L&T Press Release

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Larsen & Toubro's Digital Energy Solutions for Renewable Energy Integration and Power T&D gain wider reach

Mumbai, October 06, 2023:

The Digital Energy Solutions arm of L&T Power Transmission & Distribution business has significantly expanded its presence across India, Middle East, and North America.

In India, the business is implementing a key order to upgrade SCADA and associated systems in the National and Regional Transmission Asset Management Centers. Controlling one of the largest substation and transmission line networks in the world, the Power Transmission Asset Management Centers in India undertake sophisticated monitoring and control of the country's vast electric grid of more than 270 EHV Substations. With real time monitoring of system parameters and visualization of assets, several objectives such as early detection of anomalies, faster interventions, effective coordination, advanced analytics, and efficient operations are achieved. The mission critical upgradation will involve parallel operation of the existing systems deploying upgraded systems such as Transmission Remote Access System (TRAS), Automatic Fault Analysis System (AFAS), and Power Transmission Asset Cybersecurity solution (PTACS).

In recent months, the business has secured orders to implement Advanced Distribution Management Systems in Maharashtra and Gujarat.

In North America, the business is involved in implementing a slew of clean energy integration, utility operations and grid research projects. For a clean energy producer in California, the business is implementing a project to provide "Balancing Authority" (BA) control services for energy assets. The scope includes "day ahead", "real-time" and "after the fact" BA monitoring control and compliance services under NERC standards including the California Electric ISO Market interface system. The project will be delivered by the facility called HENOC (Hybrid Energy Network Operation Center) in Fairfield, California, USA. The facilities and personnel involved in the project are certified by USA NERC (North America Electric Reliability Council).

Building upon advanced energy grid simulation and modeling capabilities, multiple research & development and demonstration grant projects are being carried out for partners under contract with California Energy Commission (CEC) and USA Department of Energy (DoE).

Under a CEC grant, the US team of L&T Power T&D's DES business will make advancements to bi-directional inverter controls for Vehicle to Grid energy management. An Energy Grid Resilience Framework to facilitate transactive energy collaboration between utility and communities in USA is also under formulation through the USA DoE grant.

With increasing penetration of renewable energy in the grid, the business is engaged worldwide in providing commercial utility control room solutions for grid integration in collaboration with world's leading EMS-DMS suppliers to build next generation energy power management systems (EPMS). Having successfully completed the first phase of a project to integrate generation plants with utility T&D control room using OSI PI system, the Middle East team of L&T Power T&D's DES business has been entrusted with the second phase of the project, by a large energy utilty in the region.

Such worldwide project engagements reflect the endorsement of capabilities built by the business for delivering advanced technology integration solutions for both in front-of-meter (IFM) and behind-the-meter (BTM) utility operations.

The offerings of the business are centered around **L&T-***Spark*™, a high-end technology integration platform for utility grid control room operation, especially designed to work in conjunction with field proven EMS-DMS products of leading OEM's. The platform facilitates integration between tertiary controls from T&D control room and grid automation controls at substation and/or plant control rooms.

L&T-*Spark*™ consists of **L&T-***Spark*-**HECS**™, **L&T-***Spark*-**CSMR**™ and **L&T-***Spark*-**SHEMS**™, designed for integration of renewable hybrid plants, substations, and electric vehicles respectively.

L&T-*Spark*-**HECS**™ **for Renewable Hybrid Energy (RHE) plant control integration:** L&T Spark Hybrid Energy Management and Control System (HECS) is a hardware agnostic software defined solution to monitor, regulate and control hybrid plants consisting of solar, wind and energy storage. The solution can also be deployed as an independent solar power plant controller (**L&T-***Spark*-**PPC**™) or battery energy control system (**L&T-***Spark*-**BECS**™).

L&T-*Spark*-**PPC**™ systems have been deployed at GSEC and NTPC sites in India. **L&T-***Spark*-**BECS**™ systems are in operation at Hazira in India and Washington State University site in Pullman, WA, USA.

L&T-*Spark*-**CSMR**™ **for Utility & Merchant Energy (UME) substation integration:** L&T's Spark Common Substation Middleware & Reporting (CSMR) System is a substation data integration platform for grid operator's situational awareness powered by real-time data analytics and visualization to ensure grid reliability and maximum system availability.

The product has been deployed in Odisha, India integrating more than 130 substations equipped by different substation technology OEMs. Also, the **L&T-***Spark*-**CSMR**™ has been fully tested for its capabilities through real-life integration validation with substation IEDs (Intelligent Electronic Devices) of multiple OEMs deployed as part of Digital Substation project in L&T Construction's Manapakkam Campus, Chennai, India.

L&T-*Spark*-SHEMS™ for Electric Vehicle Energy (EVE) integration: L&T's Spark Site Hybrid Energy Management System (SHEMS) is a tool for BTM (Behind the Meter) Utility operation. The tool is built for the real-time energy management & control of Electric Vehicle Supply Equipment (EVSE) infrastructure integrated with onsite energy assets and the grid import/export power.

L&T-*Spark*-SHEMS™ has been in production at a commercial EV Charging site in Philadelphia, PA, USA.

As **L&T-*Spark*™** is integrated with industry standard simulation design tools such as PSSE, PSCAD and others, consisting of **advanced power system modeling and simulation algorithms**, the platform enables the business to provide a comprehensive service offering under **L&T-*Spark*-DEGS™** (Digital Energy Grid Services) portfolio comprising the following:

T&D Engineering & Simulation services | Clean Energy planning & Simulation studies | Electric vehicle and fleet charging feasibility and design | Engineering services for engineered equipment package | Bulk power balancing authority | NERC CIP / Cyber security compliance Design, Monitoring & Reporting | Community & Grid Resilience planning | Asset monitoring & Condition monitoring services | HENOC – BA Services for North America

A state-of-the-art Test Verification Lab powered by **L&T-*Spark*™** in conjunction with world's leading simulation test engines for Software In Loop (SIL) & Hardware In Loop (HIL) Simulation Testing has been established at L&T Construction's Manapakkam Campus in Chennai, India.

Commenting on the development **Mr. T. Madhava Das**, *Whole-Time Director & Sr. Executive Vice President (Utilities), Larsen & Toubro* said: "*We thank our customers for entrusting these projects with us. We are resolute in advancing the state of art of the digital electric grid solutions worldwide, leveraging our deep domain expertise in the core areas of Power T&D and Renewable Energy*".

Mr. S.N.Subrahmanyan, Chairman and Managing Director of Larsen & Toubro, said: *"The intelligent and resilient electricity grids are crucial to ensure access to affordable, reliable, sustainable and modern energy for all. We are glad that the digital energy solutions built upon our ethos on 'technology led sustainable growth' help customers and countries accelerate the clean energy transition in India and overseas."*

Background:
Larsen & Toubro is a USD 23 billion Indian multinational engaged in EPC Projects, Hi-Tech Manufacturing and Services. It operates in over 50 countries worldwide. A strong, customer-focused approach and the constant quest for top-class quality have enabled L&T to attain and sustain leadership in its major lines of business for eight decades.

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