

# Power losses: technology to the rescue

Service providers are helping distribution firms detect theft and meter tampering in real time

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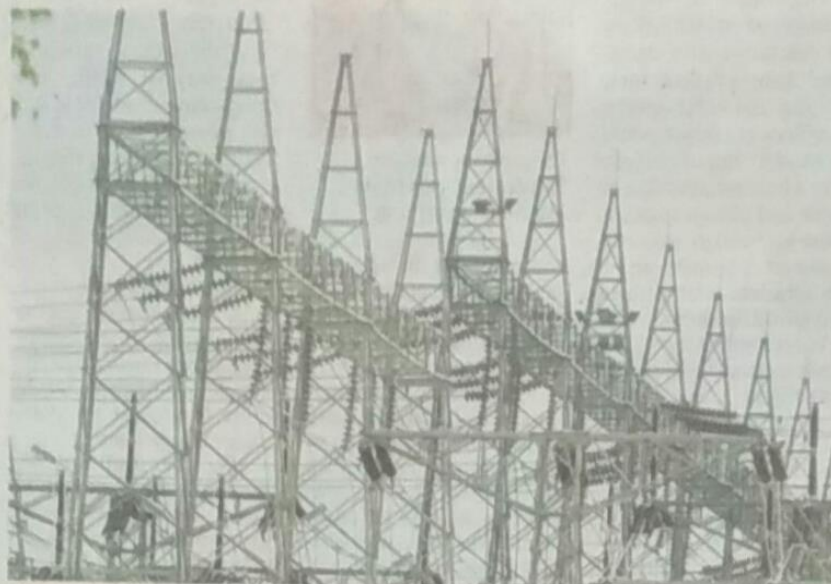
The high rates of transmission and distribution losses in India, up to 60% in some states, have led to a profusion of technologies emerging to at least address the non-technical losses occurring due to power theft and meter tampering.

Companies such as Omron, Sensus and even phone handset maker Nokia have begun operations in this sector – helping power distributor companies detect and address power theft and meter tampering in real time. Others have begun work to reduce costs by enabling remote reading of meters, doing away with the need for a physical check at each meter location.

Omron, for example, has been developing a sensor that can be integrated with meters, allowing the detection of any sort of tampering, be it physical (when the consumer jolts it in the hope that the meter reading will pause) or electromagnetic (where the consumer applies a charge in the vicinity of the meter, which renders it temporarily dysfunctional).

"We came up with a tamper-detection sensor last year," Vinod Raphael, country business head, Omron Electronic and Mechanical Components division, India told *The Hindu*. "We have started to do pilots in order to prove to the power utilities the value of these sensors. The sensor is integrated into the metres."

Pilot projects are being done in partnership with Tata Power, Mr. Raphael added, saying that the preliminary results have shown that the sensors integrate per-



**Gauging theft:** Sensors that detect tampering of lines assume importance in a country like India, which has about 4 lakh kilometres of distribution lines.

fectly with the metres. "Now, we are looking to scale it up," he said. Along with a sensor for meters in consumers' households, Omron is also working on a Line Monitoring Sensor that can detect power theft at the point of the distribution cables.

## Detecting imbalances

A key reason behind the non-technical losses in electricity distribution is due to 'hooking' or theft using a hook on the cable and the resulting diversion of electricity, Mr. Raphael said. "Now, we have started the development of sensors that can be clamped onto low-tension distribution lines and can detect load imbalances."

The sensor uses GSM technology to transmit the data to the distribution company's central server, so that the utilities can gauge that something is wrong.

These sensors assume im-

portance in a country like India, which has about 4 lakh kilometres of distribution lines. A key problem in bringing this sensor technology to India is the variety of utility service providers and the actual physical locations of the meters themselves.

"To connect the smart meter and bring the data to the control centre, you need an effective, reliable and secure communications system," Amit Valdyia, director, Strategic Customer Team at Sensus said.

"Around 32% of Indians are in urban centres. And there are different categories of customers getting serviced by different utilities. And these smart meters are deployed in tough locations like basements."

Another concern is the slow pace at which India is adopting modern technology that could greatly increase the efficiency of operations

in the electricity sector.

"In India, my view is that 5G applications are more in IOT (Internet of Things) and that needs to develop much more in India," Bharti Airtel chairman Sunil Mittal told *The Hindu* in a recent interview.

"Today, all electricity meters should be read by IOT. Why should anybody go for meter readings, I can't imagine? We should be able to just have an embedded chip meter that would pay for itself as well. An Airtel money account or another wallet reads the meter and pays for itself. These things are going to happen but I think India is slightly lagging behind."

Angellique International has developed a smart meter that seeks to address the issue.

"Smart meters communicate meter readings directly to electricity distributors,

eliminating the need for someone to come out and read meters - whether that is required for each bill, to change electricity retailers or to reconnect power when customers move house," Rakesh Kumar Ahuja, senior vice president at Angellique International said. "Since one becomes wiser in using electricity, one can instantly know how much to use and consume."

"Smart meters cannot be bypassed, and can be read with the help of a remote device," he added. "Very soon, we will have a communication cable that can be controlled and operated through a central department."

Another issue in India behind the poor delivery of electricity to the end consumer is failing infrastructure and, here too, the integration of communications technology could help address the problem.

Following a recent deal with Nokia, Tata Power Delhi Distribution Limited (TATA Power-DDL) become the first Indian power utility to deploy tele-protection services over its entire network. Using the new upgraded system, Tata Power-DDL will be able to receive almost-instant updates of any fault in its infrastructure and reroute power through alternative lines to minimise the disruption to the end consumer.

"The system connects all our grid stations and ensures there is tele-protection and in case there is a fault, then it can be addressed immediately," Praveer Sinha, CEO & MD, Tata Power-DDL said. "The consumer should never have to purchase digisets or inverters."