Renewable Energy Services
Onshore and Offshore Wind

2024

ENERGY & INDUSTRY DIVISION

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A Global, Full-range Technical Partner for Renewable Energy and BESS Projects

Applus+ provides independent, highly-specialized **technical advisory, engineering, quality control, testing and inspection services** for renewable energy and battery energy storage systems (BESS) projects all around the world. We support owners, developers, IPPs, OEM companies, financial institutions, and equity investors to minimize their risks across all stages of their projects, from feasibility and development, to construction and operations, covering all required specialties.

Our **specialised brands for technical advisory services** for renewable energy and BESS projects:

ENERT/S Applus+

barlovento Applus+

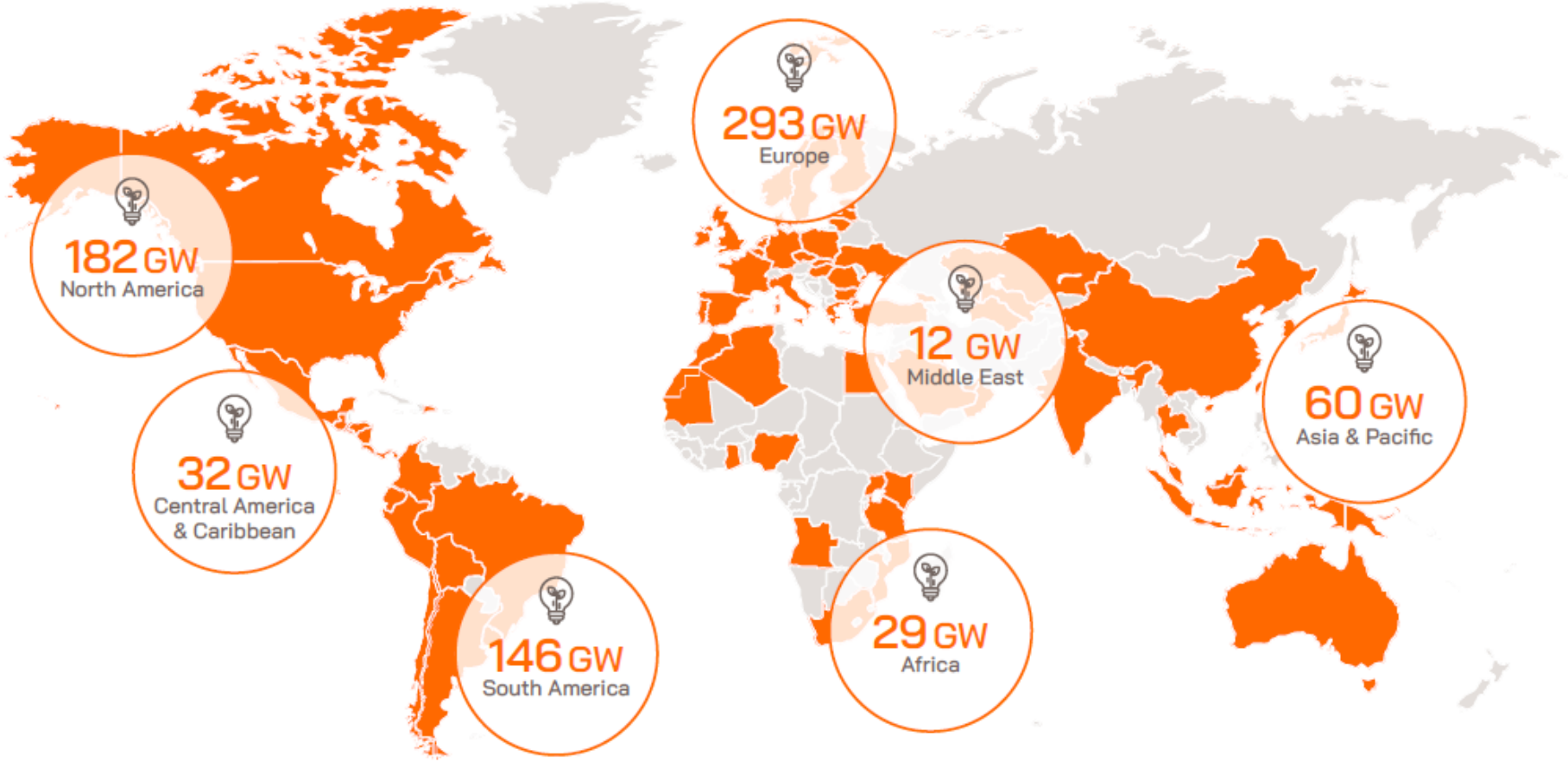
+750 GW
Track record in solar PV and wind

+30 GWh
Track record in energy storage

+20
Years of experience in renewable energy

+70
Countries

Global Presence and Track Record in Renewable & BESS Projects



TECHNOLOGIES

- Wind onshore & offshore
- Solar PV & CSP
- Storage
- Green Hydrogen

Technical Advisory by

ENERT/S Applus+

barlovento Applus+

- Red Flag Analysis
- Wind Resource & Energy Yield Assessment
- Feasibility Studies:
  - Capex/Opex Projects estimation
  - Power Quality Studies / Grid Code
- EPC, O&M, TSA & PPA Contract Advice
- Technical Due Diligence*
- QA/QC & Vendor Surveillance Services
- Engineering Services:
  - Conceptual and Basic Engineering*
  - Onshore Substation Detailed Engineering
- Owner's Engineering Services & Project Management
- Asset Management & Operations Advisory
- Power Performance Testing
- Wind Turbine Testing

** Service available only for onshore wind projects*

Testing and Inspection

During Development and Construction

- Environmental Impact Assessments
- Technical Feasibilities Studies*
  - Geotechnical & Topography ...
- Quality Control during Manufacturing:
  - Wind Towers, Jackets, Monopiles and Transition Pieces
- Recruitment Management Support
- Construction & Commissioning Supervision
- Environmental and Health & Safety Coordination

During Operation

- Advanced Drone-Based Blade Inspections
- Mechanical Inspection and Testing:
  - Wind Tower, Gear Box, Shaft ...
  - NDT Services (Conventional & Advanced)
- Electrical Testing & Condition Assessments
- Thermographic Inspections
- EHS Advisor & Regulatory Review (SALEM®)
- Civil Inspection and Testing:
  - Foundations and Verticality*
- BoP Maintenance & Statutory Inspection

** Service available only for onshore wind projects*

Some of our Clients

We provide our best-in-class, cutting-edge services to OEM companies, owners, developers, IPPs across all the stages of their onshore and offshore wind projects.

Top OEM companies

Vestas
SIEMENS Gamesa RENEWABLE ENERGY
GE
NORDEX
ENERCON ENERGY FOR THE WORLD
ENVISION
WEG
VENSYS

Utilities, project owners and developers

MAINSTREAM RENEWABLE POWER
RWE
SSE
ENGIE
IBERDROLA
enel Green Power
acciona
Shell
capital energy
aes
lightsource bp
ACWA POWER
EDF
Masdar A MUBADALA COMPANY

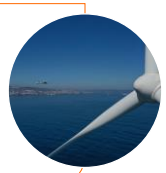
Applus+ Innovation and Digital Solutions for Wind Projects

Innovation is present throughout Applus+ entire value chain. It is the engine that **facilitates and drives business**, contributing to the company's ongoing evolution. Being a leader in innovation is a unique model and one to which Applus+ will always be committed.

Applus+ is an **expert in developing and implementing innovative and digital solutions** to respond to our clients' needs and challenges. Our solutions for renewable energy projects include:

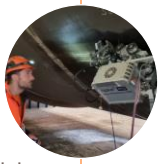
Advanced drone-based wind blade inspections

A complete, turn-key solution that combines the use of autonomous drones with high-precision, intelligent navigation technology for data capture and AI-based applications for analysis, damage assessment, and report generation with repair recommendations.



IWEX technology for ultra-advanced UT inspection for wind project manufacturing

The in-house developed Inverse Wave Field Extrapolation (IWEX) technology is based on full matrix capture (FMC). It allows locating and sizing defects in welds with great accuracy thanks to its 3D resolution. This technology is applicable to onshore and offshore wind projects and is mainly used for quality control of welds during the manufacturing process of wind towers, jackets, transition pieces and monopiles.



TRAZA solution for wind project management

This power-grid management platform, based on a geographical-positioning application, enables the management of day-to-day operation of wind projects, optimizing resources and helping to meet quality, deadlines, and budget requirements.

traza

Thanks!

www.applus.com