

OktoGRID™ - Preventing Outage

Reducing risk of failure in 15 minutes, non-invasive, any power transformer type.



Benefits by Prevent Outage

- Reduced risk of unexpected outage
- Reduced unplanned downtime
- Decreased insurance premiums

Consequences of unexpected transformer outage:

- Cost of up to **15 Mio. EUR**
- Reputation damage

OktoGRID detected insulation issue on N1 backup transformer

- **N1** (Denmark's 2nd largest DSO) installed **OktoGRID Data Collectors™** on **ten 60/10 kV transformers**.
- **Goal:** Detect critical transformer issues.
- One backup transformer showed **signs of electromechanical stress**.
- OktoGRID analytics pointed to **degraded winding insulation**.

Real-time measurements

OktoGRID's Data Collector™ uses real-time measurements to derive early fault indicator to prevent transformer outages.

Comparing results to electrical test by **Hitachi Energy**

A later executed **DGA** didn't show any signs of deterioration. Only a **power factor (tan δ) measurement** proved OktoGRID's findings:

- **Low primary side insulation resistance**
- **Deterioration of primary side winding insulation**

Pink dot shows transformer condition stage in figure 1.

"Our own extensive analysis confirmed OktoGRID findings. This has the potential to improve our asset management and reduce costs of onsite oil analysis."

Time to failure for different failure indicators:

Transformer failures are first detected through anomalies in the ultrasonic/vibration emissions (see Fig.1).

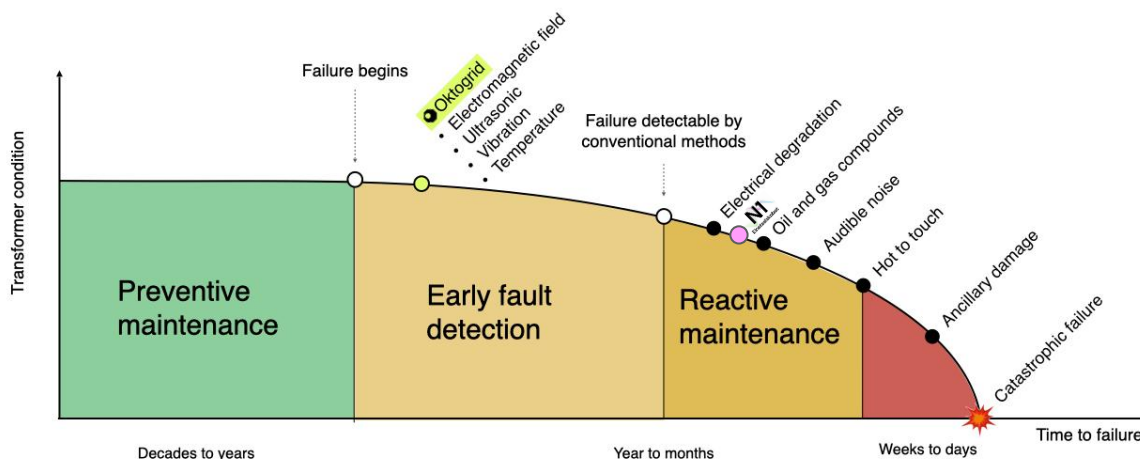


Fig. 1: Transformer Condition Degradation (CIGRE 445: Guide for Transformer Maintenance, Working Group A2.34, February 2011)