



INTERNET OF THINGS
hIoTTron

Smart Distribution Transformer
Monitoring System (DTMS)
Technical Details



About HIOTRON



Hiotron Pvt. Ltd (hIOTron[®]) is an Indian technology corporation focused on development and implementation of Internet of Things based Products and Solutions. Our plug & play modular & industrial hardware & IoT platform allows businesses to securely connect, manage and analyze data from legacy to modern devices or assets.

We develop, manufacture, support, licenses IoT Platform and sell IoT based consumer, industrial electronics & software services. Hence, we provide a complete ecosystem for IoT solutions right from training, design, hardware manufacturing, integration, platform, analytics and support to any business or individual to make their IoT journey simple and successful.

Currently, Very Few companies have the in-house skills and tools to build IOT solutions quickly and cost-effectively whereas our in-house development team is very much expertise in all the major vertical of IOT technology such as custom PCB design/hardware development, embedded software development, device-cloud/network integration, communication/web protocols & IT experts, front-end/mobile app or Web-App development & big-data analyst.

Core Expertise

Connectivity

ModBus, ProfiBus, Profinet, CANBus, RS232/485, Wi-Fi, ZigBee (Star/Mesh), LoRa (868 or 915 MHz), Z-wave, Sub-1, Bluetooth, BLE4.0, IR, NFC etc.

Semiconductor

Freescale, Marvell, Atmel, TI, QUALCOMM, Microchip & Many more.

Communication Channel

Wi-Fi, Ethernet, GSM/GPRS (2G,3G,4G), GNSS, LTE.

Cloud Platforms

AWS, IBM Blue-mix Watson, Azure IoT, Thing-Worx, hIOTron® & Private.

Communication & Queuing Protocols

MQTT, REST, Web-sockets, COAP, XMPP, AMQP.

Databases

Cassandra, MongoDB, Raven DB, MySQL, Oracle, MS-SQL.

Mobile Application

Android, iOS, Windows.

Standards

OPENIoT, HomeKit, Thread, Nest, Alljoyn, Brillo & Weave.

Achievements

**7.6 Years
in Existence**

**35+
Team Members**

**7+ Project
Managers**

**Completed 354+
Projects**

**21.5k IoT
Devices Deployed**

**For 16+
IoT Applications**

**In 33
Cities**

**Across 5
Countries**

Clientele



JOHN DEERE



TATA TECHNOLOGIES



HITACHI
Inspire the Next



TATA MOTORS



SUTTATTI

SUTTATTI ENTERPRISES LTD



OTIS



TATA CONSULTANCY SERVICES



Solution Details

DTMS Introduction - hIOTron's Distribution transformer monitoring system (DTMS) playing critical role in empowering distribution companies and transformer manufactures with handy and real time information about various common as well as advance level parameters which enables them to re-define life and performance of the product.

It monitors real-time vital parameters of transformers remotely. It diagnoses and sends alert/notifications in the form email, SMS whenever there is anomaly happens in the transformer. This transforms transformers manufacturers (OEMs) maintenance habits from time based to condition based and helps them to take corrective actions before the failure actually happens.

System Features

- ✓ Physical Parameters: Oil Temperature, Oil Level, Ambient Temperature, Humidity, Winding Temperature, additionally we can also measure Lug Temperature/Panel box temperature(optional), Tap Position Indicator (Optional)
- ✓ Electrical parameters:
 - Basic: Phase wise Voltage, Current, PF, KW, KVA, KVAR, System V, I,PF, KVAh, KVARh
 - Harmonics: 1st to 15th odd harmonic, THD for Current & Voltage
- ✓ Demand: Peak Demand every 15minute, daily, monthly & yearly
- ✓ Cloud Platform, mobile application, analytics, customized reports
- ✓ Geo location with Alert Pop Ups & Communication status

- ✓ Realtime transformer status & graphical trends of Physical & Electrical parameters
- ✓ Advanced electrical Parameters such as a) Harmonics (THD%, I & V b) Instantaneous demand, c) Peak Demand
- ✓ Customized alerts for Overload, Unbalance, Voltage drop, High Oil Temperature, High Winding Temperature, Oil Level Low/Empty, etc.
- ✓ Load Profile, Units consumed & Losses
- ✓ Asset Availability, Downtime, Units Lost
- ✓ Notifications in the form of SMS, EMAIL as per settings
- ✓ Preventive Checks scheduling
- ✓ Utility analytics such as: SAIFI, SAIDI, CAIDI

System Specifications

- ✓ Communication: 3G/4G GSM + Wi-Fi enabled modem.
- ✓ Metering circuit/system compliant with IEC 62053-22 (Class- 0.5s).
- ✓ Microcontroller (Texas processor) with 80Mhz speed, 256Kb RAM & 8MB storage.
- ✓ Real time clock.
- ✓ Rechargeable battery, (Lifeof2hrs+).
- ✓ I/O's: Overall seven Analog (Three Temperature & four 4~20mA output) & 7 Digital Inputs/Outputs.
- ✓ Electrical parameters: Phase Voltage, Current, PF, Frequency, KVA, KVA_r, Kw, Harmonics (THD% V & I), Instantaneous Demand, Peak Demand.
- ✓ Three Resin Cast CT's of desired rating & 0.5s Class to be mounted on cable/bus bar.
- ✓ Flexible mounting Oil temperature (sensor chips of Jumo Japan or UST Germany) measurement sensor with IP65 termination Head, SS316 covering, Resolution -0.1DegC, Accuracy- 0.5Deg C, Confirms to DIN 43760 & ASTM E644, Temperature Range: -50 to 150 Deg. C.

- ✓ Oil Level Alert Sensor: Switching Type SPST, Termination: IP65 Head, Flexible mounting Cap with Guide tube 8mmx490mm SS316, Variable Sensor length suitable for 250mm to 490mm Conservator tank, Alerts: Normal, Low & Empty.
- ✓ Ambient temperature & Humidity sensors: Resolution-0.1DegC, Accuracy- 0.5Deg C, Temperature Range -50 to 100 Deg. C.
- ✓ IP65 box having size 250mmx300mmx110mm (LxWxH) with shielded wiring/cables, flexible SS conduits cover, connectors/adaptors and box mounting flange (Suitable length cable/conduit length, Max - 5m.

Utility Benefit

- ✓ Enterprise level platform to monitor transformer health, power quality, power theft & critical parameters such as SAIDI & SAIFI.
- ✓ Improved Asset Availability & Lower unplanned downtime.
- ✓ Online Asset Register & Transformer lifecycle history.
- ✓ Predictive asset health management & Preventive checks scheduling.
- ✓ Alerts & Notifications: SMS & Emails for threshold limits e.g. Overload, Under-load, Unbalance, Low/Empty oil Level, High Temperature (Hot spots), Power On/Off, Low PF etc.
- ✓ Demand management.
- ✓ Power losses management - Technical & Commercial.
- ✓ Phone App for tracking alerts & managing transformer functioning.
- ✓ Lower cost of maintenance.
- ✓ Improved service life

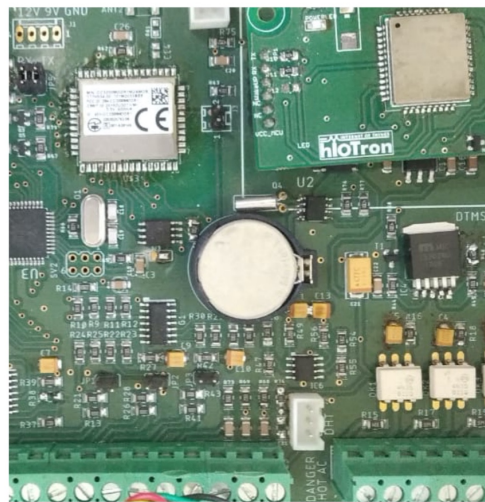
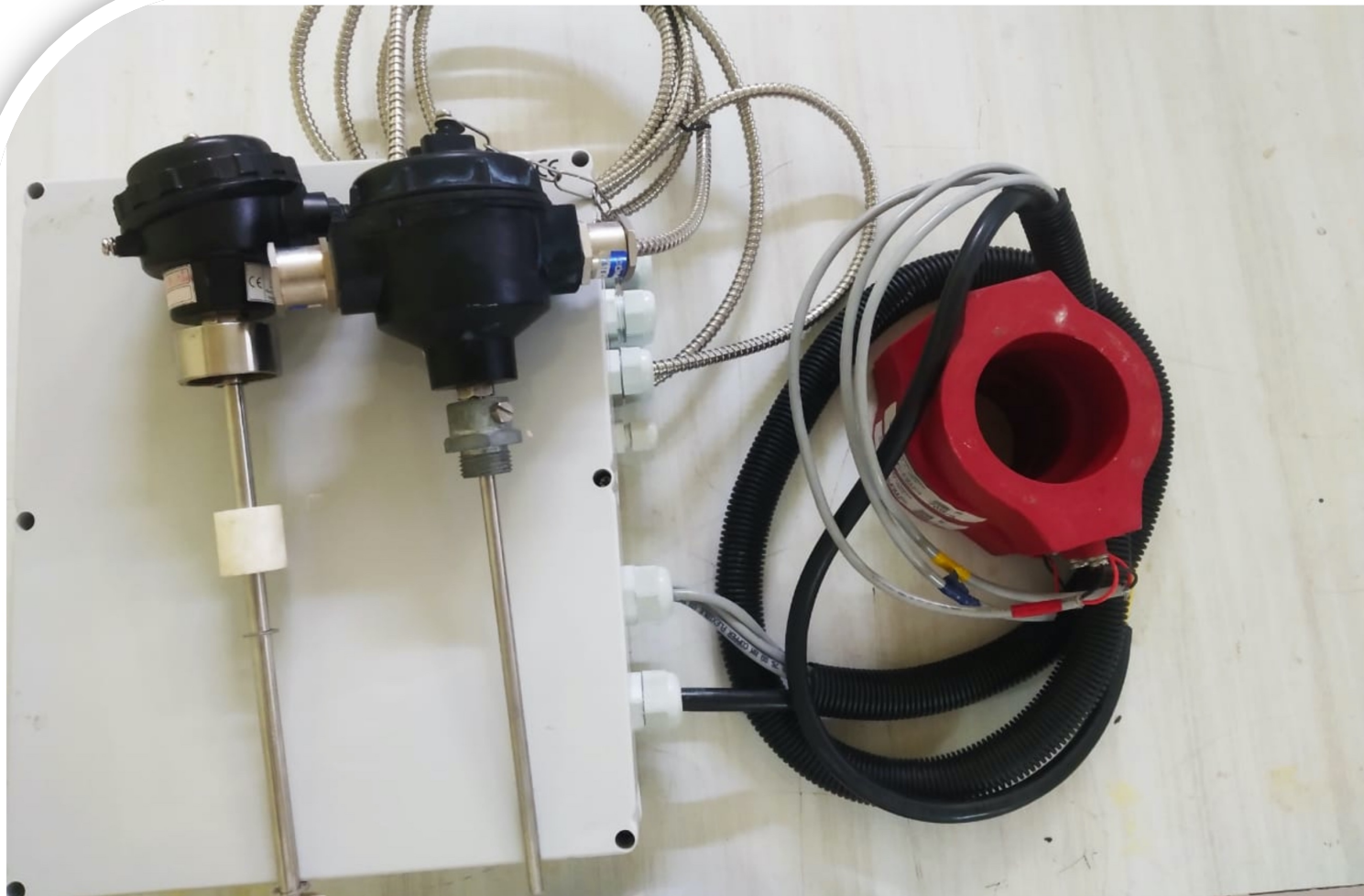
Transformer OEM Benefits

- ✓ End-to-end fully white label solution.
- ✓ Customized suit as per requirement.
- ✓ Easy Integration with 3rd party system or services.

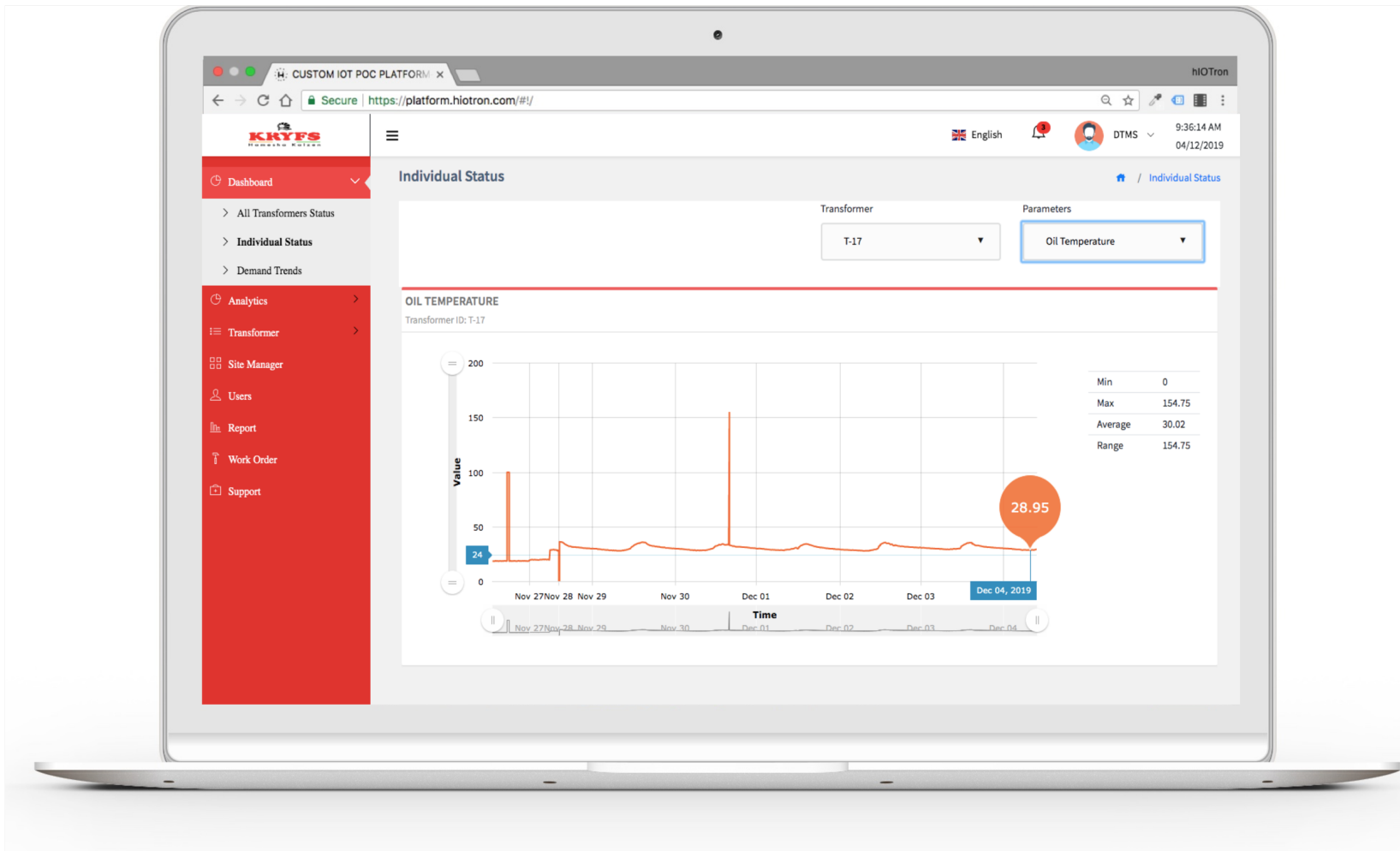
Important links

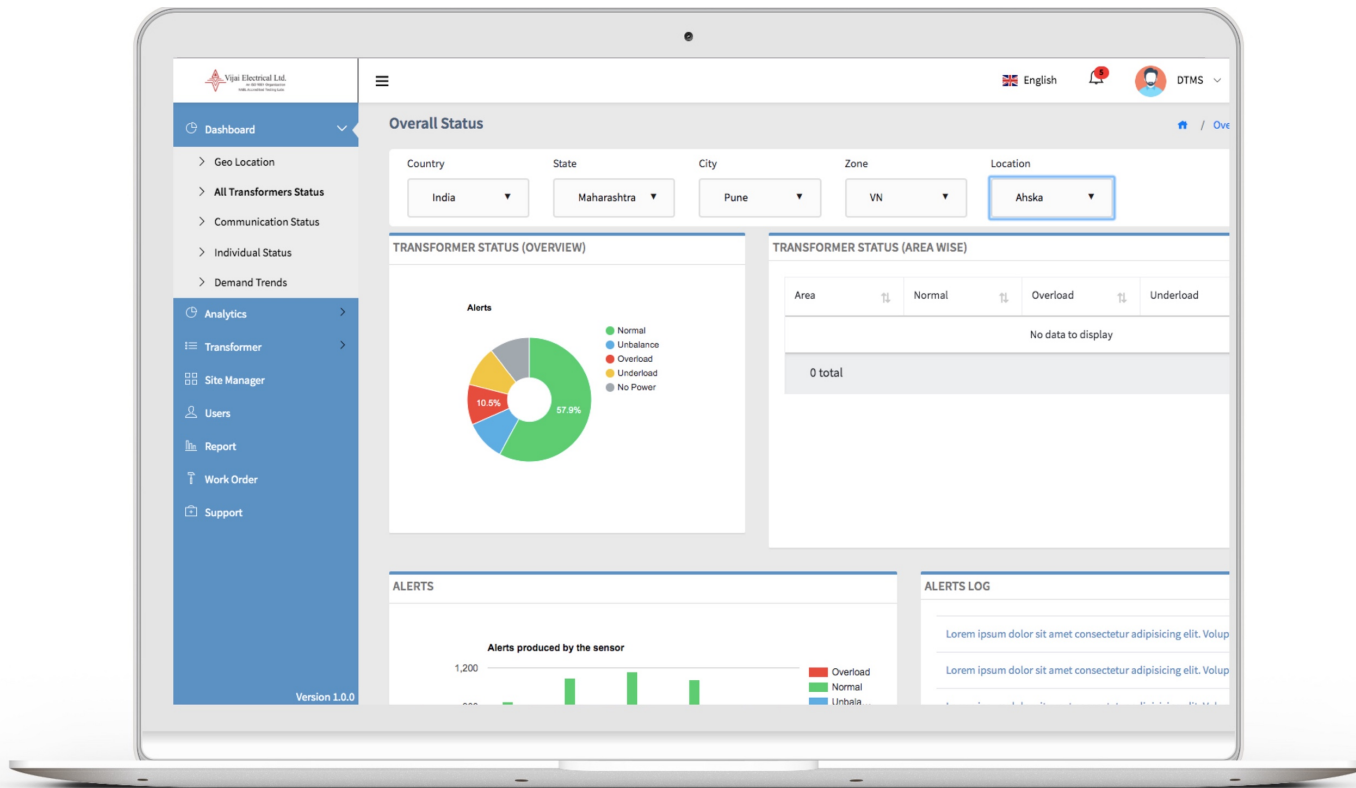
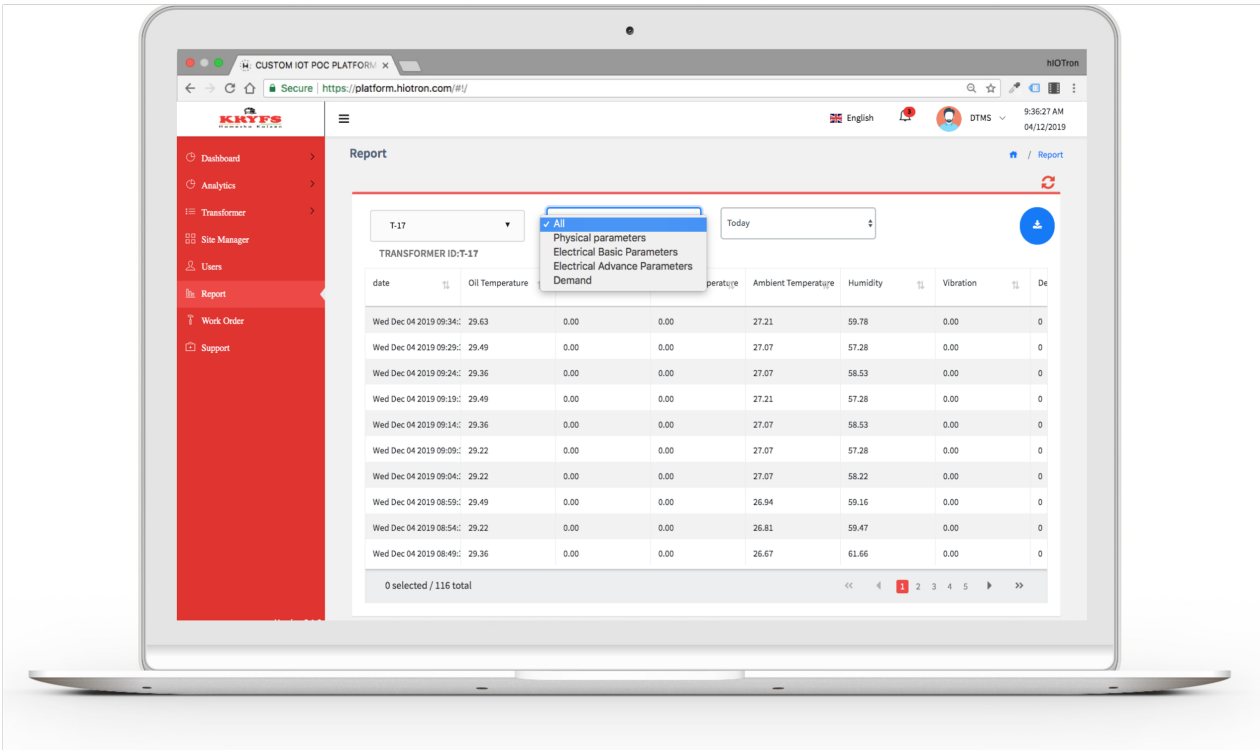
- Demo link - <https://www.youtube.com/watch?v=z47YUdujpaI>
- Installation Guide - <https://drive.google.com/drive/u/0/shared-with-me>
- Platform link - <http://platform.trafobola.com/> (demo username - dtms & password - 1234)
- Parameters excel report - <https://drive.google.com/file/d/1uHwvYwG164S1nz029af0s00RG5kTudCa/view?usp=sharing>

Product Images



Dashboard Images





Report



T-5116 ▼ All ▼ Today ▼ Download

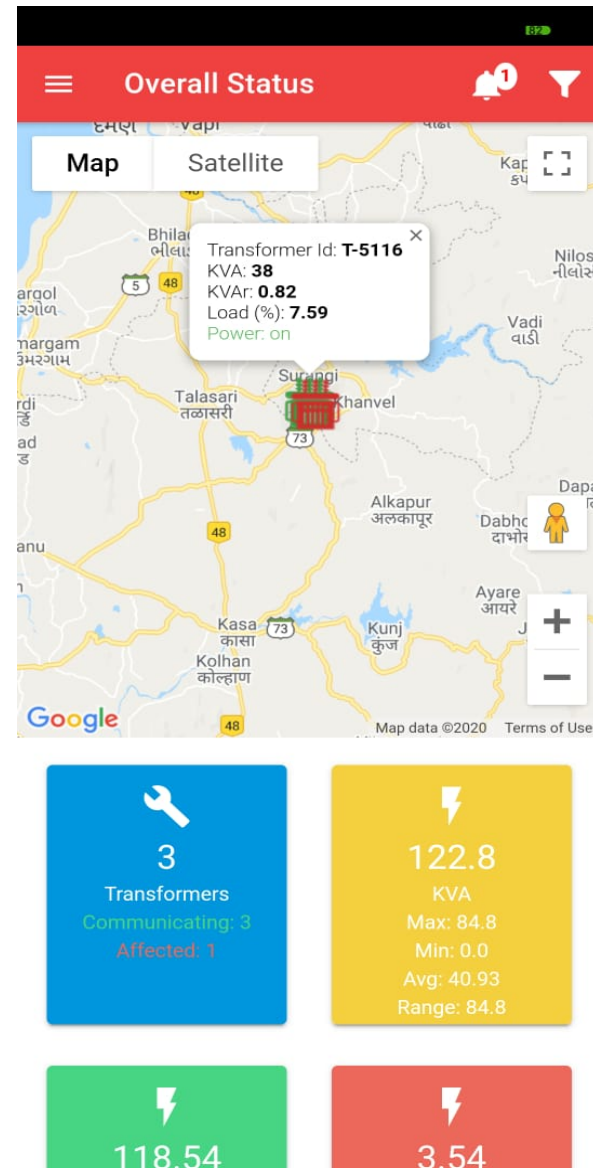
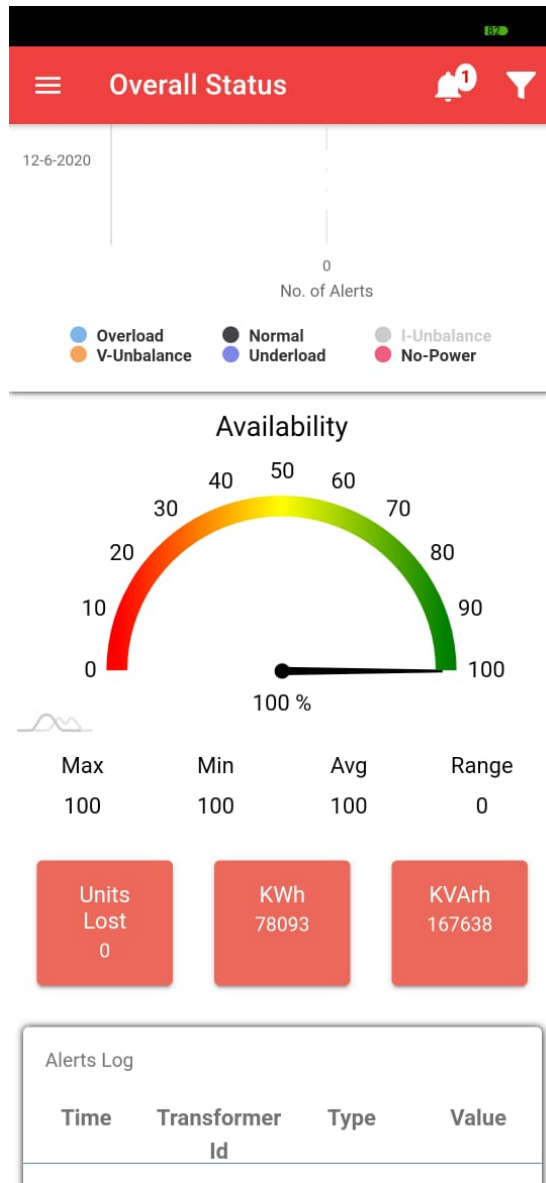
TRANSFORMER ID: T-5116 Location: [Khanvel Rd](#), City: [Silvassa](#)

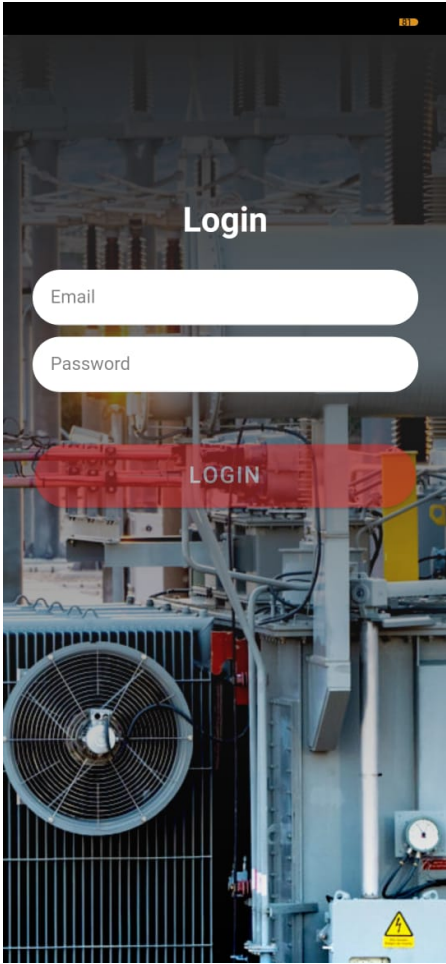
Start Date: [Jun 13, 2020](#) End Date: [Jun 13, 2020](#)

date	Oil Temperature	Oil Level	Winding Temperature	Ambient Temperature	Humidity	Device Location	Va_
Sat Jun 13 2020 13:48:40	27.610	Normal	28.41	30.000	42.000	0.000	245
Sat Jun 13 2020 13:33:40	27.610	Normal	28.08	29.000	43.000	0.000	246
Sat Jun 13 2020 13:18:40	27.210	Normal	27.86	28.000	51.000	0.000	246
Sat Jun 13 2020 13:03:40	26.670	Normal	27.07	28.000	54.000	0.000	247
Sat Jun 13 2020 12:48:40	26.270	Normal	26.80	27.000	56.000	0.000	245
Sat Jun 13 2020 12:33:40	25.870	Normal	26.42	26.000	57.000	0.000	243
Sat Jun 13 2020 12:18:30	25.600	Normal	26.56	25.000	57.000	0.000	243
Sat Jun 13 2020 12:03:30	25.600	Normal	26.27	25.000	56.000	0.000	242
Sat Jun 13 2020 11:48:30	25.870	Normal	26.62	27.000	51.000	0.000	241
Sat Jun 13 2020 11:33:30	26.130	Normal	26.85	28.000	56.000	0.000	241

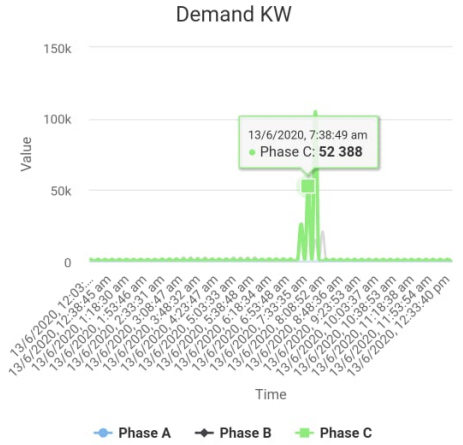
0 selected / 56 total

Mobile application images (Android)





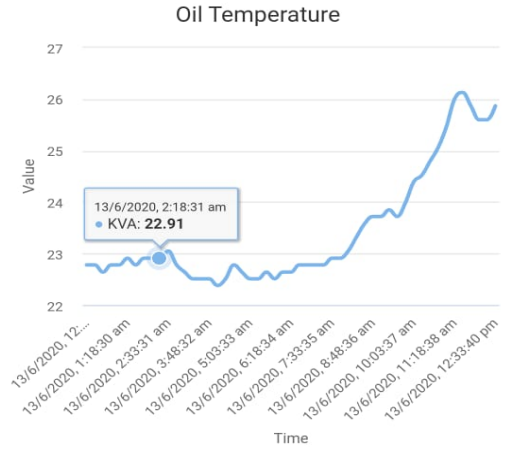
Demand Trends



Phase	Min	Max	Avg	Range
A	8	1,379	679.049	1,371
B	1	34,923	1,803.118	34,922
C	9	104,789	2,503.775	104,780

Individual Status

Transformer Id: **T-5116**



Min	Max	Avg	Range
22.38	26.13	23.43	3.75

Overall Status

12-6-2020

Alerts

- Online: 3
- Offline: 0
- Normal: 2
- Overload: 0
- Underload: 0
- Unbalance: 1
- No Power: 0
- Oil-Temp: 0

Available

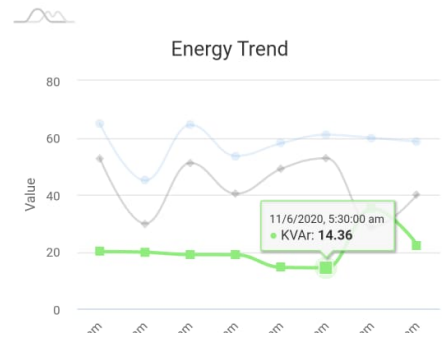
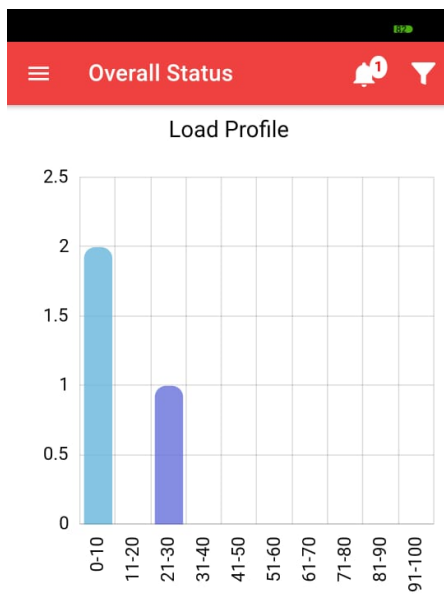
Max: 100, Min: 100, Avg: 100, Range: 0

Units Lost: 0

KWh: 78093

KVAh: 167638

Alerts Log



Existing OEM Partners & Brands

BOLA

BETTER OPERATIONS & LIFE BY ANALYTICS



Vijai Electricals Ltd.
(An ISO 9001 Organisation)

UNIVERSAL
SPARES & SERVICES

Industrial Testimonial

"It is clear that the power and capability of the hIOTron IoT platform is immediately applicable to address the requirements of even the largest scale cyber physical systems in commercial and government applications. "hIOTron is a technological tour de force."

Ibrahem Jabour
CEO & Co-founder
Tahkom Company
Riyadh, Saudi Arabia



"BAGIC and hIOTron are pushing the frontiers of Logistic solutions to empower private and public sector organizations to uncover valuable and actionable insights."

Praveen Kadam, Vertical head:
Connected Ecosystem at
Bajaj Allianz General
Insurance Co. Ltd.



"Our additional investment in hIOTron reflects our ongoing confidence in the company's unmatched capabilities, best-in-class technical team, and significant growth potential. hIOTron is transforming industries, creating competitive advantages for its customers, and generating significant, measurable social impact in important areas such as healthcare and energy."

Parimal Shah | Vice President |
International Operations MK Jokai
Agri Plantations Pvt. Ltd.



"We approached hIOTron to develop TM-Black BOX which can simply communicate to cloud using GSM to accurately deliver the arcade games card swap & tickets/coin counts. We really surprised with the level of service right from custom PCB designed to the custom enclosures with entire software stack covered so smooth & easily for such a complex task."

Anup Tapadia,
Founder & Chief Technology
TouchMagix™





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hiOTron

Head office Address:

B-202, Ashoka Plaza Next to Hyatt Regency,
Viman Nagar - 411014,
Pune (India)

Mail id:

info@hiotron.com / partner@hiotron.com

Contact:

+91-9975551455/97666929093

Website:

www.hiotron.com