



# RENEWABLE ENERGY - WIND & SOLAR



## STATE OF THE MARKET

With companies racing to implement environmentally sustainable production practices following the 2016 Paris Agreement, it is unsurprising that solar and wind photovoltaics are currently the fastest-expanding sources of electricity worldwide.<sup>1</sup> Driven by declining generation costs and rapidly advancing technology, global renewable electricity capacity is projected to grow by 42% by 2021.<sup>2</sup> Even developing countries—especially in Sub-Saharan Africa—will leapfrog to renewable energy generation.<sup>3</sup>

The next-generation phase of wind and solar power deployment will reduce carbon emissions and help countries meet the energy needs of their population. While this will inevitably fuel economic growth and increase energy security, betting on renewable energy alone could be risky. A dependence on weather conditions and subsequent variations in the availability of wind and sunshine make electricity generation from these sources a challenge. Consequently, hybrid power—integration of renewable and conventional energy—is likely to take center stage.

## SERVICE OFFERINGS

L&T Technology Services (LTTS) offers energy management and storage solutions as well as comprehensive services for the solar and wind power segment. We provide end-to-end design and validation services, while adhering to international compliance standards. Our offerings include design support and data management through Digital PLM Managed Services (DPLMS), PLM Transformation and Consulting Services (PTCS), power transmission, cloud-based support, control and automation solutions, and microgrid solutions for smart power distribution.

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### Footnotes:

1. International Energy Agency, Next Generation Wind and Solar Power, <https://www.iea.org/publications/freepublications/publication/NextGenerationWindandSolarPower.pdf>
2. International Energy Agency, Renewable Energy Medium-Term Market Report 2016, <https://www.iea.org/Textbase/npsum/MTrenew2016sum.pdf>
3. International Energy Agency, Renewables to Lead World Power Market Growth to 2020, <http://www.iea.org/newsroom/news/2015/october/renewables-to-lead-world-power-market-growth-to-2020.html>

# FROM DESIGN AND VALIDATION TO CONTENT MANAGEMENT

## Key Segments



Wind Energy



Solar Energy



Energy Management & Storage

## Service Offerings



Structural Design and Validation



Composites



Power Transmission



Digitization



Design Support and Data Management



Jigs and Tools

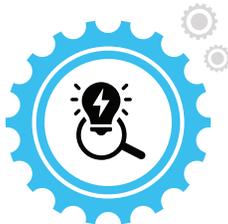


Electrical and Control



Content Management System

## KEY DIFFERENTIATORS



In-house smart solutions for lightning detection, vibration analysis, grid tied invertors, and micro grids



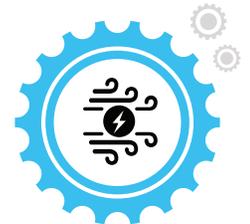
Control and automation experience with expertise to define and execute digitization roadmaps



Resource pool of over 200 with strong domain expertise and experience



In-house state-of-the-art power labs and facilities



Strong expertise in renewable and conventional energy to enable hybrid energy generation

## BENEFITS

- Produce efficient, low-cost power using sustainable methods
- Reduce product development cycle and optimize operational efficiency with advanced technology
- Comply with locally-certified standards governing product design and structure by leveraging our service suite
- Decrease maintenance costs through remote monitoring

## CASES



Designed mainframe for 100 kW wind turbine system which complied with safety and DNV-GL standards. Ensured quick turnaround, reduced the weight and complexity of yaw drive and consequently, lowered costs.



Optimized tower design to ensure it suits local transportation conditions. Ensured there was no resonance at 3P frequency. Identified mass savings of approximately 4 tons without any change in tower top mass, and reduced costs significantly.



Designed and developed software for a grid-tied solar inverter using MATLAB/SIMULINK simulation. Delivered a scalable, ready-to-market solution for solar power plants and larger capacities.

For more information visit us at [www.lnttechservices.com](http://www.lnttechservices.com)

Reach us at [info@lnttechservices.com](mailto:info@lnttechservices.com)



## About L&T Technology Services

L&T Technology Services Limited is a subsidiary of Larsen & Toubro Limited with a focus in the engineering services space, partnering with over 50 Fortune 500 companies. A leading pure-play Engineering, Research and Development services company, we offer design and development solutions through the entire product development chain, across various industries such as Industrial Products, Medical Devices, Transportation, Telecom & Hi-tech, and the Process Industry. We also offer solutions in the areas of Mechanical Engineering Services, Embedded Systems & Applications, Engineering Process Services, Product Lifecycle Management, Engineering Analytics, Power Electronics, Machine-to-Machine (M2M), and the Internet-of-Things (IoT).