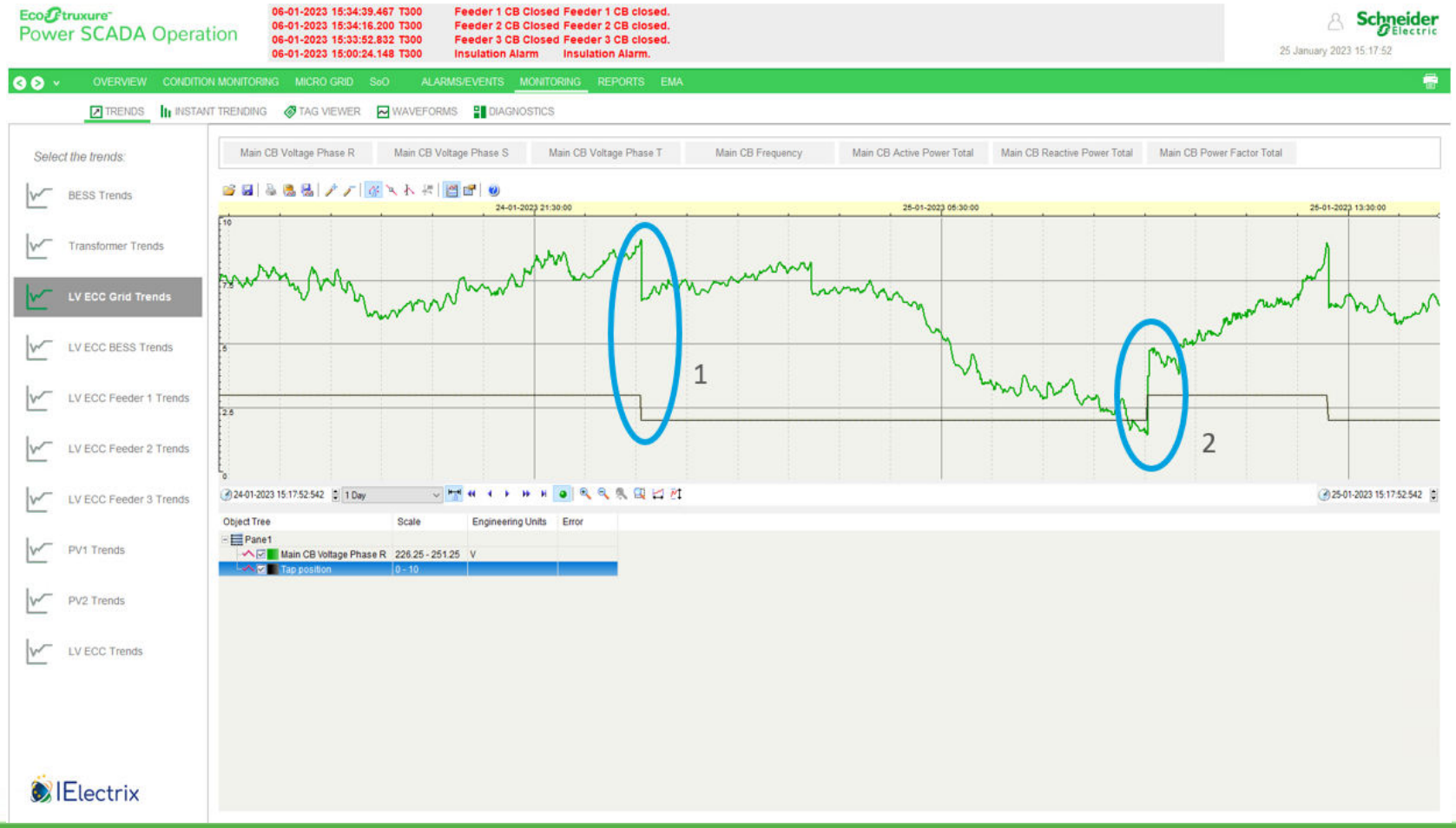
Frequency regulation test



Improvement of the quality of electricity supply

Automatic Voltage Regulation (AVR)

Low voltage regulation by the AVR algorithm



Challenges and main lessons learnt

- Implementing an innovative demonstrator designed and manufactured in Europe in an existing LV network in India with real customers is a challenge, especially during a global health crisis
- Plan extensive testing in Europe early in the project before shipping the demonstration system to India
- Difficulties faced during the project execution due to the sanitary crisis and the harsh environmental conditions of Delhi
- Give preference to equipment manufactured in India to ease the implementation and the maintenance of the microgrid
- Local expertise support required
- Strong cross-cultural collaboration among European and Indian partners over the 4 years of the project

Thanks for your attention

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