Distribution transformer to be "SMART"

Cellular Transformer Remote Monitoring Application

TNDE-Xpert uses transformer manufacturer's experience and IIoT (Industrial IoT) technology to support our customers' need for real - time information and a more reliable distribution grid.
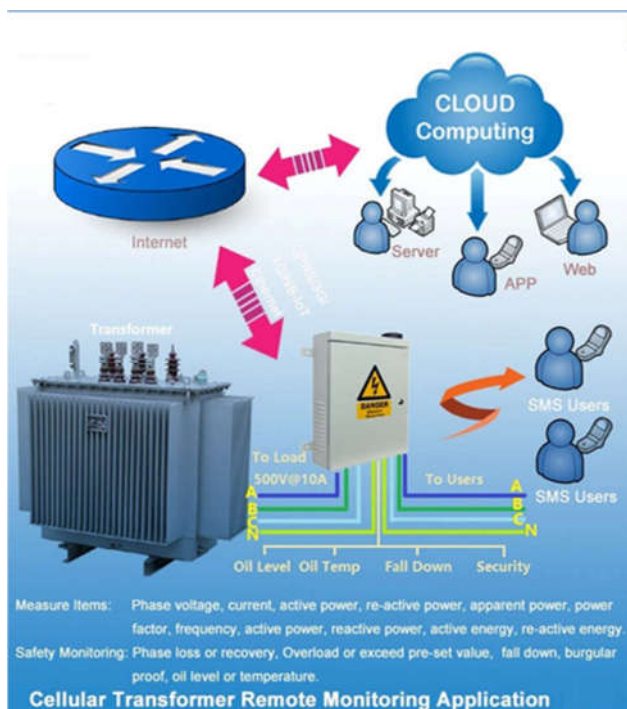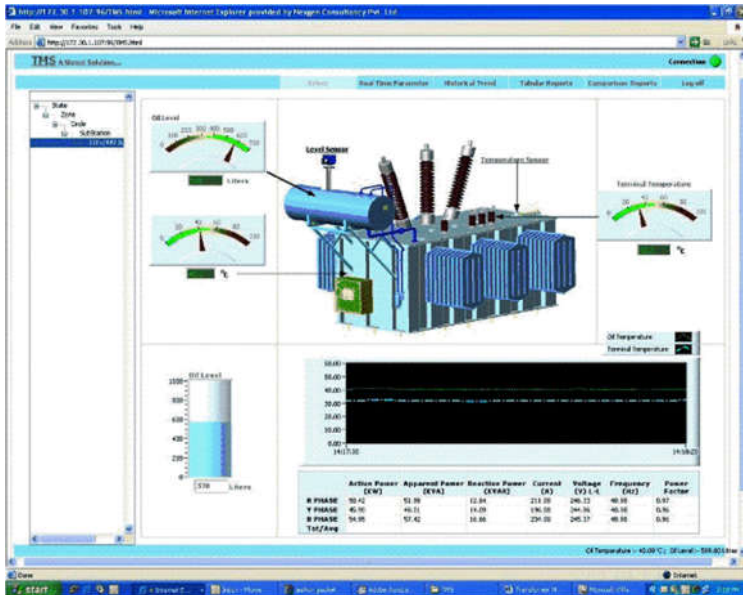
TNDE-Xpert for today's distribution grid

T&D Engineering Ltd. (TNDE) has developed the smart part of smart distribution transformer to meet the evolving needs of today's grid. As the grid becomes more complex, it requires a more advanced distribution transformer.

Customers are requiring advanced data in order to make informed decisions about asset health, planned replacements, and overall grid conditions. TNDE-Xpert addresses these challenges and is easily expandable to address the challenges of tomorrow.

The TNDE-Xpert was developed with industry requirements in mind:

- Ability to collect, analyze and store data
- Minimize on-hand inventory
- Avoid extended downtimes
- Reduce maintenance costs
- Asset position tracking (with Cellular)

Turning insights into actions

The TNDE-Xpert measures, stores, and trends operating data and calculates transformer consumed life. It uses mature and reliable sensing

technology with industrial computing components integrated directly into the transformer during manufacturing. Its unique and fully incorporated sensing and computing functionality ensures data accuracy that is time- synchronized to facilitate both inference and predictive analytics.

Real-time data is downloaded using TNDE-Xpert's secure user interface. The sensor's raw data and analytics output can be stored for up to 20 years and uses advanced industry encryption.

Using TNDE-Xpert, customers can:

- Measure transformer key operating parameters.
- Improve condition-based maintenance planning
- Store time-stamped and synced operational data for short and long-term analysis
- Reduce inventory
- Increase uptime
- Have insight into condition of grid
- Identify operational trends or potential failures

Sensing and output features

- Measuring the 3-phase 3-wire, 3-phase 4-wire distribution power voltage, current, factor, watts, frequency, active power, reactive power, when overload or loss phase or exceed the pre-set value
- Alert by SMS, Voice call, Cloud, APP, Wechat, Web Server, SCADA, HMI, DSC immediately
- Industrial class, high reliability, high stability, and programmable Remote Terminal Unit (RTU). It embedded 32-Bit High Performance Microprocessor MCU, integrated special measurement chip and inbuilt industrial Cellular module
- Provide 4 digital inputs, 2 relay outputs, 1 ambient sensor input for monitoring on site temperature & humidity (other on request)
- RTU inbuilt TCP/IP protocol stack over cellular network or Ethernet to make it suitable for internet of things (IoT) applications. Can be easily to operate by the provided cloud, app, and web server, or integrated to any IoT applications according to the TCP/UDP protocol, or integrated to SCADA systems by standard Modbus TCP protocol

TNDE-Xpert applications:

- Utility Distribution
- Renewables
- Industrial
- Oil & Gas and Chemical
- Data Centers

TNDE-Xpert power ratings:
Liquid-filled distribution transformers from 100 kVA to 20 MVA, and up to 36 kV

TNDE-Xpert differentiators:

- Integrated into the transformer during manufacturing - not a cumbersome attachment
- Capitalized expense (CAPEX) vs. expense on existing operational equipment (OPEX)
- No additional wiring, software or hardware required
- Time-synched data allows for trending analytics (inference and predictive)
- Platform that can be accessed while still online
- Ethernet or cellular connections available
- Flexible configuration to support data viewing through customer's existing communication tools

TNDE-Xpert helps customers understand transformer and grid conditions to ensure a more reliable network.

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