

## ElectronVibe Case Study Series

# IOT ENABLED FAULT DETECTION SYSTEM PILOT

WITH POWEREASY AND TATA POWER-DDL

## POWEReasy

### ABOUT POWEREASY

POWEReasy delivers world class power in the face of deteriorating grids and semi-skilled electricians.

### SERVICES

POWEReasy has developed different IoT enabled products that reports 20 electrical faults (arc faults, neutral faults, reverse phase, etc.) including:

- Smart Optimizer - relies on automatic voltage optimization to save energy. It uses Machine Learning to adjust the output voltage to an optimal level for varying loads. It does this automatically
- Smart DB: Provides real-time electrical audits that are reported to the cloud. The upgraded version comes with an in-built voltage stabilizer

### VALUE PROPOSITION

- It optimizes electrical usage and helps achieve electrical immunity.
- Identifies up to 20 electrical faults
- POWEReasy's systems are easy to install and are low in cost for grids and facility managers. Its systems automate as well as improve the efficacy of proactive fault diagnosis, electricity audits, and optimization.
- Systems installed are supported by a team of electrical experts who monitor and report the facility's electrical health via a remote command centre.



Founded in 2013  
Founder: Dr. Tejas Jhaveri



Domain  
Safety



Winner of  
ElectronVibe 2020



Headquartered in  
Mumbai, MH



Website  
[www.powereasy.in](http://www.powereasy.in)

# THE PILOT

## ESTIMATED IMPACT

With **20%** Smart Optimizer rollout in the TPDDL LT feeder network



**Rs. 8.44 Lakh\***  
(ROI: 20 months)

Average savings from the installation of 10 Smart Optimizer to 1 LT feeder



**Rs. 230 Crore\***

in increased profit for TPDDL per year due to increased operational efficiency



\*Assuming a CAPEX investment business model

## GREATER IMPACT

for Delhi  
Approx.

**50,000**

LT Feeders,  
with 5 lakh Smart Optimizers installed



Approx.

**3,800 Cr**

Potential Savings for Discoms per year\*



\*Assuming a CAPEX investment business model



## CHALLENGES

- North & North-West Delhi (510 sq. km)
- 1.76 million consumers
- Peak Demand: 2069 MW

- Currently, there are approximately 15,000 LT feeders installed across the Tata Power-DDL network with losses estimated at Rs. 15.4 lakh per feeder annually from revenue and distribution loss
- Tata Power-DDL were looking for solutions that would provide real-time status of Line Parameters and Protection/Alert towards a variety of electrical abnormalities in the network along with optimizing the output line voltage.

## SOLUTIONS

- As part of an initial pilot program, POWEReasy has installed two 30KVA Smart Optimizers to LT feeders at Sangam Vihar and Jharoda Chawki locations on March 22nd, 2021.
- The devices communicate the data on a web portal and details such as power consumption, phase-wise loading, phase voltages, power factor, and other line parameters are analyzed and presented to the user.
- The smart optimizer system promises to optimize power quality, provide instant, localized root cause analysis, and avoid disruptions to the entire feeder at a CAPEX cost of Rs. 14.4 lakh per feeder (with an average of 10 smart optimizers installed per LT feeder)

## OUTCOMES

The data shared by the Smart Optimizer was noted to be beneficial to Tata Power-DDL in many ways most notably for the following points:

1

Generally earth resistance is measured as per schedule. A damaged earthing or high earth resistance is high risk. The Earth voltage alert system **helped TPDDL identify poor earthing in the network**, when the site was visited and manually checked, 37 Volts was Identified between neutral and earth which was rectified by providing new earthing.

2

A loose connection alert was received and when the joint site visit was done damaged consumer wirings were observed as key reasons. At one location, a loose connection in distribution box was found and rectified. Thus such alerts **helped TPDDL in mitigating fire risk** and damage to the asset.

3

Real time feed of line parameters **helped TPDDL in understanding load pattern in areas**. Large switching of inductive load in Sangam Vihar area resulted in a regular power factor dip between 7AM to 9AM. A similar pattern was observed for the Jharoda Area between 3AM and 5 AM.

Tata Power DDL plans to install more Smart Optimizers for dedicated consumers to better understand and fully utilize the features of the system