

Scalable AMI solutions by Kimbal catalysing modernisation of energy distribution

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As one of the fastest-growing economies in the world, India is on a trajectory of rapid industrialisation, urbanisation, and infrastructure development. In the interim budget of 2024-25, ₹11.11 lakh crore is being allocated for infrastructure projects. This economic acceleration drives demand for affordable, reliable, sustainable, and safe electricity. In the past decade, energy generation in India has experienced new peaks, which is robustly supported by India's one grid- a commendable feat achieved in a country of 1.4 billion people. Nevertheless, it is high time that the consumer at the last mile gets due attention to ensure efficient and aware energy consumption, bringing the energy distribution ecosystem to the focal point.

As an energy-tech organisation at the forefront of building tools to modernise the distribution grid, Kimbal has deployed integrated Advanced Metering Infrastructure (AMI) solutions, combining smart meters, RF-mesh communication infrastructure, and Head-End-System (HES) to 20 lakh consumers nationwide, and another 1.2 crore deployment is under progress. In adherence to international protocols like EC 62056, IEC 62052 and IEC 62053, DLMS's smart meters are designed

with Firmware Upgrade Over-the-Air (FOTA) capabilities that enable utilities to adopt new features and protocols without needing hardware replacements, ensuring long-term interoperability and scalability.

As a technology-first organisation, Kimbal has adopted automation at all critical steps of its manufacturing process to reach the highly intended 0-defect goal. HES is another critical AMI component, designed using a flexible architecture that enables seamless integrations with other smart meter brands. Enabled by the power of the cloud, it is designed to handle growing network sizes efficiently and offer automatic scalability to utilities without performance degradation. One of the recent advancements in communication infrastructure technologies is an In-meter Gateway. It is a simple plug-and-play component for smart meters to deploy RF-mesh nodes quickly and economically without any cumbersome site planning.

The energy transition is happening quickly, and some of the emerging technologies that will shape its future include AI/ML, blockchain, edge computing, distributed computing, microgrid technologies, and 5G

connectivity. Kimbal is currently building an energy management solution powered by AI/ML. The company has a field-proven AI-enabled meter reading solution for static meters that functions at up to 90 percent accuracy and has been instrumental in helping utilities improve their billing collection.

Indeed, local resistance to electricity bill payment is not a new challenge for India. Therefore, as we move forward to this transition to smart meter-based infrastructure, we must allocate budgets to DISCOMs for public awareness campaigns that educate consumers about the countless benefits of smart meters. Additionally, the liquidity crisis in the industry warrants due attention, with the finance ministry considering smart meter manufacturing as a priority sector for lending. This move and extended credit limits could alleviate challenges such as over 100 days of inventory and 150 days of receivables from AMI service providers. ⚡



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