Asset Health Management

mNTCS

Transformer Monitoring & Diagnostics System

mPrest

CONNECTING THE DOTS

The Challenges in Preventing Catastrophic Failures

Power utilities' top priority is delivering a continuous flow of electricity at all times. The financial impact of a transformer failure and power outage can reach tens of millions of dollars – not to mention reputation damage and dissatisfied customers.

Due to ever-increasing energy consumption, an aging grid infrastructure and the growing use of renewable resources, stress on transformers is reaching potentially dangerous levels. Not only are transformers operating at a higher capacity for longer durations, they are also experiencing more volatile demand changes than in the past.

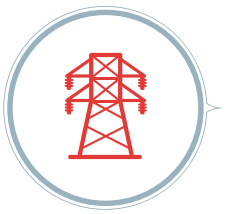
To avoid catastrophic transformer failure and minimize operational risk, power utilities require advanced monitoring and diagnostic tools that enable predictive maintenance and more effective asset health management.

mNTCS: The System of Systems for Critical Assets Health

mPrest introduces mNTCS, an innovative monitoring and diagnostics application for cost-effective transformer health management, including predictive maintenance. Acting as a system of systems, mNTCS excels in collecting data from multiple sensors, performing advanced analytics and providing timely information on the health and operational condition of transformers, cables and other assets.
This first-of-its-kind platform operates across multiple standards and interfaces with multi-vendor assets and sensors, enabling it to deliver a complete real-time picture of the transformers' health condition. Featuring unmatched predictive capabilities, mNTCS interfaces with critical infrastructure in full compliance with NERC/CIP requirements. The system also supports lube-oil monitoring within generation and transmission elements, as well as aggregation of trend data on lubricating oils with other data types.

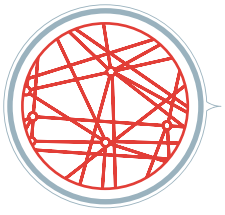
Leveraging Predictive Power: Unrivaled Disaster Prevention

Using advanced anomaly-detection algorithms that rely on real-time and historical data, combined with external lab reports data, predictive analytics and an advanced rules engine, mNTCS is uniquely capable of accurately predicting transformers' future operational condition. Unlike "threshold-based" methodology which detects only above-threshold anomalies, mNTCS also detects subthreshold-based anomalies. This allows for significantly more efficient and prioritized maintenance procedures – minimizing transformer downtime while preventing catastrophic failures.



Unique methodology for near-term failure detection
mNTCS detects short-term and subthreshold behavioral anomalies based on continuous monitoring and comparisons against historical data. Armed with proprietary subthreshold anomaly algorithms, mNTCS is uniquely capable of predicting failures likely to occur in the near future. Together with the system's ability to sense anomalies based on trend analysis and multiple warning signs, mNTCS' unprecedented predictive capabilities can alert you to possible threats even when indicators seem normal.

Accurate analysis for optimal fleet ranking and maintenance
mNTCS provides an accurate transformer condition assessment in real time. Its proprietary methodology and algorithms can recognize patterns in the transformer's behavior by focusing on recurrence, magnitude and cross dependencies of multiple sensor inputs. This results in precise failure prediction and transformer condition prognosis, which are automatically translated into optimal ranking of large-scale fleets. Through a more efficient and prioritized maintenance process, mNTCS ensures reliable, continuous operations, while extending transformer lifetime and reducing operational costs.

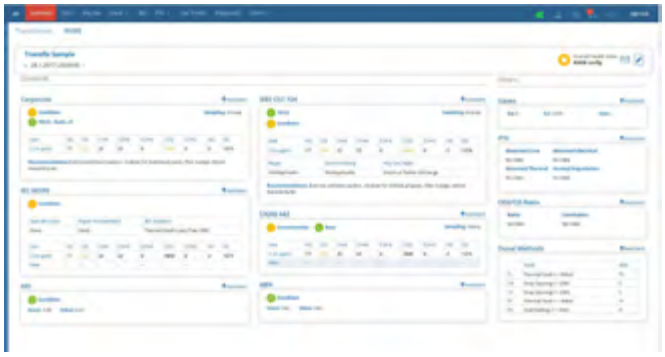


Support for offline DGA samples
mNTCS supports the reading and analysis of offline DGA samples in parallel to the frequent monitoring of online DGA samples. This flexibility allows utilities to monitor the entire history of their transformer fleets in one application.

Predicting potential transformer issues reduces unplanned downtime, maintenance costs and operational risks

Key Benefits

- Early warning to prevent catastrophic failures
- Continuous operations with reduced OPEX
- Extended transformer lifetime with condition-based maintenance
- Fleet ranking for more efficient, prioritized maintenance process
- Ability to discriminate between true and false alarms
- Incorporation of EPRI PTX transformer analytics engine
- Lower TCO with reduced operational risks and costs
- Easy installation and onboarding



Feature Description	mNTCS Application
Control room operator tools	✓
Transformer expert tools	✓
Web interface	✓
Database	✓
Supported numbers of transformers	Practically unlimited
Load / temperature trend analysis, correlation and alarms	✓
Duval triangles and pentagons	✓
Multiple gas trend analysis, correlations and alarms	✓
Trending analysis	✓
Abnormality analysis	✓
Alarm visualization	✓
Data validation	✓
Transformer overview report	✓
Maintenance events	✓
Transformer health-index	✓
Transformer fleet ranking	✓
Transformer & fleet dashboards	✓
Email notifications	✓
Flexible rules engine	✓
Case management support	✓
User access control	✓
Automatic data download	✓
Transfix DGA online interface support	✓

Supported Standards

IEEE C57.19.01:2000 (IR)
IEC 60599:2015
IEEE C57.104
IEEE C57.139 – OLTC
Duval OLTC
CIGRE
EPRI PTX
NEI (Standard Candidate)

About mPrest

mPrest is a global provider of mission-critical monitoring, control and big data analytics software. Leveraging the power of the Industrial IoT, mPrest's integrative "system of systems" is a proven catalyst for digital business transformation. Our management solution has been deployed in next-gen IoE (Internet of Energy) applications for power utilities, as well as innovative management applications for water utilities, smart cities, defense and HLS.

By connecting the dots across multiple disciplines, mPrest delivers unified situational awareness, sophisticated analytics, end-to-end IT/OT integration and process management. Featuring unprecedented interoperability and real-time data optimization, mPrest allows organizations to accelerate time-to-market, improve system performance and reduce operational costs.

For more information, visit us at www.mprest.com
or send us an email to info@mprest.com

Version 3, December 2017