



December 2020

POWER

for today and tomorrow

Onshore Wind



1

INTRODUCTION BV P&U



Our mission

Shaping a world of trust



CREATED IN 1828

190+ years in business



BUSINESS TO BUSINESS TO SOCIETY

Quality, health & safety, environmental protection & social responsibility



FACT BASED UNDERSTANDING

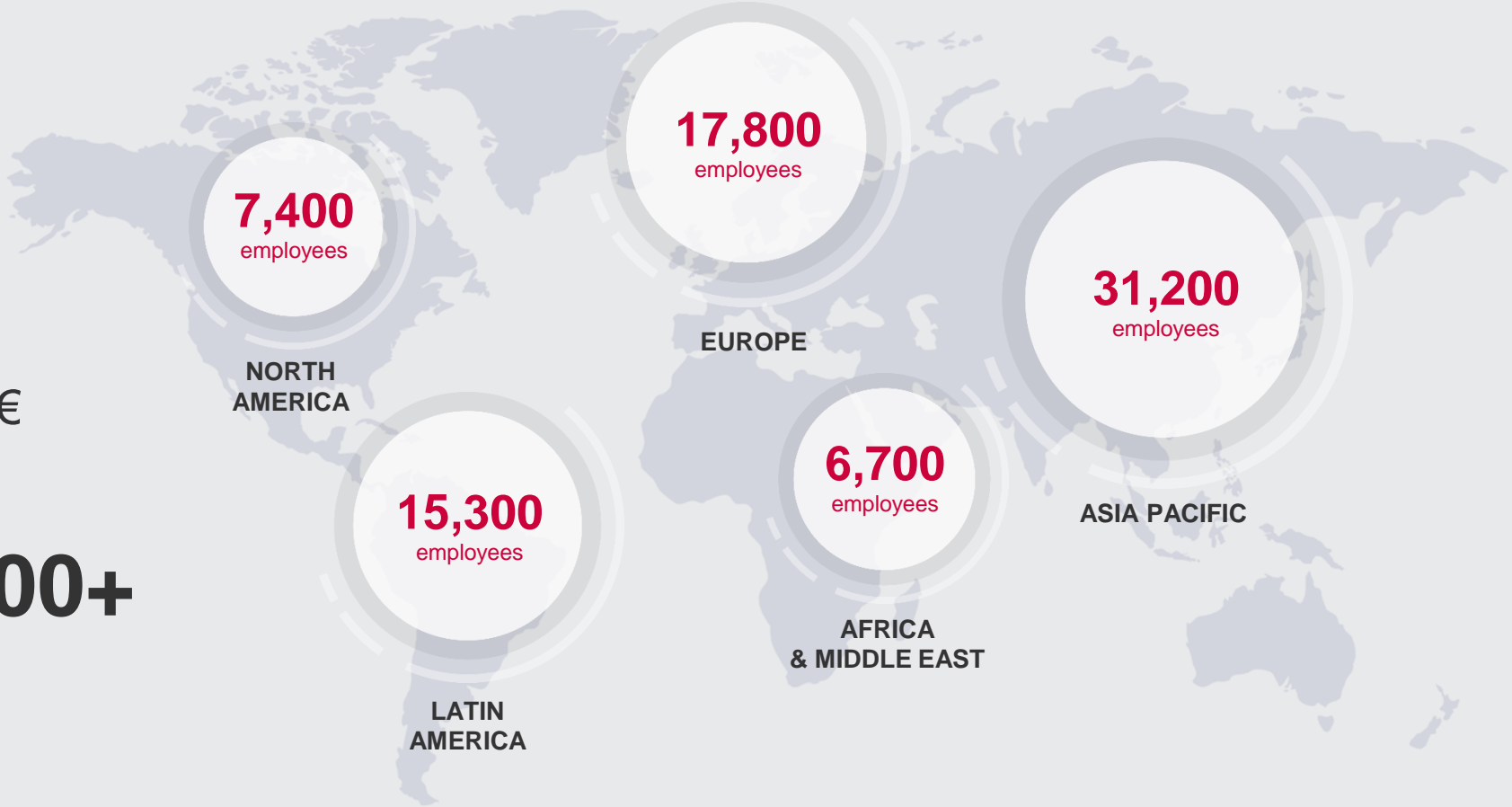
Testing, inspection, certification & technical services

Unique reach, unique scope

Unrivalled global presence and service portfolio

5.1 bn€
2019 revenue

78,000+
Employees



EXPERTISE



INDEPENDENCE



IMPARTIALITY



INTEGRITY



Your trusted partner in the energy transition



In power since around

1905



7,500+

Power experts



15

Global power centers
of expertise



4,000+

Power clients



Power references in

100+

countries



BUREAU
VERITAS



Addressing the issues of today

While building a low-carbon tomorrow



SECURING TODAY'S ENERGY NEEDS

1.2 billion

people have no access to electricity

60%

rise in electricity demand
expected by 2040

X2

increase in electricity demand in
developing countries in the next 20 years

Conventional energy generation is still critical in meeting today's rapidly growing energy demand



ACCELERATING THE TRANSITION

90%

increase in global CO₂
emissions since 1970

70%

reduction of energy-related CO₂ emissions
by 2050 necessary for a climate-safe future

> 60%

of power projects to come online
by 2020 will be renewables-based

The energy sector is on the front line of the fight against climate change, and renewable energy has a pivotal role to play



Safety, quality & performance



GENERATION

Low carbon

- Offshore & onshore wind
- PV & CSP solar
- Storage
- Nuclear
- Hydro
- Conventional thermal



TRANSMISSION

Power grids

- UHV DC power lines
- HV power lines
- HV sub stations
- Interconnectors



DISTRIBUTION

Utilities

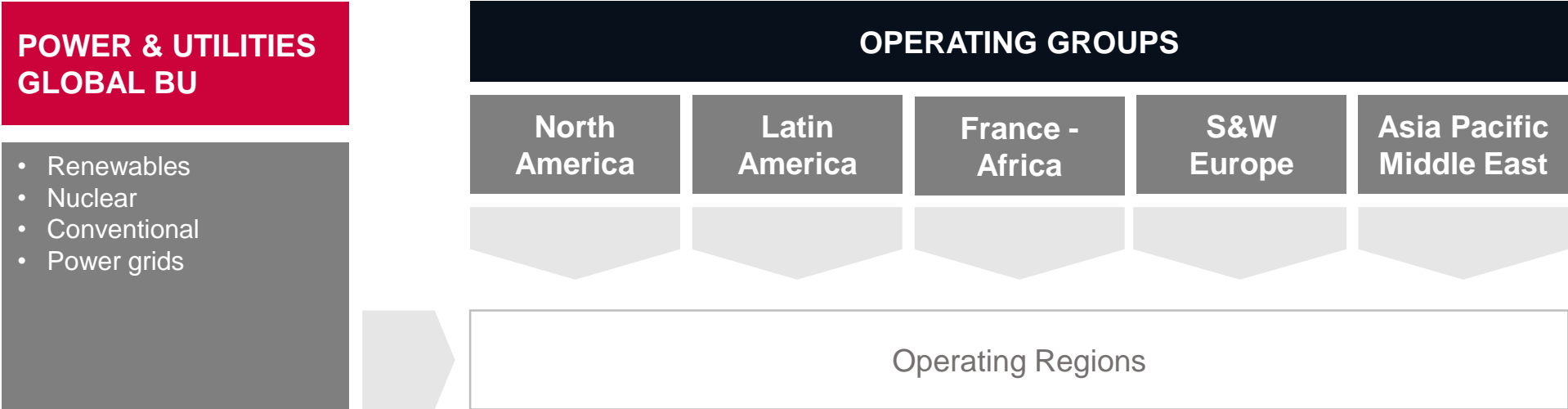
- MV/LV overhead and underground lines
- MV/LV sub stations
- Gas & water distribution
- District heating & cooling

ACROSS ALL STAKEHOLDERS: partner to owner-operators, developers, EPC-contractors, OEMs, lenders, governments and authorities

Power & Utilities Global Organization

P&U IS A GLOBAL BUSINESS UNIT IN BUREAU VERITAS

- Global direction with regional agility



Track record in power

Our customers



2

ONSHORE WIND

Onshore wind BV key figures



50+

GW installed capacity



500+

Onshore wind projects globally



50+

Active countries and regions



15+

Years experience



SAFE, RELIABLE & VIABLE WIND POWER

Full-scope certification covering turbines, foundations, offshore substation and inter-array cables

Delivered on time and on budget

Conformity verified

Risks assessed and mitigated

HSSE prioritized

Availability ensured

Maintenance costs optimized



CERTIFICATION

Demonstrate compliance & secure viability

- Approvals in Principle
- Component certification
- Type certification
- Project certification



DESIGN & PERMITTING

Reduce development risk

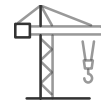
- Wind measurement & site assessment
- Grid connection assessment
- Design review
- Environmental impact assessment
- Permitting support
- Risk assessment
- Due diligence
- Investor / lender services



PROCUREMENT

Access a global, reliable supply chain

- Supply chain technical assessment
- Technical procurement support
- Shop inspections (QA/QC)
- Expediting
- Factory acceptance tests
- Transport, loading & unloading supervision



CONSTRUCTION

Run projects safely & to schedule

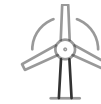
- Project & construction management support
- On site QA/QC
- On site HSE
- Turbine foundation supervision
- Commissioning and test run supervision
- Take over and end-of-warranty inspections



ASSET OPERATION

Periodic inspections of blades & main components

- Non-destructive testing
- Load measurements
- Vibration monitoring
- Thermographic inspections
- Oil analysis
- Endoscopic inspections
- Rotor balance inspections
- Earth termination measurements
- Training
- Failure & damage analysis



ASSET MANAGEMENT

Extend operating life & increase performance

- Maintenance strategies
- Condition monitoring & assessment
- Asset integrity management
- Reliability engineering
- Performance optimization
- Remaining life assessment & lifetime extension

3

REFERENCES



Case study

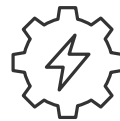
Onshore wind



01/2007 – ongoing



Worldwide



PROJECT

100+ projects on all continents

- > 3 GW projects supported in Europe
- > 1 GW projects supported in Asia-Pacific
- > 500 MW projects supported in Middle East region



BUREAU VERITAS' ROLE

Wide range of design, procurement & construction services:

- Component & type certification; design review
- Supply chain QA/QC
- Project management support & civil works construction supervision (foundations, roads, cable ways, substation building)
- On site QA/QC & HSE for mechanical & electrical installation (turbine assembly, crane works, sub station)
- Commissioning support and test-run & performance test supervision
- In-service component inspection (blades, nacelles, gearboxes, generators, towers)



Case study Siemens Gamesa

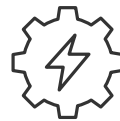
SIEMENS Gamesa
RENEWABLE ENERGY



08/2019 – 11/2019



Turkey



PROJECT

57,8 MW Hasanoba Onshore Wind

- 15 x 4,1 MW Siemens turbines



BUREAU VERITAS' ROLE

On site Health & Safety Management

- On-site HSE officers
- HSE supervision of civil works, electrical works and the turbine installations
- Sub contractor management & supervision
- Site risk analysis reports



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Case study Vestas

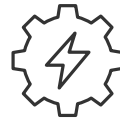
Vestas



10/2018 – 03/2019



Australia



PROJECT

Hallett Wind Farm (owned and operated by AGL Energy)

- Hallett 1: 95 MW
- Hallett 2: 71 MW
- Hallett 3: 152 MW
- Hallett 4: 53 MW



BUREAU VERITAS' ROLE

Insitu Wind Turbine Mainshaft inspection – shafttest®

- In-situ inspection of assembled mainshaft from end face (technician shown here performing a similar test on the ground).
- ShafTest® removes subjectivity from UT signal interpretation for improved test efficiency, POD and repeatability.



**BUREAU
VERITAS**

Case study

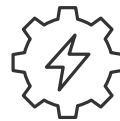
Enel Green Power



08/2017 – ongoing



Brasil



PROJECT

Wind farms in different areas of Brazil and Uruguay

- Shop inspection capex
- Opex wind farms



BUREAU VERITAS' ROLE

Supply chain management

- 5-year framework contract for the 2nd party inspection of the equipment manufactured in Latin America



Case study Siemens – Gamesa

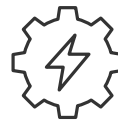
SIEMENS Gamesa
RENEWABLE ENERGY



02/2019 – 11/2019



Turkey



PROJECT

Denizli Wind Farm

- 74,8 MW Onshore Wind



BUREAU VERITAS' ROLE

Owner's representative

- Civil works supervision services for turbine roads, grouting, concrete pourings, administrative building constructions, substation works, drainage, foundation checks, etc.
- EHS on-site inspections as per local regulations and Client requirements
- Site risk analysis reports



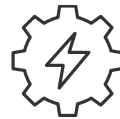
Case study Powerica Limited



04/2018 – ongoing



India



PROJECT

Wind farm portfolio in the states of Gujarat and Tamil Nadu

- 11 sites
- 203,35 MW
- Developed as IPPs



BUREAU VERITAS' ROLE

Integrated supply chain management

- Second party shop inspection of various electrical, civil, mechanical items (WTG components, nacelle, hub, blades, etc.)



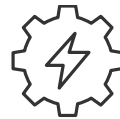
Case study Atria Power



10/2017 – ongoing



India



PROJECT

>30 operating wind turbines

- Savarkundala, Amreli, Gujarat
- Jagaluru, Davagere, Karnataka



BUREAU VERITAS' ROLE

Turbine foundation assessment

- Extraction of concrete cores
- UPVT on concrete segments
- Analysis of tests and inspection results
- Remedial measures for distressed foundations
- Supervision of recommended restoration measures for distressed regions of wind turbine foundations



Case study Senvion

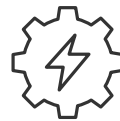
SENVION



11/2016 – 10/2019



Germany



PROJECT

Global Wind farm projects

- Large number of projects around the world



BUREAU VERITAS' ROLE

Supply chain management

- 3-year global framework contract for 2nd party inspections for equipment being manufactured in many different locations around the world
- Type certification, component certification



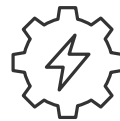
Case study **ENERCON**



Germany



06/2010 – ongoing



PROJECT

Global onshore wind construction portfolio

- Multi-site in so far 17 countries



BUREAU VERITAS' ROLE

Health & safety management

- On site HSE inspection & monitoring, during all stages of construction & installation, wind turbine + electrical and civil balance of plant, WTGs from 50 to 149m, from 800kW to 7.5MW



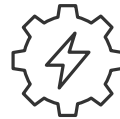
Case study Meridian Energy



New Zealand



01/2018 – ongoing



PROJECT

Several wind farms in New Zealand

- Te Uku, Raglan - Waikato Region
- West Wind - Wellington



BUREAU VERITAS' ROLE

Engineering safety inspections

- OPEX Services: Safety inspection of hydraulic cranes on 90 wind towers by IANZ certified inspectors



**BUREAU
VERITAS**



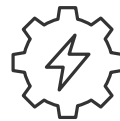
Case study Tecnoaranda



Spain



01/2012 – ongoing



PROJECT

Onshore wind

- Numerous wind projects in Spain



BUREAU VERITAS' ROLE

Manufacturing quality control

- NDT - MP, US, PD and VI – in the manufacturing process of wind towers for SIEMENS, VESTAS, EWT and INNOVENT



BUREAU
VERITAS



Case study

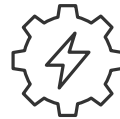
Enel Green Power



08/2017 – ongoing



Mexico



PROJECT

Wind and solar farms in different areas of Mexico

- Wind & solar farm portfolio across the country



BUREAU VERITAS' ROLE

Construction supervision

- Electrical and mechanical works
- QA/ QC on site during construction



Case study

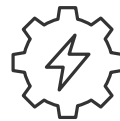
Enel Green Power



06/2010 – ongoing



Italy



PROJECT

Multiple projects across europe

- Large number of renewable energy projects in a wide range of countries



BUREAU VERITAS' ROLE

Supply chain quality management

- Shop inspection & expediting services at manufacturer facilities in countries across Europe



BUREAU
VERITAS



Case study

Sembcorp Green Infra



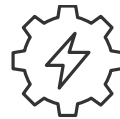
Green Infra Wind Energy Limited



India



06/2018 – ongoing



PROJECT

Wind farm portfolio across India

- 300 MW onshore wind



BUREAU VERITAS' ROLE

Development & permitting support

- Environmental site assessment



Case study

Sembcorp Green Infra



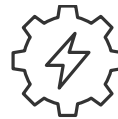
Green Infra Wind Energy Limited



India



02/2018 – ongoing



PROJECT

Wind farm portfolio across India

- 200 MW onshore wind



BUREAU VERITAS' ROLE

Health & safety management

- Fire risk audits



Case study Siemens Gamesa

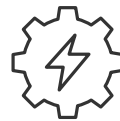
SIEMENS Gamesa
RENEWABLE ENERGY



Egypt



01/2020 – ongoing



PROJECT

250 MW West Bakr Onshore Wind

- 96 x SG 2.6-114 Siemens Gamesa turbines
- Developed and built by Lekela Power (backed by Mainstream Renewables and Actis)
- 30 k north-west of Ras Ghareb on the shores of the Gulf of Suez



BUREAU VERITAS' ROLE

On site Health & Safety Management

- On-site HSE officers
- HSE supervision of civil works, electrical works and the turbine installations
- Sub contractor management & supervision



**BUREAU
VERITAS**

Case study Siemens Gamesa

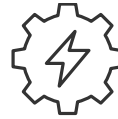
SIEMENS Gamesa
RENEWABLE ENERGY



04/2014 – ongoing



China



PROJECT

Several Gamesa onshore wind projects in China

- Hebei Senjitu Project (75 x 2.0 MW)
- Fujian Jiangkou Project (24 x 2.0 MW)
- Hebei Guyuan Project (50 x 2.0 MW)
- Thailand WED Project (30 x 2.0 MW)
- Shandong Feicheng Project (25 x 2.0 MW)



BUREAU VERITAS' ROLE

CAPEX services to deliver projects safely and to schedule

- Wind turbine tower sections manufacture supervision
- Wind turbine erection field quality inspection on site
- Wind turbine foundation construction supervision on site



**BUREAU
VERITAS**

Case study

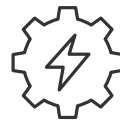
Enel Green Power



02/2017 – ongoing



Brazil



PROJECT

Onshore wind portfolio

- Several wind farm projects in Brazil and Uruguay



BUREAU VERITAS' ROLE

Supply chain services

- 5-year framework contract for equipment being manufactured in Latin America
- Shop inspection (QA/QC)
- Expediting
- Factory acceptance tests





Case study Vestas



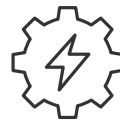
Vestas



10/2018 – 09/2019



India



PROJECT

100 MW Periappatti – Phase II onshore wind

- Owned & operated by Continuum
- 34 x Vestas V100-2.0 turbines + 14 x Vestas V110-2.0 turbines



BUREAU VERITAS' ROLE

Construction supervision

- On site QA/QC
- On site HSE
- Wind turbine commissioning inspection



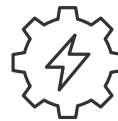
Case study CHN Energy



06/2015 – 08/2019



China



PROJECT

Several onshore wind projects across China

- Guohua Hami (300 x 2 MW - HZ)
- Guohua Santanghu (80 x 2.5 MW Goldwind)
- Guohua Linqu (23 x 2.2 MW – Envision)
- Guohua Qixia (60 x 2.5 MW - Goldwind (Gold wind 2.5MW*60))



BUREAU VERITAS' ROLE

CAPEX services to deliver projects safely and to schedule

- Wind turbine tower sections manufacture supervision
- Electric equipment manufacturing supervision (e.g. main transformer, GIS switchgear)
- Wind turbine in-service blade repairs
- Supervision on site
- Wind turbine commissioning and 240h test run inspection and supervision
- Wind turbines in-service inspections



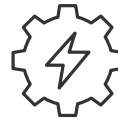
Case study Nordex



11/2014 – 01/2018



Turkey



PROJECT

Sarpıncık Wind Farm

- 72 MW Onshore – Nordex turbines



BUREAU VERITAS' ROLE

Owner's representative

- EPC management including civil works, surveyor works, electrical & instrumentation and mechanical works
- Supervision activities for all c_BoP and e_BoPs
- Test & Commissioning supervisions



Case study

Siemens Gamesa

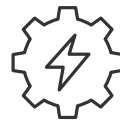
SIEMENS Gamesa
RENEWABLE ENERGY



03/2018 – 11/2018



Turkey



PROJECT

129,8 MW Üçpınar Onshore Wind

- SG 3.4-132 Siemens wind turbines



BUREAU VERITAS' ROLE

Construction supervision

- On site QA/QC for civil and mechanical works
- Sub contractor management & supervision (turbine roads, grouting, concrete pourings, substation and other administrative building constructions, turbine mechanical assembly, crane works, test & commissioning inspections, etc.)

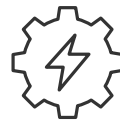


BUREAU
VERITAS

Case study Nordex



05/2015 – 02/2017



PROJECT

Sarpincik & Demircili wind farms

- 45 MW (Sarpincik) & 60 MW (Demircili) wind farms



BUREAU VERITAS' ROLE

Project management & construction supervision

- Project management
- Construction management; quality, cost & schedule control
- Vendor assessment
- Design review for WTG foundations, site and access roads & electrical and mechanical BoP systems
- Site surveyor works (QA/QC)



Case study

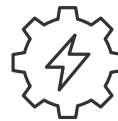
EDP Renewables



Romania



06/2016 – 05/2018



PROJECT

Onshore Wind portfolio

- 6 wind farms in Romania totalling 521 MW



BUREAU VERITAS' ROLE

Operational support services

- Frame agreement for inspection of the lifting equipment & vessels under pressure
- On site monthly inspections & monitoring of lifting devices and pressure equipment according to national legislation RSVTI



BUREAU
VERITAS



Case study Zorlu Energy

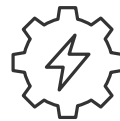
ZORLUENERJI



Turkey



06/2014 – 05/2016



PROJECT

Osmaniye Bahce I & II wind farms

- 135 MW wind (GE turbines)



BUREAU VERITAS' ROLE

Owner's representative

- On Site QA/QC inspection works
- Design review
- Manufacturer QA/QC controls
- Supplier technical assessment
- Commissioning for BoP and GE WTGs.

Case study

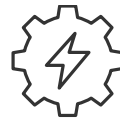
Selected Project References



01/2008 – 12/2015



India



PROJECT

- CESE Ltd. – 50 MW site QA/QC in Bhuj Gujarat
- Bhoruka – 50 MW site QA/QC in Bijapur Karnataka
- Gujarat Power Corp – 10.5 MW wind project at Charanka & Jamanwada, Gujarat.
- MSPL Gases Ltd. – 8.8 MW Wind project
- Reliance Clean – 30 MW Vastpet, Sangli Wind project
- Ramgad Minerals & Mines – 6.4 MW Wind project
- Enercon India – Geotech Investigation for Gadag & Shigaon in Karnataka, Kalugumalai & Chetkuruchi in T.N.
- Gamesa – Carrying out Core and UPVT Test on foundations in many projects
- Vestas – Carrying out Core and UPVT Test on foundations in many projects
- Acciona – ESIA for 160 MW Ravi Ujja, Bijapur project and for 80 MW Sun Photo Voltaic Energy, Belgaum, Karnataka
- Myhra Energy – OMS Audit for 4 sites in Maharashtra & AP



BUREAU
VERITAS

Case study

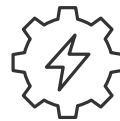
Acciona Wind



Spain



02/2015 – 03/2016



PROJECT

Type certification

- AW125-3000 TH 120 60 Hz Wind Turbine



BUREAU VERITAS' ROLE

Design assessment

- A-Design assessment according to GL 2010

Case study

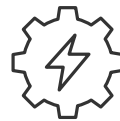
Acciona Wind



Spain



02/2016 – 11/2016



PROJECT

Type certification

- AW125-3000 TH100 60 Hz Wind Turbine



BUREAU VERITAS' ROLE

Design assessment

- A-Design assessment according to GL 2010



BUREAU
VERITAS



Case study Acciona



02/2014 – 03/2015



Spain



PROJECT

Wind turbine certification

- AW125-3000 TH120 50 Hz wind turbine



BUREAU VERITAS' ROLE

Type Certification

- Type Certification of 3MW wind turbine according to GL 2003/4

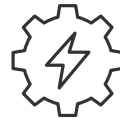
Case study Enercon



02/2012 – 10/2013



Poland



PROJECT

Several wind farm construction sites in Poland

- Kukinia, Kieselice, Wałdowo, Włynkówko, Stary Chwalim, Gadów, Tokarzew, Koźmin Wlkp., Zaskocz i Blenda (in total 45 wind turbines)



BUREAU VERITAS' ROLE

On site Health & Safety Management

- On-site HSE officers
- HSE supervision of civil works, electrical works and the turbine installations
- Sub contractor management & supervision

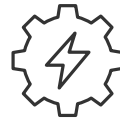




Case study C&C Wind



06/2014 – 12/2015



PROJECT

37,5 MW Orla Onshore Wind
• 15 X N100/2500 Nordex turbines



BUREAU VERITAS' ROLE

Owner's Representative

- Design review
- Technical assistance & permitting support
- On site QA/QC
- On site HSE
- Prevention plan for wind farm during the operational phase.



Case study

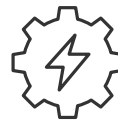
UPC & ACWA Power



Morocco



06/2016 – 03/2017



PROJECT

Khalladi Wind Farm

- 120 MW onshore wind



BUREAU VERITAS' ROLE

Construction supervision

- On site QA/QC
- On site HSE



BUREAU
VERITAS



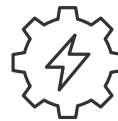
Case study Nareva



06/2013 – 08/2015



Morocco



PROJECT

Nakhfennir, Lhaouma & Foum Loued wind farms

- 100 MW, 60 MW & 60 MW onshore wind



BUREAU VERITAS' ROLE

Construction supervision

- On site QA/QC
- On site HSE



Case study Siemens Gamesa

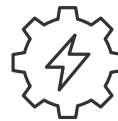
SIEMENS Gamesa
RENEWABLE ENERGY



Indonesia



01/2017 – 11/2017



PROJECT

Onshore wind portfolio

- Several wind farms in Indonesia



BUREAU VERITAS' ROLE

Construction supervision

- Construction safety services
- Wind turbine foundation construction inspection services



Case study

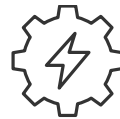
WTG Shop inspection references



01/2007 – 12/2016



India



PROJECT

- Adani Wind –
 - Inspection of turbines - accessories for 34 mw Rajala wind project
 - Inspection of Turbine Components at vendor works for 50 mw Sadla wind power project, Gujarat
- Servion – Design Review for WTG foundation
- Areva Renewables - TPI of electrical & mechanical equipments of windpower projects
- Suzlon – TPI of wind mill Tubular Towers
- Kenersys – TPI of wind mill components
- SEP Energy – TPI of WTG
- Bhilai Engineering – TPI of Wind mill structures
- Gamesa – TPI of electrical & mechanical equipments
- LM Wind – Inspection of wind mill blades for export job

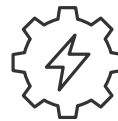
Case study ReNew Power



02/2014 – 06/2018



India



PROJECT

500+ MW project portfolio across India

- 50 MW Baleshwar-I Site at Karnataka, 40 MW Baleshwar-II site at Karnataka, 30 MW Limbwas-2 site at Khachrod, M.P., 51 MW Dangri, Rajasthan, 45 MW Dalot Rajasthan, 24 MW Parner Maharashtra, 59.4 MW Rojmal, Gujarat, 30 MW Nipaniya, MP, 18 MW Gude Maharashtra, 120 MW Dangri & Rajgarh, Rajasthan



BUREAU VERITAS' ROLE

Construction supervision services

- Shop inspection services for E&I equipment
- Civil foundation construction monitoring at site
- Deputation of civil / mech. / E&I surveyors at site
- Environmental monitoring at sites



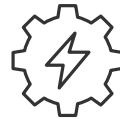
Case study Rio Energy



04/2015 – 11/2015



Brazil



PROJECT

54,4 MW Caetite A+B Onshore Wind Complex

- 3 windfarms
- 13 x 1,7-100 GE turbines
- Dedicated HV substation and transmission line



BUREAU VERITAS' ROLE

Owner's representative

- Specialized technical advisory services for the Inspection of High and Medium Voltage Equipment for the Substation

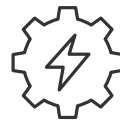
Case study ReNew Power



02/2014 – 06/2018



India



PROJECT

500+ MW project portfolio across India

- 50 MW Baleshwar-I Site at Karnataka, 40 MW Baleshwar-II site at Karnataka, 30 MW Limbwas-2 site at Khachrod, M.P., 51 MW Dangri, Rajasthan, 45 MW Dalot Rajasthan, 24 MW Parner Maharashtra, 59.4 MW Rojmal, Gujarat, 30 MW Nipaniya, MP, 18 MW Gude Maharashtra, 120 MW Dangri & Rajgarh, Rajasthan



BUREAU VERITAS' ROLE

Construction supervision services

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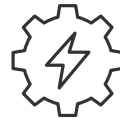
Case study Rio Energy



Brazil



01/2015 – 08/2016



PROJECT

207 MW Itarema Onshore Wind Complex

- 9 windfarms
- 69 x 3.0 MW Acciona turbines
- Dedicated HV substation and transmission line



BUREAU VERITAS' ROLE

Owner's representative

- Specialized technical advisory services for the Inspection of High and Medium Voltage Equipment for the Substation



Case study

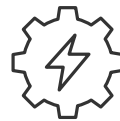
CHN Energy (Longyuan Power)



06/2016 – 12/2018



China



PROJECT

Fleet approach to a large number of Longyuan Power's installed base

- >10 wind farms in China (totalling > 1000 MW)



BUREAU VERITAS' ROLE

Operational support service provider

- ShaftTest inspection of turbine main shafts

Case study Eksim Holding

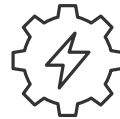
EKSİM
YATIRIM HOLDİNG



03/2015– 04/2015



Turkey



PROJECT

Tokat, Amasya & Susurluk wind farms

- 45 MW (Tokat), 45 MW (Amasya) & 65 MW (Susurluk) wind farms



BUREAU VERITAS' ROLE

Owner's representative

- On Site QA/QC inspection works
- Design review
- Manufacturing QA/QC controls
- Supplier technical assesement
- Commisioning for BoP and Nordex N90 – N100 WTGs.e



BUREAU
VERITAS

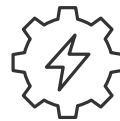
Case study CHN Energy



China



04/2016 – 12/2017



PROJECT

600 MW Hami Jingxia 4 Onshore Wind

- Xinjiang province, North-Western China



BUREAU VERITAS' ROLE

Owner's representative

- Project management
- Construction supervision
- Cost & schedule management
- On-site HSE
- Quality control
- Sub-contractor management





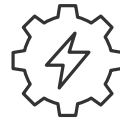
Case study CHN Energy



02/2012 – 08/2018



China



PROJECT

Fleet approach to a large number of CHN Energy's onshore farms

- >10 wind farms in China (totalling > 1000 MW)

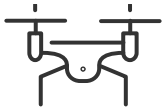


BUREAU VERITAS' ROLE

Operation Support & Condition Assessment

- Periodic gearbox inspections
- Foundation inspections
- Tower inspections
- Blade inspections (visual, vibration analysis, endoscopic, thermographic, NDT etc)

Powered by technology Innovation



REMOTE & AUTOMATED DATA COLLECTION

- Sensors
- Drones & robotics
- Imaging (HD, IR & LIDAR)
- Augmented reality (remote inspection)



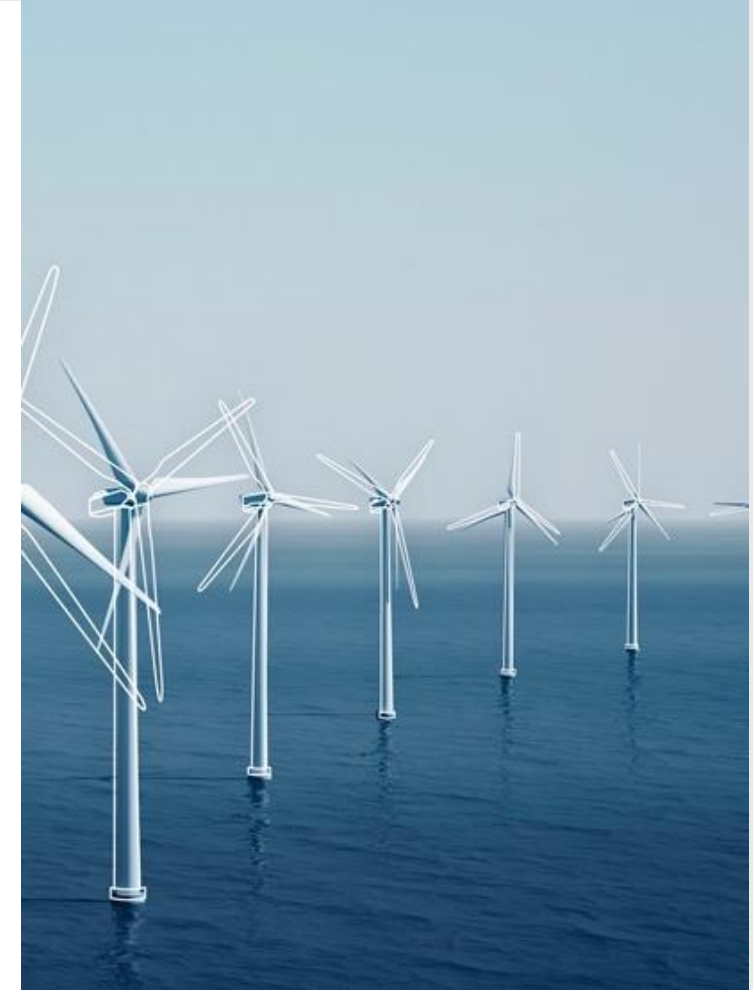
AI-BASED DETECTION & ASSESSMENT OF RISK

- Advanced image recognition
- Automated defect detection
- Predictive analytics



REAL-TIME PLATFORMS

- Analytic dashboarding
- Digital twinning
- Connected 24/7 subject matter expert advice





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