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Transformer contingency planning study

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At a glance

Transformers play a critical role in allowing power to be delivered efficiently and reliably. Transformer replacement programs are driven by prioritizing transformers according to their condition and their contribution to network reliability. Transformers in the most critical locations that are in the worst condition are the first to get replaced.

Ideally, a transformer is replaced at the moment before it reaches its end-of-life. In reality, however, no matter how scientific a replacement methodology may be, forced outages still occur because some transformers will fail before their predicted end-of-life. Once a failure occurs, damage control becomes the top priority. How quickly power can be re-routed or the failed transformer can be replaced will determine the extent of lost revenues.

Siemens offers independent consulting and analytic services to help mitigate risk to one of your largest investments, power transformers. Siemens can perform Transformer Contingency Planning Analysis to mitigate the impact of critical transformer failures by assessing site readiness and delivering a detailed plan to replace one or more transformers on an emergency basis.

Customer benefits

- Reduced downtime should a failure occur
- Predictable contingency budgeting
- Potential suppliers identified and informed in advance



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Site assessments

A site condition assessment includes:

- Assessing site access for equipment and materials
- Evaluating location/siting of spare transformer
- Developing a rigging and haulage plan for change-out
- Reviewing critical civil and structural site details and constraints
- Evaluating transformer layouts (spare unit vs. installed unit) for critical dimensions and structural limitations for the following equipment:
 - Footings for cooler/radiators
 - Transformer main tank vs. pad layout
 - Jacking pad locations
 - ISO-phase bus layout and connections
 - High-voltage bus connections
 - Control cabinet location and layout
 - Other external connections and interfaces
- Reviewing availability of current drawings and other technical information, including:
 - Civil and structural
 - Deluge design
 - Control and protection
 - Wiring diagrams (transformer interfaces)
 - Transformer design drawings
 - Operation and maintenance manuals
 - Transformer bill-of-material

Spare transformer condition assessment

An assessment of spare transformer condition consists of:

- Reviewing PM records
 - Oil sample data
 - Electrical test records and frequencies
 - Other recommended testing for benchmarking (i.e., SFRA)
- Determining key sub-component availability and storage (bushings, etc.)
- Assessing blanking plates and covers used during rigging and transportation
- Evaluating availability of spare parts and consumables for installation (seal/gasket kits, etc.)
- Recommending pre-outage actions

Final report

The final report will include:

- A detailed scope of work to replace transformer, including anticipated replacement schedule (Gantt chart format)
- Identification of key project contacts for outsourcing (guaranteed response time, if requested)
- An ancillary bill-of-material (connectors, supports, etc.).

Having a detailed replacement plan “on-the-shelf” can save millions in downtime costs. Even when a spare transformer is available on-site, days may be wasted developing hauling plans, comparing critical dimensions of the spare transformer, performing civil analysis, etc. For a nominal investment, these activities can be planned in advance saving valuable downtime when the transformer needs to be replaced in an emergency situation.

A Transformer Contingency Planning Study from Siemens provides you that important plan. As turnkey transformer replacements are a core competency of Siemens, we can apply lessons learned from past projects so you avoid the pitfalls we have already seen.

Siemens Industry, Inc.

7000 Siemens Road
Wendell, NC 27591

For more information, please contact our Customer Support Center.
Phone: 1-800-347-6659

usa.siemens.com

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