How Tata Power is bringing data, AI, ML to energy mgmt

Sujit.John@timesgroup.com

Most big cities in India have major power problems, but those are mostly due to governments not investing sufficiently in distribution infrastructure, and/or not raising power tariffs in line with costs. Private distribution companies, however, are beginning to use digital technologies to manage their grids better, identify power theft, and give customers a near real-time view into their consumption patterns, enabling them to contain costs.

Praveer Sinha, CEO of Tata Power, a distributor of power in Mumbai, Delhi and Odisha, says that over the past few years, the company's engineers have built world-class solutions. These have involved use of technologies like IoT (smart meters), and AI/ML.

DIGITAL TRANSFORMATION

"The integration of electrical energy and information technology is the big change that has happened. We can now monitor everything on a real-time basis. I know exactly how much the consumption is on your street, your house. I can understand if you have used a microwave, an AC, whether a person switches on their geyser at 8am or 8.30am," he says.

All of this data is processed to provide insights to both customers and the company. Customers have an app that provides a variety of information. "In the middle of the month, I tell them this is how much you have consumed so far this month, last year in this month it was only so much, if you consume at the same rate, you will cross that and go into the next tariff slab. I can say you are using an old airconditioner, and if you were using a 5-star rated AC, this would have been your consumption," Sinha says.

Nilesh Kane, chief of distribution for Mumbai in Tata Power, says they have developed AI/ML logic that understands how much power a 3BHK or a 2BHK flat in South Mumbai or Panvel consumes on average, and on that basis figure out if a flat might be stealing power. There are thousands of transformers in a city, and it was traditionally difficult to monitor each. But now, systems can real-time look at input energy and output energy at the transformer level and instantly know losses in each.

Sinha says a huge benefit is also in their ability to design and optimise the power network, since they know precisely how much power will be required by locality, by month, by day, by weather conditions.

The company has 150 engineers in Delhi, and more than 400 in Mumbai. "We started doing it all ourselves because things like billing solutions and payment solutions of global companies are very standardised, while in India, we have some 120 categories of customers, each with different tariff structures, we have diverse payment mechanisms," he says.

> Our engineers have combined IT and electrical technology to develop solutions that are as good as those at any other company in the world, be it San Diego Gas & Energy, Tokyo Electric Power, or E.ON in Germany.
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> **Praveer Sinha** | CEO & MD, TATA POWER

> We have cut distribution losses substantially in Delhi and Mumbai because data now enables us to identify problems like power theft at the transformer and customer levels.
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> **Nilesh Kane** | CHIEF DISTRIBUTION (MUMBAI), TATA POWER