



# COMPANY PRESENTATION

# BELECTRIFYING.



## OUR VISION

A leading green energy company with the goal to enable people to improve their quality of life by using energy more innovatively through sustainable technology and services.

## OUR BUSINESS

Designing, building and operating utility-scale PV and hybrid power plants as well as battery storage systems



BELECTRIC is one of the leading PV technology companies worldwide with over 300 commissioned PV plants.



# Company profile

- Our target: Achieve highest environmental friendliness, security of supply, and cost-effectiveness in the energy system of the future
- Our core capabilities: Engineering, procurement & construction (EPC system integrator) as well as project management and operation & maintenance (O&M) of PV power plants, hybrid power plants and battery storage systems
- More than 300 realized PV solar power plants
- Pioneer in solar and batteries since 2001
- Top 10 global O&M service provider with 1.7 GW under management
- 700+ dedicated people in 11 countries
- Part of global renewables division of innogy SE since 2017



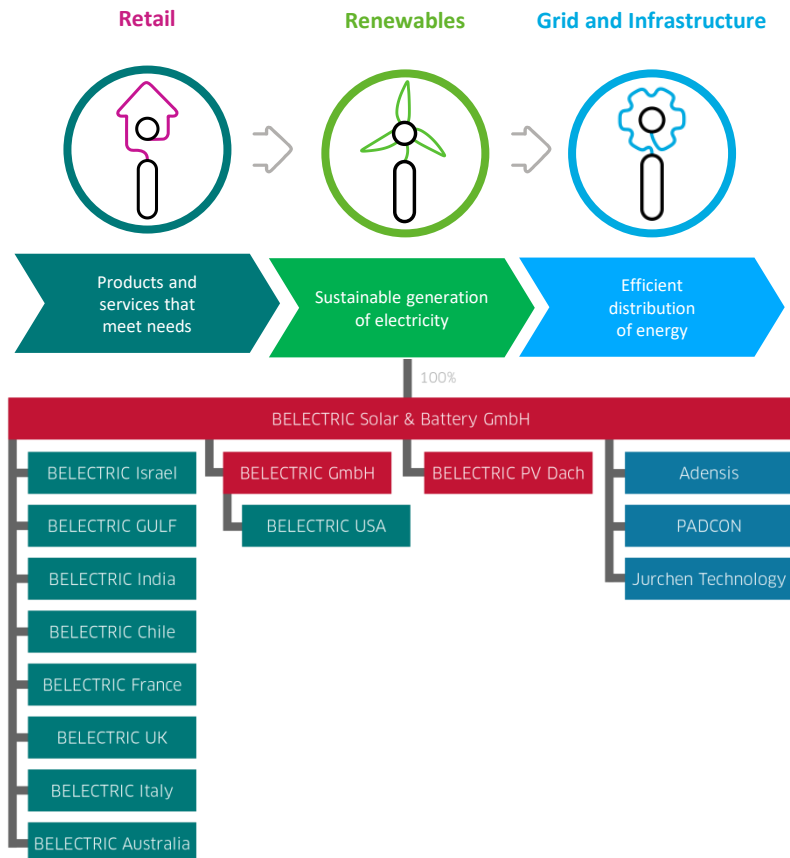


# From PV pioneers to global leader

- Founded in the year 2001
- Pioneers in developing utility scale PV in Germany and abroad
- Operated and grown by “owners management”
- Continuous top position in PV technology, > 100 patents
- Early mover in developing new international markets
- Just 10 years from start-up to global player



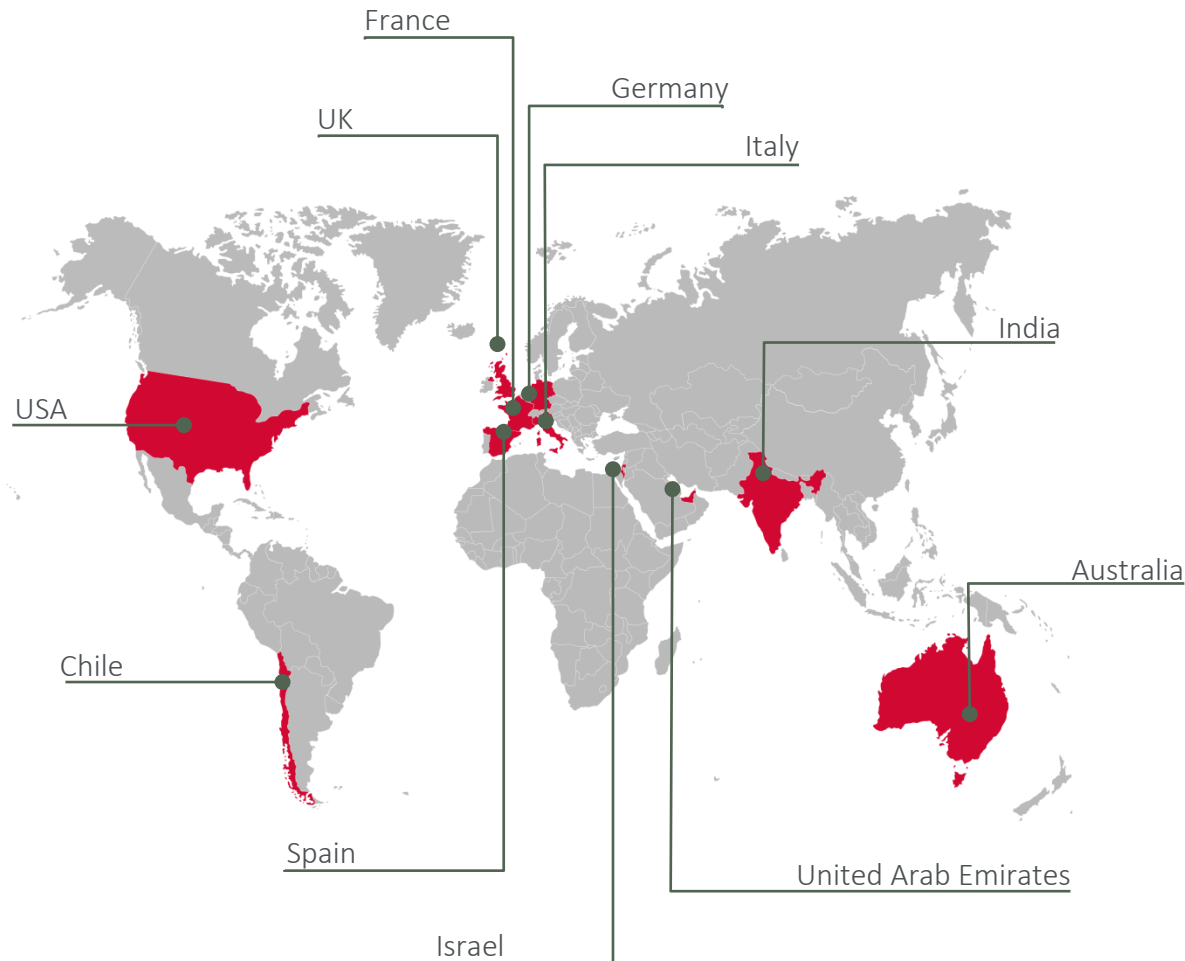
# Part of one of Europe's largest utilities



- ~€18 bn market capitalisation – most valuable energy utility in Germany
- ~23 m customers across Europe
- €46 bn in revenues
- ~40,000 employees
- ~€6.5 bn of investments 2016-2018
- Largely CO<sub>2</sub> free
- No nuclear liabilities
- Fully unbundled grid operation
- Ongoing transaction with RWE and eon

WITH OPERATIONS IN 11 COUNTRIES WE COMBINE GLOBAL STANDARDS WITH LOCAL FLEXIBILITY

# International network of companies



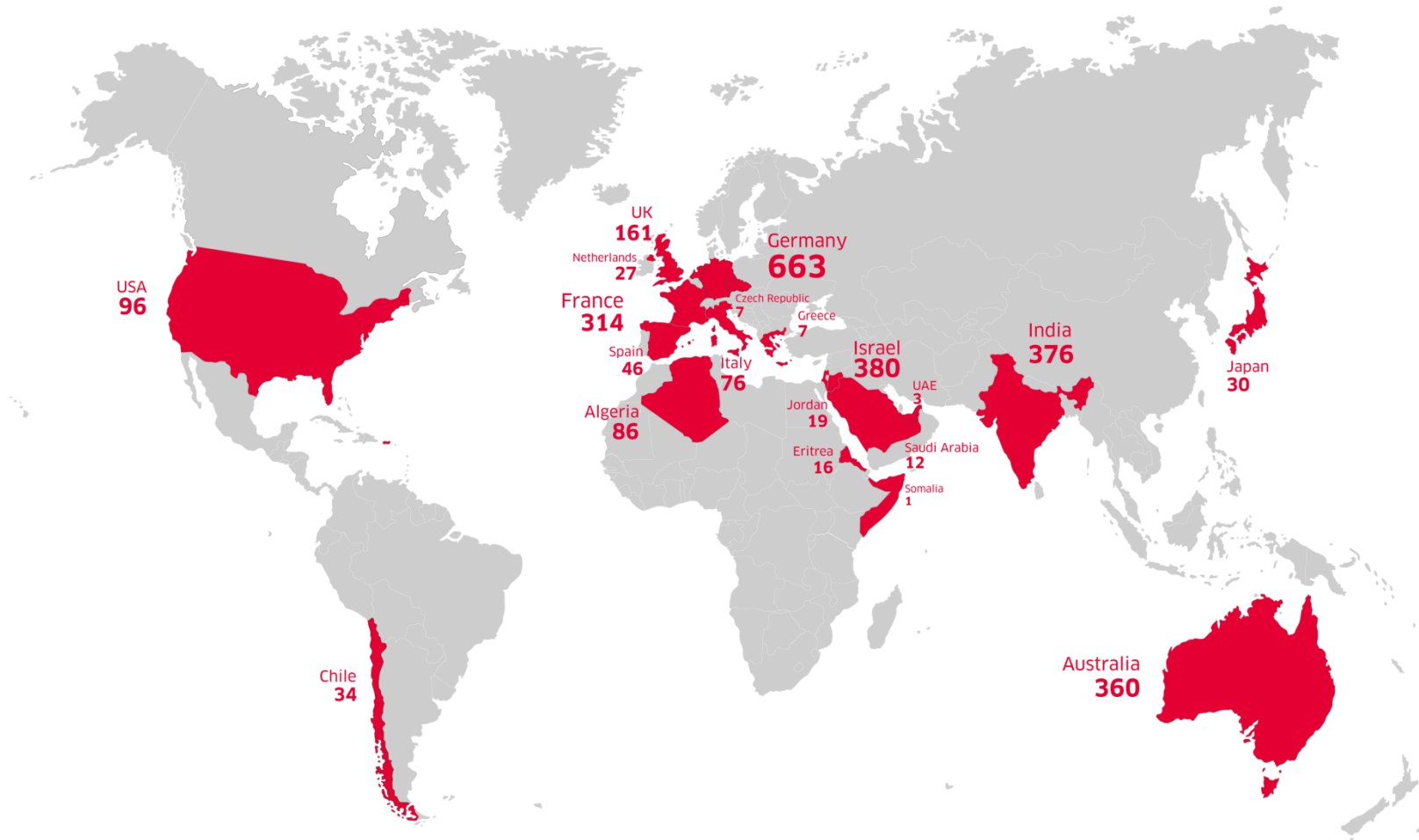
11  
countries

4  
continents

704  
employees

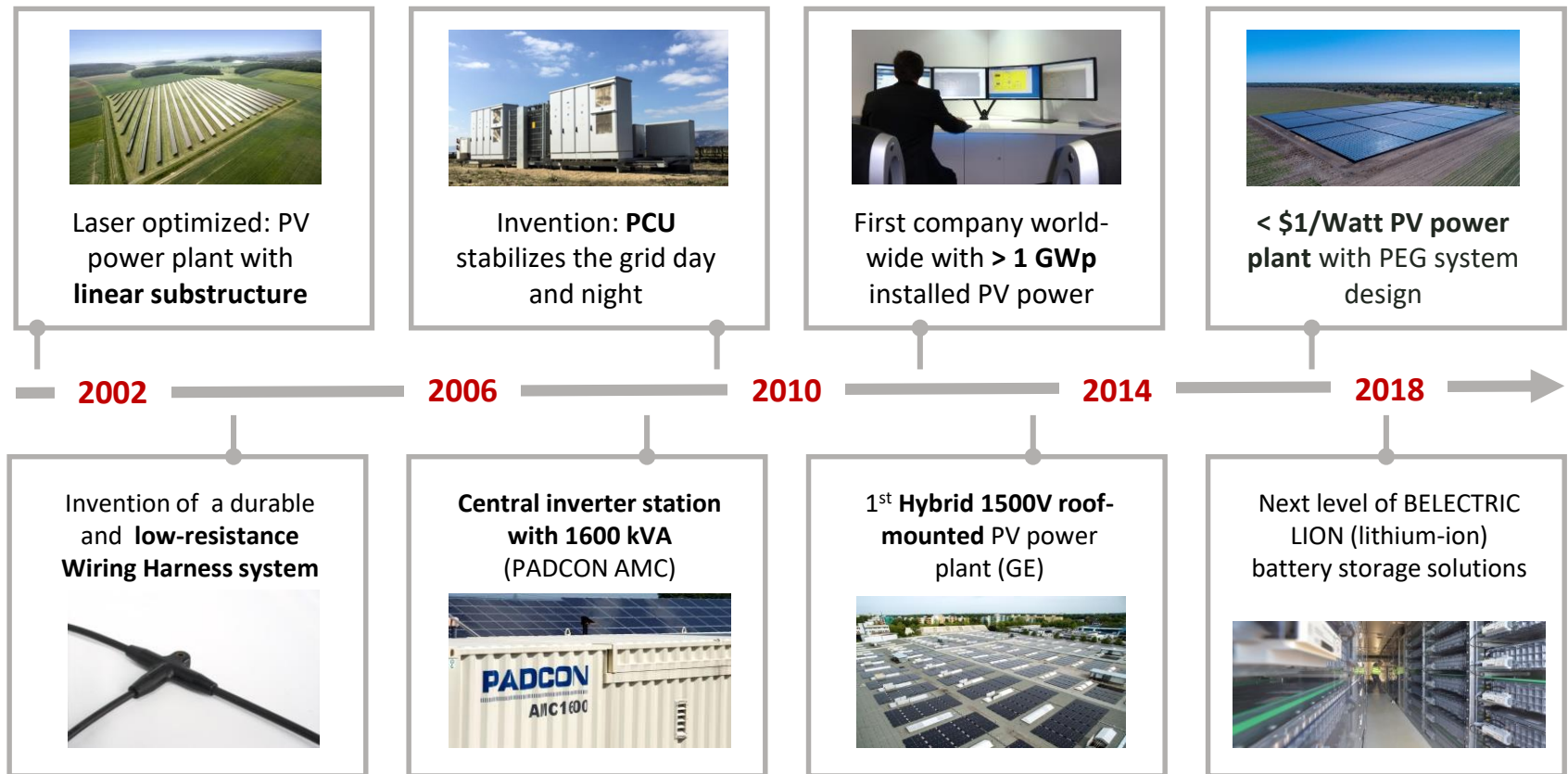
WE HAVE BUILT MORE THAN 2000 MWP OF SOLAR POWER PLANTS – ON ALMOST ALL CONTINENTS

# Proven international EPC track record

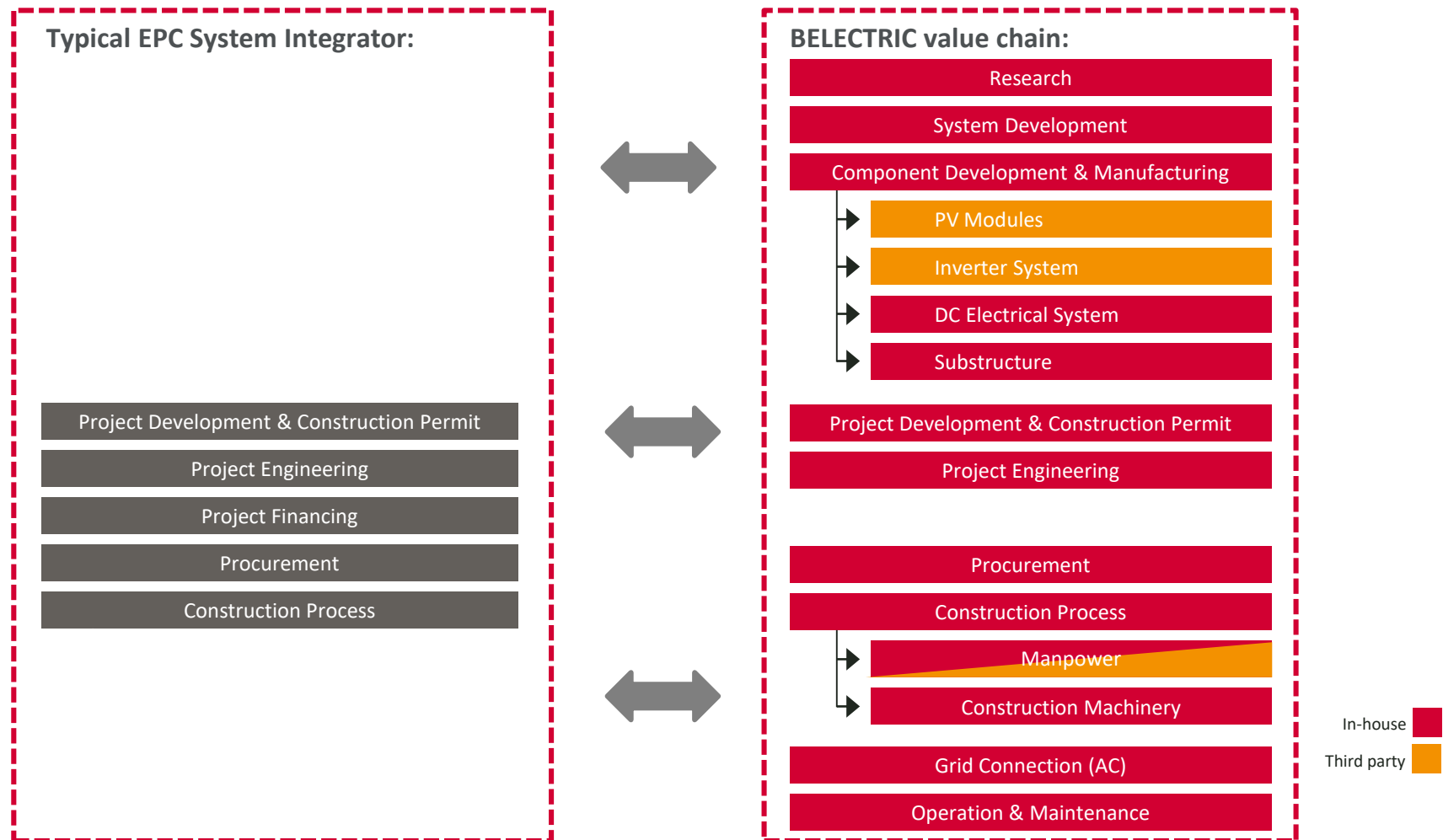




# Why BELECTRIC? The Evolution of PV!



# All-round expertise inhouse



COMPREHENSIVE SKILLS AND TRACK RECORD IN CONSTRUCTION AROUND THE GLOBE

# We're building solar & battery storage systems on 30 sites on 4 continents





# Intra-group expertise



PV Substructure

DC Cabling Systems

Module Clips

Mounting Accessories

SCADA Systems

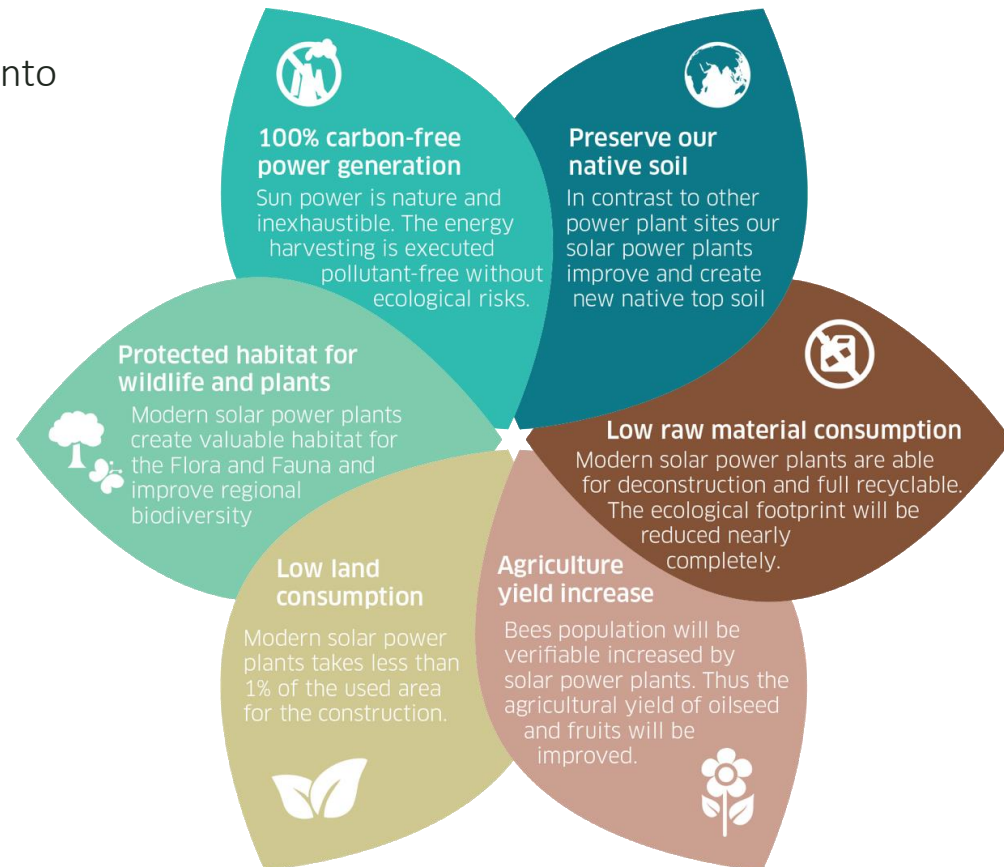
Monitoring Applications

O&M Services

PID Solutions

# Supporting biodiversity

- Sensible integration of solar power plants into the existing landscapes
- Creation of a biosphere in the midst of a cultivated landscape
- 99% of natural areas still exist
- De-centralized solar power improves independent, regional power generation and biodiversity



STRONG RELATIONSHIPS ENSURING A GLOBAL REACH INTO THE ENERGY BUSINESS

# Broad Global Customer Base

**Balfour Beatty**  
Investments

**Constellation.**  
An Exelon Company

**COMMERZ REAL**  
Commerzbank Gruppe

**sonnedix**  
SOLAR POWER PRODUCER

**Foresight**  
group

ارامكو السعودية  
**Saudi Aramco**



**First Solar.**

**KGAL**

**SMA**

**GE**  
GE Energy



**LUXCARA**

**N-ERGIE**  
Spürbar näher.

**SUNPOWER**



**SHIKUN&BINUI**  
ARISON GROUP

**edf**  
energies nouvelles

**RWE**

سونلغاز  
**sonelgaz**

**TOTAL**



**eren**

**swt.**  
Stadtwerke Tübingen

**Fortum**

**SOLAR FRONTIER**

**Statkraft**

**CarbonFree**  
TECHNOLOGY

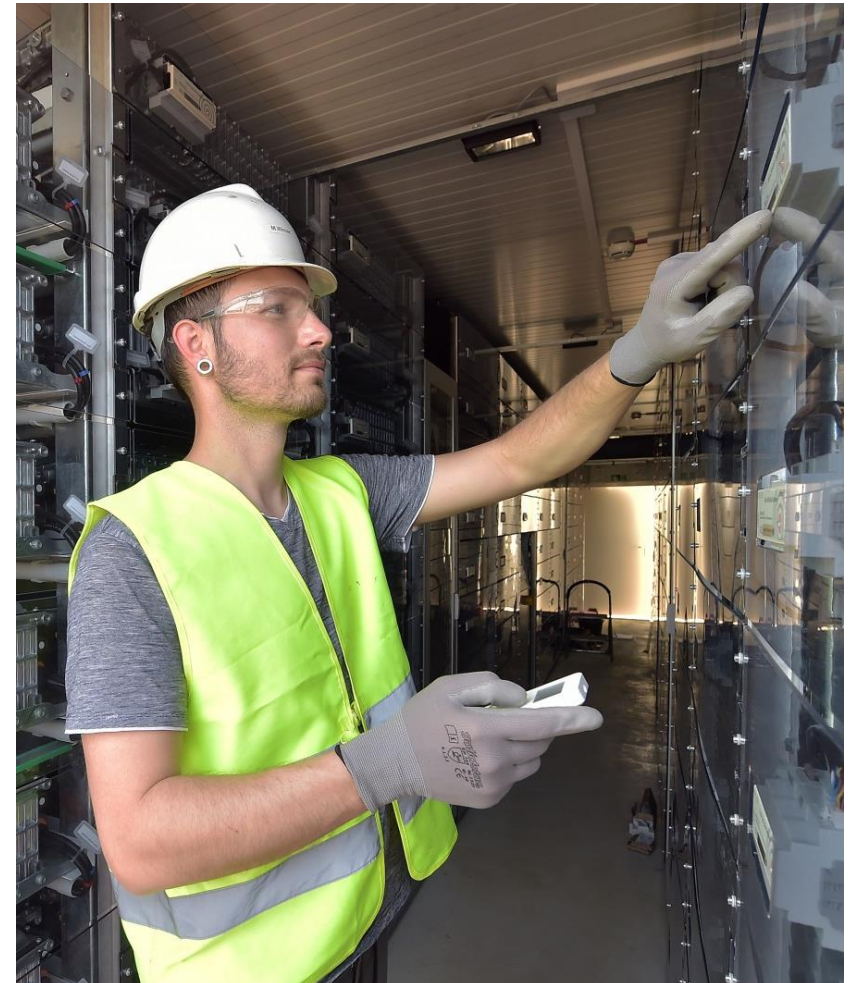
**SOLAR PACK**





# HS&E management is part of our DNA

- HS&E for us is not just a set of requirements and guidelines. It's integral part of our corporate values. Wherever we work for you – implementation of our global standards is ensured.
- As subsidiary of innogy, Belectric's HS&E is part of an advanced organisation with strict policies based on many years of experience from thermal power stations and mining (innogy until 2016 was part of power generator RWE) as well as power and gas networks.
- Strict behavioural and procedural guidelines and comprehensive mandatory trainings with particular focus on asset operation, project management, contractor management.
- Certification of BELECTRIC GmbH according to OHSAS 18001 (future ISO 45001)



# Projects “under construction”

**Limondale, Australia**



- Year of completion: 2019/2020
- 349 MWp; Full-EPC + O&M

**Pavagada, India**



- Year of completion: 2019
- 350 MWp, Full-EPC + O&M

**South Amman, Jordan**



- Year of completion: 2019
- 46 MW, Full-EPC + O&M

**WBL, Netherlands**



- Year of completion: 2019
- 11 MWp; Full-EPC + O&M

**Bonnhof, Germany**



- Year of completion: 2018
- 10MW, Full-EPC + O&M

**Zeelim, Israel**



- Year of completion: 2019
- 120MWp, Full-EPC + O&M



# Reference Projects Around the Globe

**Tarabin, Israel**



- Year: 2018
- 13 MWp, Full-EPC + O&M

**Pedum, Israel**



- Year: 2018
- 14,7 MWp Product Design + Full-EPC + O&M

**Nevendon, UK**



- Year: 2018
- 10MW PV, 7,20MWh Battery

**Goondiwindi, Australia**



- Year: 2017
- 4.8 MWp; Full-EPC + O&M

**Battery Storage Herdecke, Germany**



- Year: 2018
- Capacity: 7 MWh; Full-EPC + Battery System

**Battery Storage Chemnitz, Germany**



- Year: 2017
- Capacity: 16 MWh; Full-EPC + Battery System



# Reference Projects Around the Globe (2)

**Pavagada, India**



- Year: 2017 /18
- 125 MWp, Full-EPC + O&M supervision

**Maryland Solar, USA**



- Year: 2012
- 29 MWp, Full-EPC + O&M

**El Boco, Chile**



- Year: 2017
- 3.8 MWp, Full-EPC + O&M

**Ashalim, Israel**



- Year: 2018
- 30 MWp, Full-EPC

**Hauts plateaux Ouest, Algeria**



- Year: 2015
- 85 MWp, Full-EPC + O&M

**Landmead, United Kingdom**



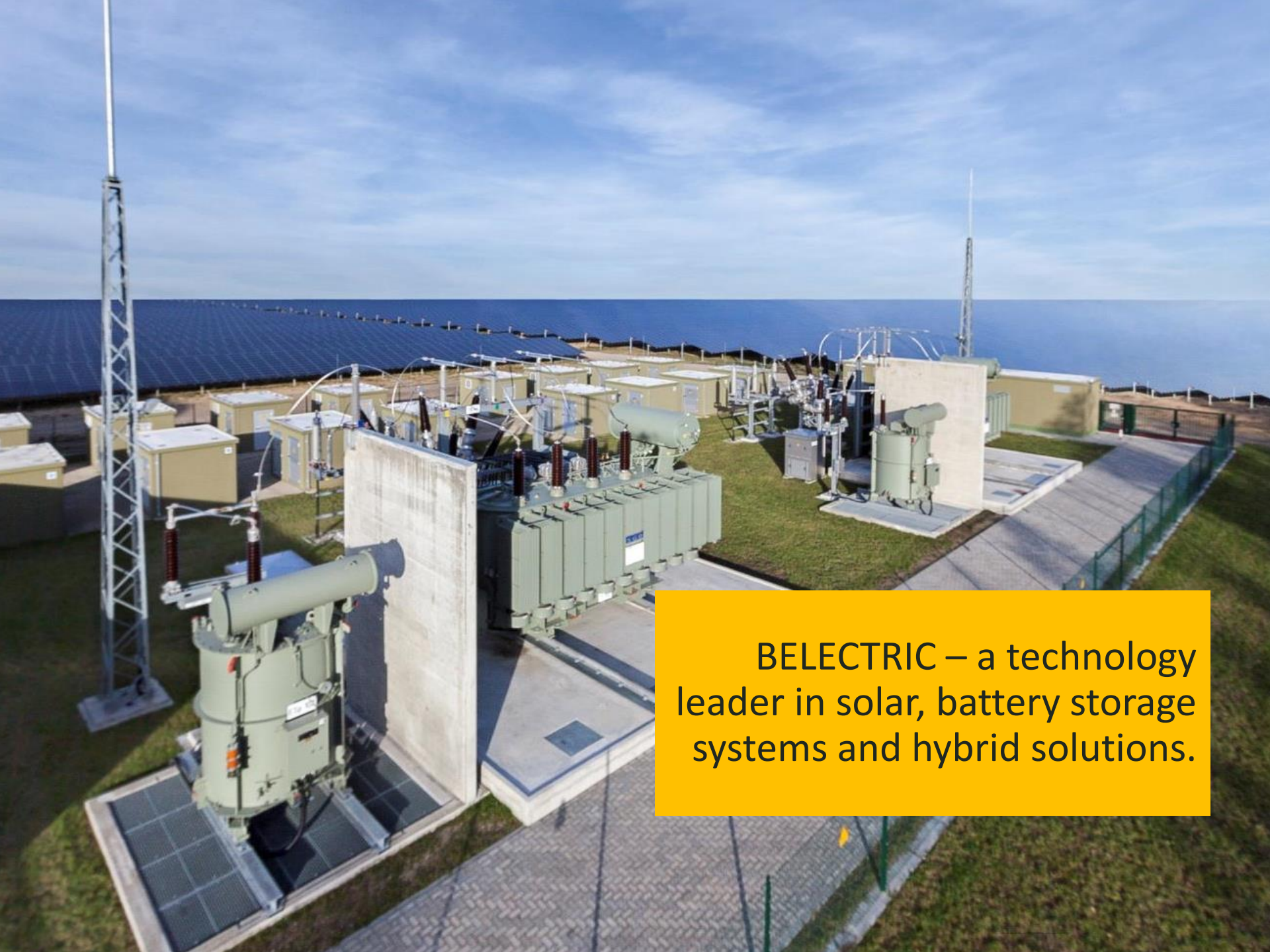
- Year: 2014
- 46 MWp, Full-EPC + O&M

# INNOVATING SINCE 2001



## **OUR MOTIVATION**

Technology leader in solar,  
battery storage systems and  
hybrid solutions.

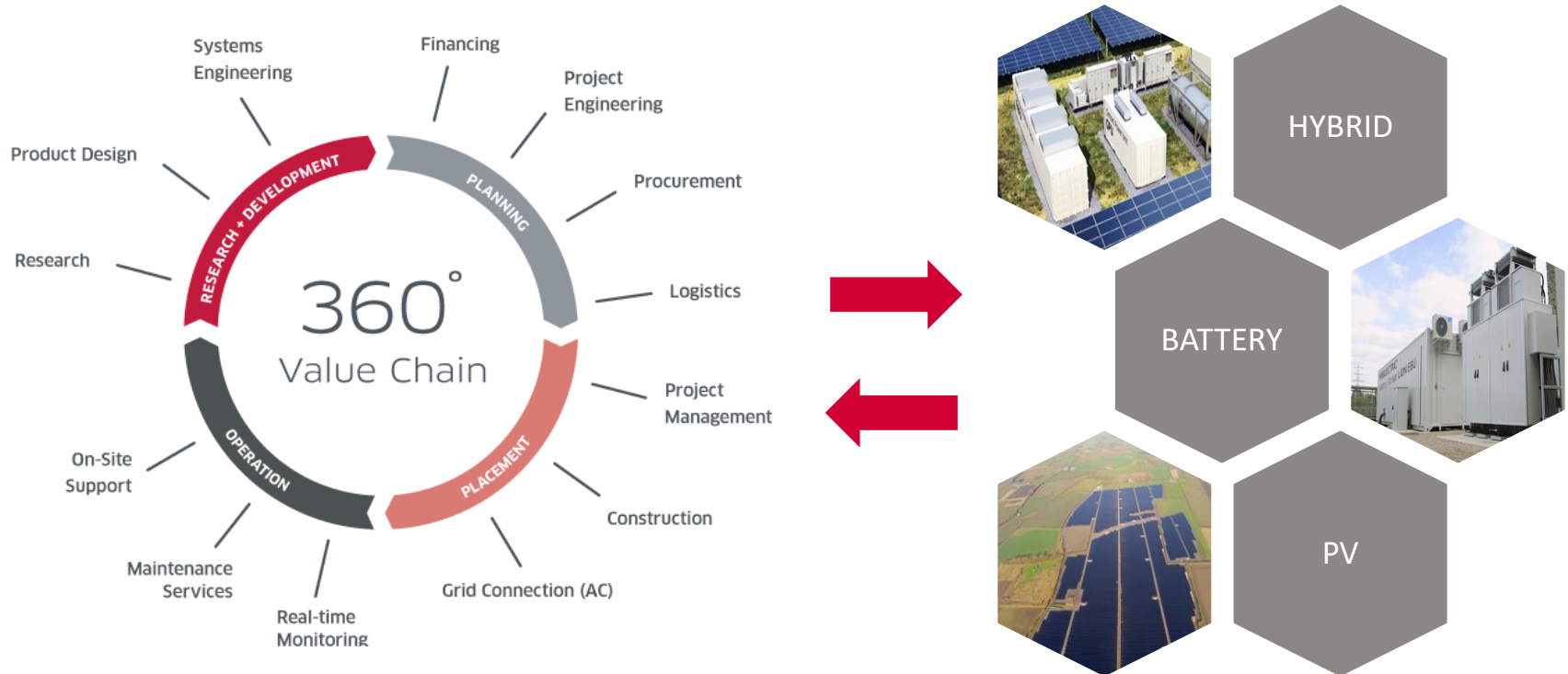


BELECTRIC – a technology leader in solar, battery storage systems and hybrid solutions.



PROVEN TECHNOLOGY DESIGNED FOR RELIABILITY AND OPERATION SAFETY

# Constant Product Development



Our clients benefit from almost two decades of pace-setting R&D, based on first-hand experience from designing and constructing more than 2 GW of solar and battery plants.

GLOBAL BENCHMARK THROUGH HIGH EFFICIENCY, LOW RAW MATERIAL CONSUMPTION AND INDUSTRY LEADING QUALITY

# Standardized & effective system designs

## PEG power plant



- LCOE optimized, full-integrated power plant system for mid-sized to large-scale PV applications
- Saves over 50% labor and machine costs compared to typical EPC
- Best-in-class area utilization of 1.4MWp per hectare
- High installation safety & ergonomics

## Off-Grid & Hybrid Solution



- Combines solar power generation with fuel-based energy sources
- Can be placed worldwide to generate power 24/7
- Reduces fuel consumption and CO<sub>2</sub> emissions

## Grid Stabilization 24/7



- Simplified and low cost grid access
- Higher acceptance of solar power at the utility customer base
- Stabilizes weak grid conditions and saves grid expansion cost
- Optimized plant uptime

## Battery Storage



- Most economic battery storage systems based on innovative lithium-ion technology
- Ancillary services, energy arbitrage, and demand charge optimisation
- Certified for frequency & spinning reserve operation
- Container-based and building integrated solutions

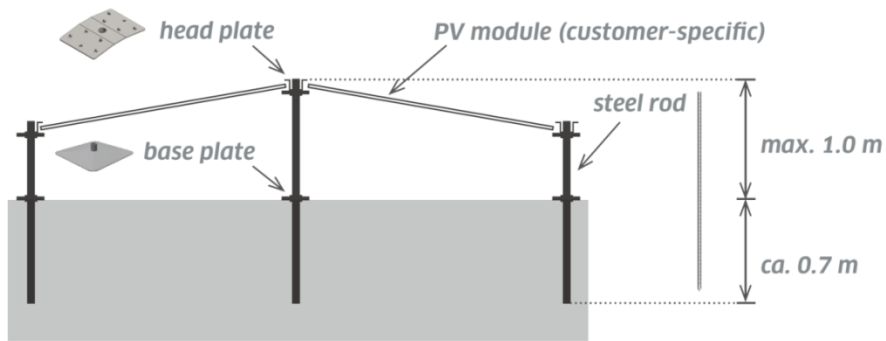


We removed the complexity of utility-scale PV by a new and simple PV plant design – PEG®



CLEAN AND AFFORDABLE ENERGY WITH BELECTRIC'S REVOLUTIONARY SOLAR PV POWER PLANT

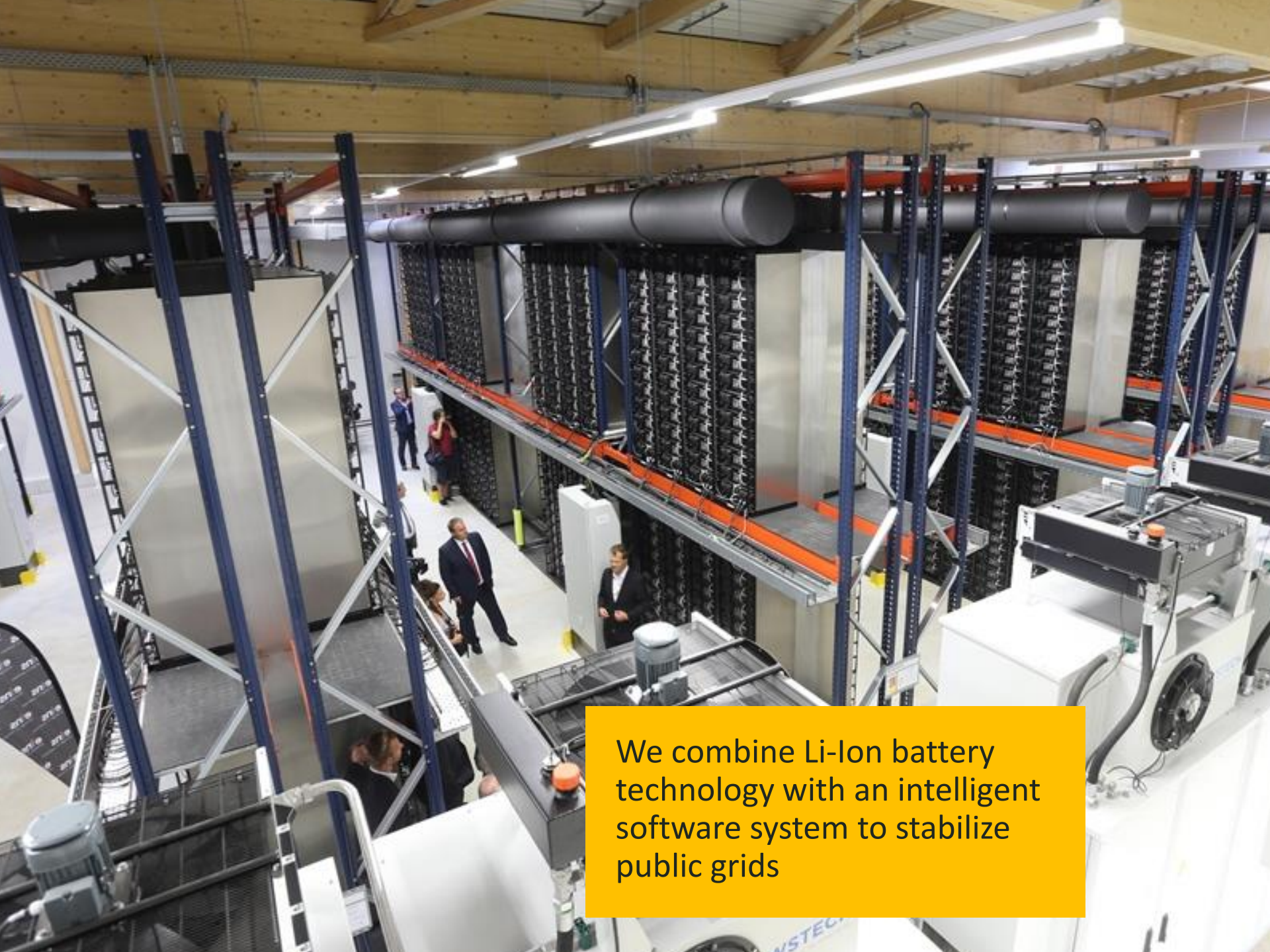
# PEG: Revolution in the field of PV substructure





BELECTRIC is one of the leading companies for utility-scale battery storage in Europe





We combine Li-Ion battery technology with an intelligent software system to stabilize public grids



BELECTRIC LION SERIES: MOST ECONOMIC ENERGY STORAGE SOLUTIONS BASED ON RELIABLE LI-ION BATTERIES

# BELECTRIC Battery Storage Solutions

## Battery energy storage systems



- Modular, container-based (EBU) or individual building-integrated systems
- Available system sizes: Mid-sized (80 kWh) to Multi-megawatt (utility-scale)
- Providing power at peak demand to reduce grid load
- Storing excess solar power to increase its availability
- Proven lithium-ion battery technology combined with state-of-the-art battery management system & medium tension grid interface
- Fully automated battery management system incl. safety system and online supervision

## Customer benefits



- Combined business models with attractive ROI
- High system quality ensured through in-house manufacturing and comprehensive testing of third party components
- Enables a flexible, grid stabilizing power supply, hybrid power and off-grid electricity with PV
- Ancillary services: Black Start Capabilities, Dynamic Reactive Power, Peak Shaving, Ramp Rate Control

## BELECTRIC HYBRID POWER

One of the most advanced solar hybrid solutions worldwide.



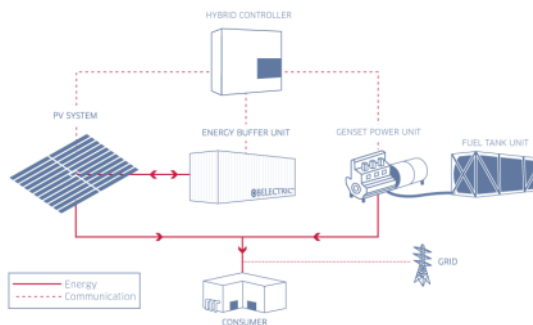
# Hybrid Power Solutions

## Description



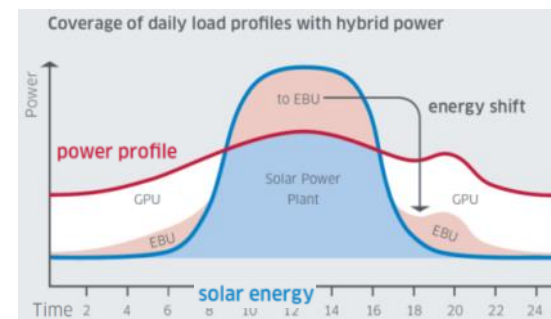
- One of the most advanced solar hybrid solutions worldwide
- Combines solar power generation with battery storage and fuel-based energy sources
- Exceptional grid stabilization function allows usage of PV systems as main source of energy

## Value added by BELECTRIC



- Integrated technology reduces engineering and O&M cost
- Can be placed worldwide to generate 24h/day reliable power
- Allows access to highly profitable market segments

## Benefits



- Integrated solution to generate low cost electrical power
- Reduces fuel consumption and CO<sub>2</sub> emissions significantly below “fuel saving plant types”
- Cost efficient storage solution increases energy independency
- Enables utilization of reliable solar energy in remote locations without grid connection



As one of world's most experienced O&M providers,  
BELECTRIC is operating **>1,700 MW PV power**.  
This corresponds to **>US\$ 2 billion** of operational PV  
assets under contract.



# Our full package O&M ensures maximization of daily energy yield (1)

## Customer Support



## Monitoring & CCTV



## Maintenance



## Analysis



## Performance



- 24/7/365 service coverage
- Detailed monthly, quarterly, and annual reports
- Board reporting
- Asset management assistance (regulatory, UTF, financials)
- Web-based monitoring system with a permanent and real-time data access
- Extensive data reports and analysis functions with all important power plant parameters
- Preventive maintenance (inspections, landscape, cleaning)
- Corrective maintenance (repairs, analytical fault detection etc.)
- Management of specialised subcontractors
- Plant start up control procedure
- Continuous surveillance
- Ticket generation, service activation, and completion notification
- Technical retrofitting & upgrading available to improve plant performance
- Internal engineering department supporting O&M
- Spare parts management

# Our full package O&M ensures maximization of daily energy yield (2)

## On-Site Inspections

- Planned routine services
- Preventive maintenance procedures and part replacements
- Special equipment/analysis proactively detect threats
- Thermal analyzing prevents energy yield loss



## Maintenance and Unplanned Repairs

- Spare parts package with forecasting, in-house warehousing and replenishment via RMA
- Real-time plant monitoring & rapid fault response increases equipment availability & reduces downtimes
- Specialized inverter maintenance training In-house



## Cleaning – Performance even in dusty environments



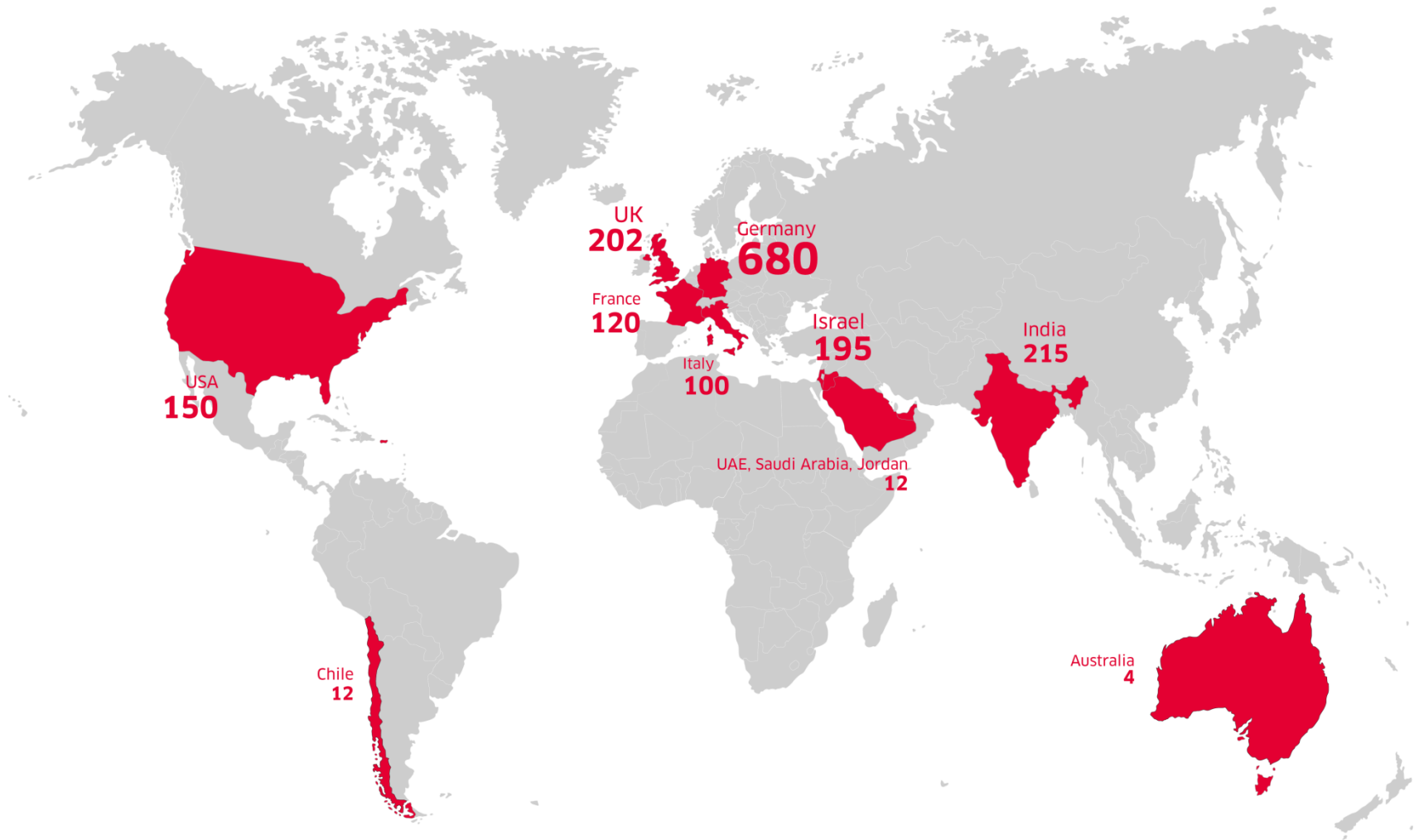
## Landscape Care





LONGTERM EXPERIENCE IN NEARLY ALL AREAS AND ALL CLIMATIC CONDITIONS

# O&M Global footprint







**BELECTRIC –  
The better electric.**