

Renewable Energy

India | USA | Italy | Japan | UK | Germany | France | Spain



Climate change and the need to manage diminishing fossil fuel reserves are two of the biggest challenges faced across the globe today. Electricity generation is the leading cause of industrial air pollution across the globe. To counter this, renewable energy sources are being explored extensively in research & development and product engineering in most countries across the world.

QuEST Global, with its decade of engineering experience in conventional power equipments has gained experience in analysis, design and surrounding engineering activities like electrical/controls. The proven experience has helped QuEST Global to quickly start engaging with key customers in their renewable energy engineering

requirements. With significant engineering experience with European majors in PV/Wind Farm engineering support, and technology know how in the entire value chain, the team is ready to take any renewable engineering challenge - from product engineering to balance of plant, systems across the entire renewable energy segment like:

- Solar-PV/Thermal
- Wind
- Biomass
- Small Hydro
- Tidal

Equipment Engineering (Turbine+Generator Set)					BOP Services (Wind/Solar farm)			
Renewable Systems		Wind	Solar	Hydro	Biomass	Electrical	Mechanical	Civil
QuEST Services								
Drafting and Modeling support	Drafting 3D-Modeling Legacy Data Conversion Design Localization Study Manufacturing Drawing Creation	✓	✓	✓	✓	Power Flow and Voltage Analysis	Detail Farm Design and Turbine Layouts	Service Road Network Design
Design Validation	Learn on Linear Impact Creep/Fatigue Analysis Rotor Dynamics Rigid /Flexible Body Dynamics	✓		✓	✓	Electrical Cable Transmission Line Engineering	Piping Layout	Wind Turbine Foundation Layout/Design
Aero Dynamics Design	Performance Analysis Thermal and Fluid Flow Analysis Single and Multiphase Flows Multi-Fluid Interaction	✓		✓	✓	Single Line Diagram (SLD)	Wind Turbine Generator Foundation Design	
Design Process Automation	CAD Development Process Automation Design Process Automation Upgradation of Design Programs	✓	✓	✓	✓	Complete Substation and Control Engineering		
						System Design and Shading Reviews (PV)		

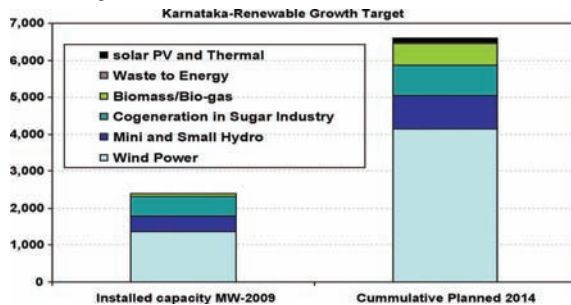
India – Come for Engineering, Stay for business.

'Electricity for all' – Social & Political Obligation: India Advantage

India is presently battling a 15.2% peak demand power deficit. Furthermore, it requires an additional 300,000 MW capacity by 2017 to sustain the growing GDP and related power requirements. The Government of India has planned major systematic investments to achieve this power target, which include:

- \$ 800 Billion investments by 2030 to meet energy demands
- \$66 Billion investments in transmission and distribution infrastructure
- Around 2 million in trained/skilled workers

Renewable Target: The Indian Government has plans to grow non-hydro renewable components of energy to around 20% by 2030, from the current status of around 8%. Karnataka is the leading state in renewable development and has various lucrative incentives for the investors to fuel its aggressive renewable target.

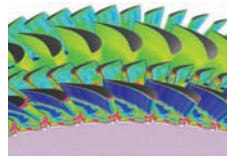


The Indian market is quite sensitive to price and ease of product usage. To tap the growing potential of this market calls for localizing products to local codes, standards and usage preferences.

QuEST Global offers a win-win support solution for the entire value chain of service offerings across a wide range of products, with significant investment in engineering services and beyond.

Investing in Engineering Services and Beyond

Design, Build, Assembly, Test & Repair



Recent Acquisition - Aero-CFD Capabilities

- Acquired ASE Technologies (in 2008) for high-end Aero-CFD Capability



High Precision Manufacturing

- Over 100,000 square feet of floor space servicing major OEMS



QuEST Global SEZ Based Low Cost Ecosystem

- QuEST's SEZ: 300 acre site to support entire system value chain
- Customs completed on site, 15 year tax holiday



Investing in Long Term Strategic Relationships

- API –QuEST SEZ Special processing JV with Magellan Aerospace (Canada)

Case Study: Aerodynamic Design Optimization of a Vertical-Axis Wind Turbine

Scope of Work

To optimize the design for aerodynamic performance (torque/power output) before going for prototype testing.

Task Executed

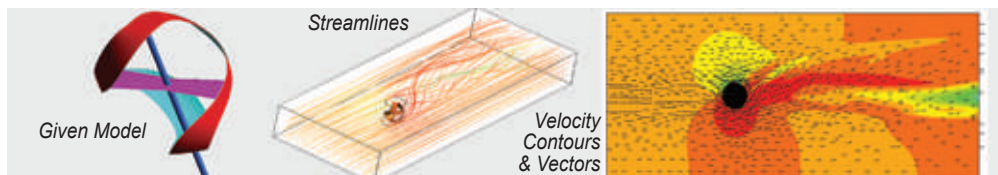
3D CFD analysis to –

- Validate the predicted power output for the given design and the operating

- condition (wind speed, shaft rotation), with the customer data
- Predict the power output at design operating condition (higher wind speed and shaft rotation)
- Further iteration to improve the design for expected power output

Value To Customer:

Significant cost savings on the prototype testing budget.



About QuEST Global

QuEST Global is a leading provider of diversified engineering services and manufacturing. The company helps customers in the Aerospace, Consumer Electronics, Healthcare, Industrial Products, Marine, Nuclear, Oil & Gas, Power Generation and Transportation verticals, to cut product development costs, shorten lead times, extend capacity and maximize engineering resources. We do this by providing support across the complete product life-cycle from design and modelling through analysis, prototyping, automation, data documentation, instrumentation and controls, embedded systems development, manufacturing support, vendor management and in-house precision machining.



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