SOLAR POWER AFRICA

BREAKAWAY SESSION 4

ASANTE PHIRI

16 February 2022

IN PARTNERSHIP WITH SOLAR POWER EVENTS

POWERED BY SAPVIA South African Photovoltaic Industry Association

SUPPORTED BY RMB

GLOBELEQ POWERING AFRICA'S GROWTH

ORGANISED BY messe frankfurt

Enel at glance

87 GW
of installed capacity
of which 55% renewable

207 TWh
of net production
of which 55% emission free

70 Million customers
23 Million Free Market

Global Utility
35 Countries
5 Continents

67,000 employees
among top 20 in Equileap ranking for gender quality

A sustainable and fully integrated business model

1st network operator[1]

World's largest player[2] in renewables

Largest retail customer base worldwide

2.2 Million km
distribution networks

6.4 GW
demand response

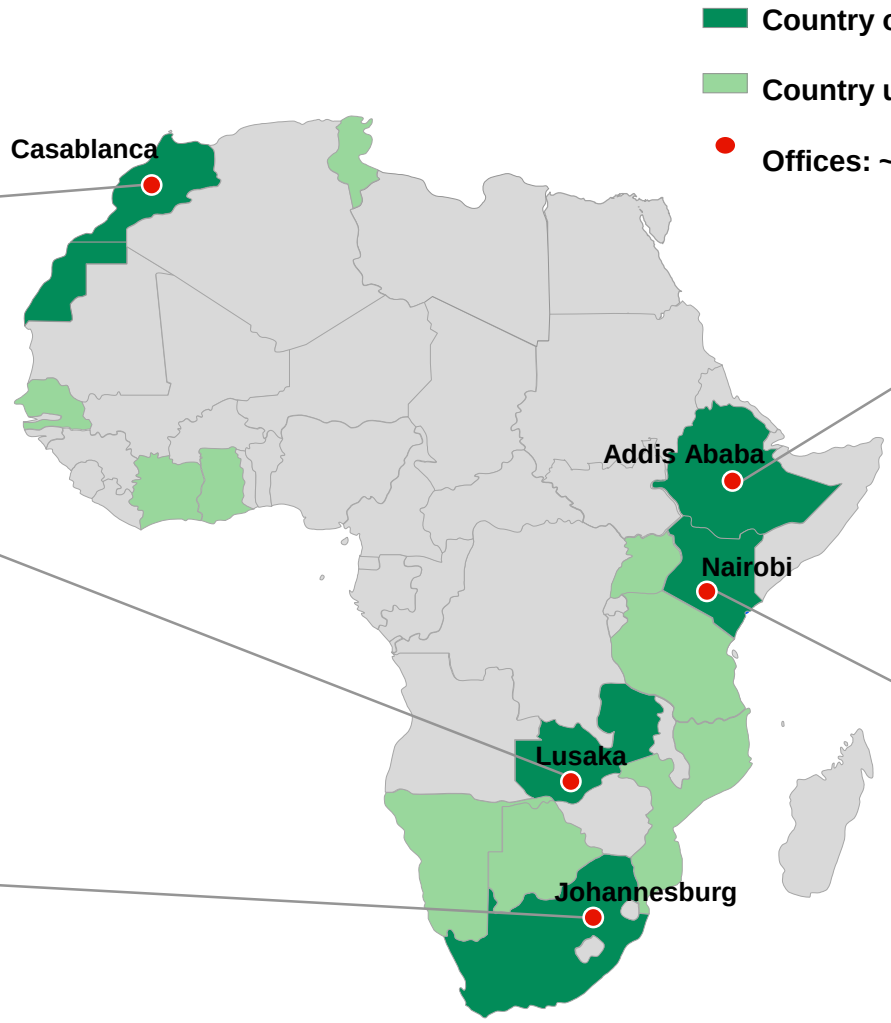
90,000
charging points

Financial Information 2020

REVENUES	EBITDA	MARKET CAP.(Dec 2020)
65 BN EUROS	17.9 BN EUROS	84.3 BN EUROS

[1] By number of end users. Publicly owned operators not included. [2] By installed capacity

Enel Green Power Footprint in Africa



MOROCCO

In operation:
210 MW (Wind)
385 MW CCGT

Under Construction: 640 MW (Wind)

ETHIOPIA

Awarded (FC Process ongoing)
100 MW solar PV

Pre-qualified
Round 2 tender 3x100 MW (Solar PV)

ZAMBIA

In Operation: 34 MW (Solar PV)

KENYA

Pre-qualified:
140 MW geothermal
Greenfield Development
50 MW (Wind)
16 MW (Hydro)

SOUTH AFRICA

Over 900MW in Operation
Total installed capacity of **1200MW** including projects currently in final stage of construction

Leveraging Technology for Effective and Efficient Operations and Maintenance

Green Power

Drivers in the Adoption of Technology

Plant SCADA Data
Big Data Applications

Drones and robotics
Artificial intelligence and machine learning
Cloud-based computing

Man-hours saved
Increased plant productivity
Increased Personnel productivity

Opportunity for avoided Costs
ESG/ Reduced CO2 Footprint
Downward Pressure on O&M Costs

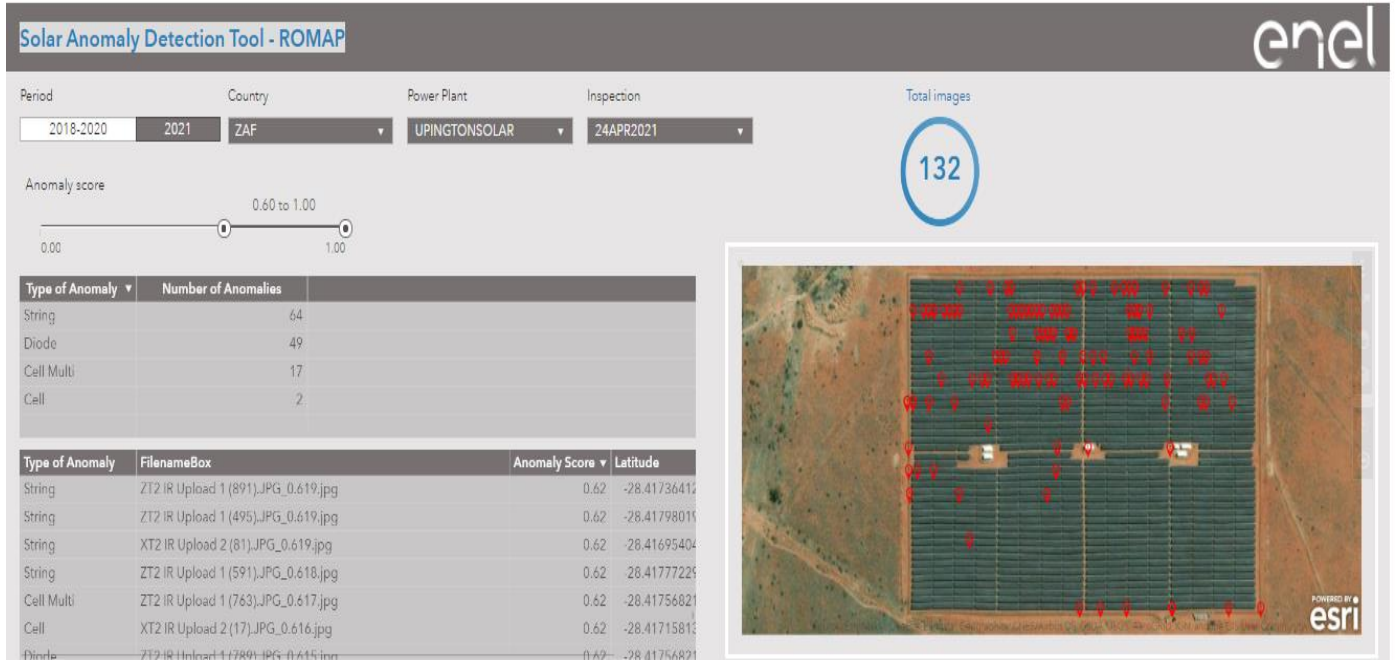
Maximized Asset
Optimal Costs
Optimal Revenue

Field Maintenance Technology

Drone Thermography and AI for Data Analysis

Robotised Grass Cutting and Inspections

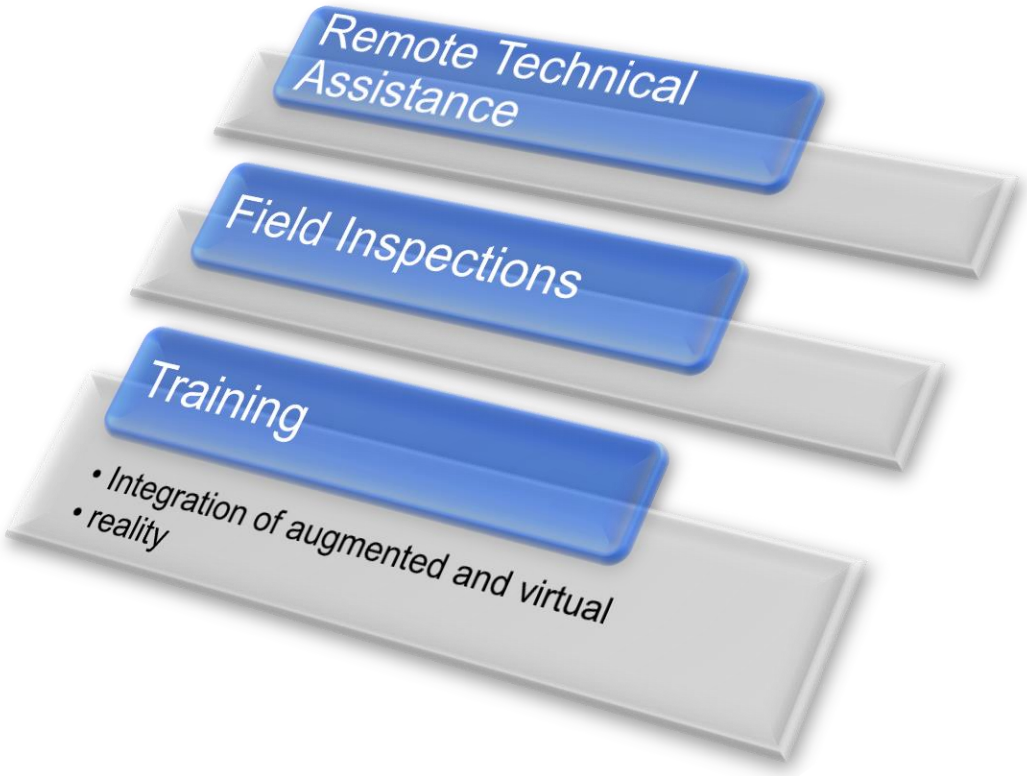
Robotised module cleaning



- Key considerations
  - Hardware and quality of imagery
  - Drone pilot skill and flight planning
  - Anomaly Detection Software and AI
  - Accuracy of results!!! can be a nightmare field staff
  - Integration of As-Built Documentation
  - Economic Development

Smart Glasses

Smart Glasses, Virtual and Augmented Reality



Scope

Specialized inspections – inverters
Discussion on fire cause & origin determination

Travel on-site avoided

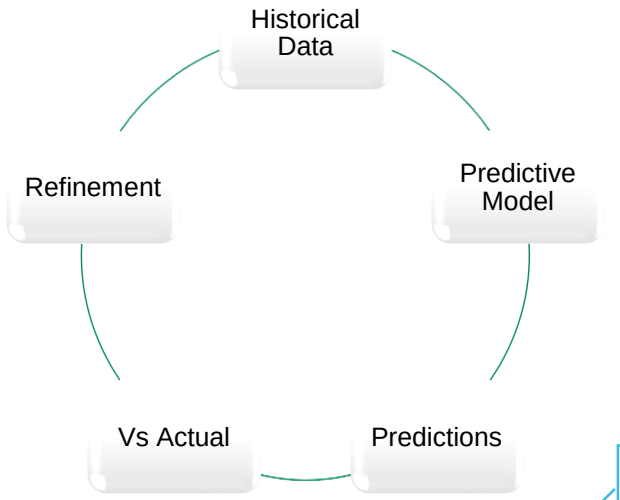
Internal Enel teams (4 local O&M & 5 Remote) possibility of more technical inputs by different actors

Other info

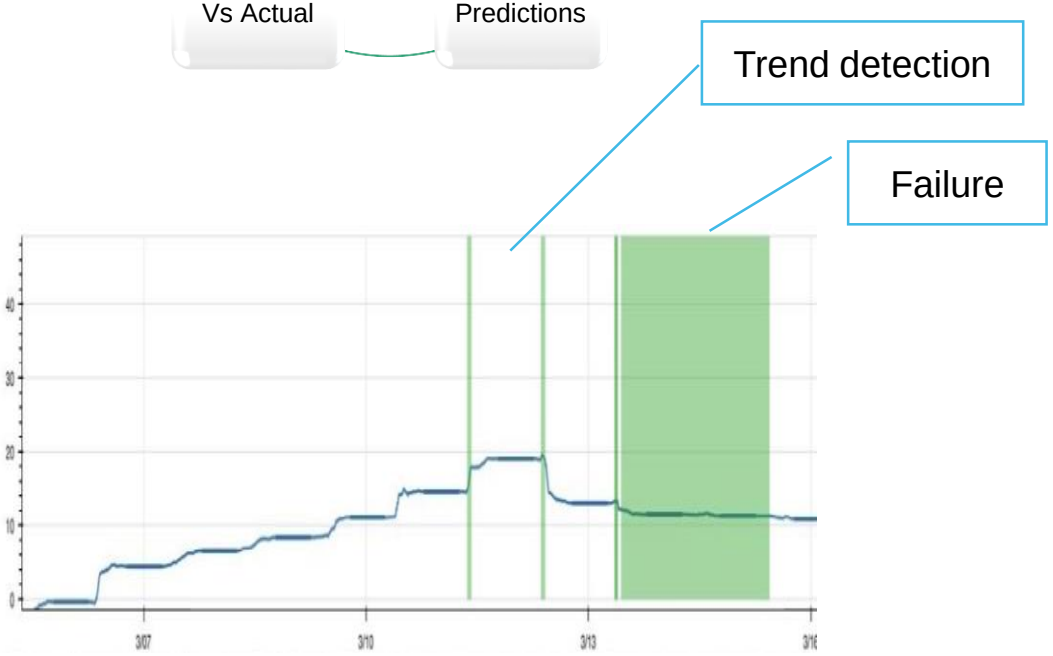
9k€ of travel and accomodation avoided

Videos & pictures taken with SGs used for RCA

Predictive Analytics



- Use of historical sensor data
- Failure and ERP records
- Predictive models – statistical, machine learning, pattern recognition, AI
- Value add: Controlled shutdown, salvage equipment



Digital Twin Technology

- Virtual model representation of a physical object's dynamics and operation
  - Component, asset, systems or process level
- Integration of real world sensor data onto digital model
  - Allows for simulation, performance analysis and performance improvement
- Uses
  - Gain insights into design and operation
  - Research and development, design, production and operations
  - *Operational efficiency analysis and improvement*
  - *3D training environment*

Thank you

Green Power