

TCL NEWS

Transformer Proposition Set

Threeepwood Consulting Ltd is very excited to announce we can now offer Specialist Consulting Services for Transformers.

Specialist Transformer Consulting

We have the in-house knowledge and experience to deliver the following:-

- Preparation of specifications to meet customer requirements
- Procurement: purchase specification and tendering review/assessment
- Supplier capability assessment and Factory Acceptance Tests (FATs)
- Expert design review to meet customer and application requirements
- Transformer condition assessment: review of oil analysis and DGA results
- Inspection of external condition and review of test results
- Failure investigation and inspection of active parts (internal)
- Insurance reports: Transformer post-mortems
- Training Courses: General, Transformer fittings and Maintenance
- Technical documentation: O&M Policy, Specifications, Procedures & Manuals

"The Threeepwood Project Team has exceeded my expectations. The technical consultancy (including specification production and electrical safety audit) have all been professionally well delivered by Threeepwood Consulting and will greatly help us with our short and long term development of our electrical network."

- Tony Jefferson

SEMBCORP



Partners in Power Engineering

Add Value to your Assets

Let us...

- Assess your Assets
- Ensure Quality
- Guide your Investment
- Help with Procurement
- Maintain Safety
- Optimise Performance
- Review Documentation



Transformers come in many different designs and constructions

Design Review and Specifications

We can assist with site reviews to look at existing plant and equipment and carry out feasibility studies to identify what new equipment is required. We can write the detailed specifications for procurement (tendering), and once the design is complete, we can: check it meets the customer's requirements and specification; review the basic design parameters, including cooling, dielectric strength, short-circuit withstand.

Tender Assessment

We can offer assistance in the early days of a project to select a list of potential suppliers. We can then: assess all bids; chair a Tender Panel (including interviews); and make recommendations for order placement.

Supplier Assessment and Factory Testing

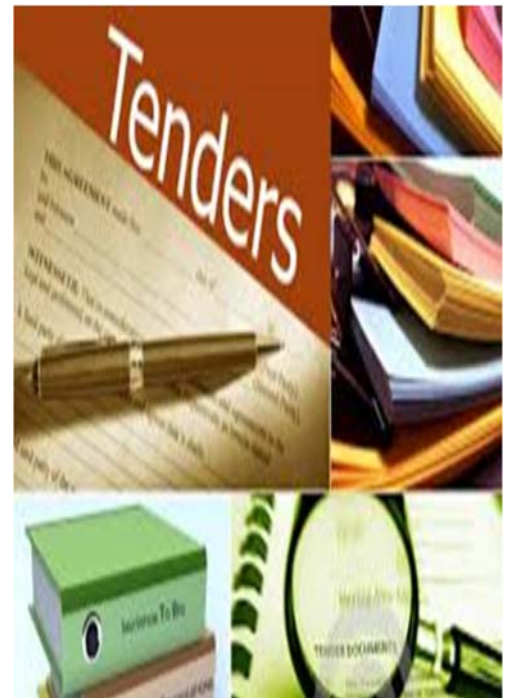
We can carry out a full assessment of a potential supplier's capability (typically done pre-contract) and carry out design reviews once a project is under way. We can attend Factory Acceptance Tests (FATs) in the manufacturer's premises (UK or international) or other test facility, checking accuracy of measurements, correct test levels are used, test equipment calibration, and specification requirements are met.

Can you rely on Suppliers?

With an increasing emphasis to drive down installation costs the pressure to use new or lesser known suppliers is great.

Utility and Industrial applications may require plant and equipment to run safely, economically and efficiently for 30 years or more. But Retail and Commercial may only require plant to run for 10 years. So requirements are very different; not all products and suppliers are the same.

In order to make the right decision **Technical Due Diligence** is highly recommended to not only look at the anticipated equipment performance, but also safety issues, the quality of the production process; the design team; ongoing maintenance needs and any after sales service.



Condition Assessment

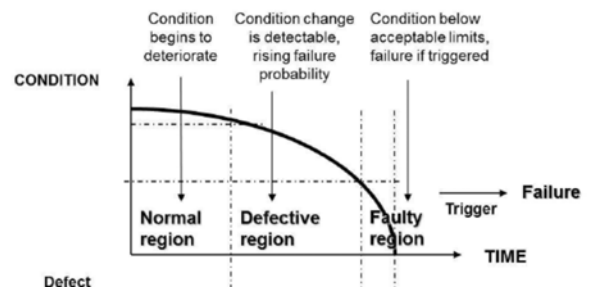
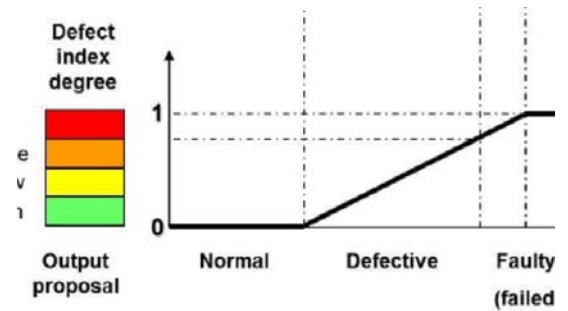
Do you really know the state of your Assets?
How long will they continue to perform?

How far off is their End-of- Life?

Many clients have oil sampling carried out regularly, but are the results understood?
What does the presence of Hydrogen in your transformer oil really mean?

A Failure Investigation may have been done, but was the root cause understood? How can you be sure a repeat event will not occur?

Can you reduce your Insurance Premiums by adopting Best Practice?



How can you Predict the End-of-Life of your Assets?

Condition Assessment

Threepwood Consulting can carry out site inspections to review the external condition of a transformer; its cooling system; and other accessories. In our experience, many failures are due to inadequate maintenance, e.g. where a simple oil pump has failed resulting in the loss of a wind farm or other plant. We can review test results to look for emerging faults and also provide advice for remote monitoring systems.

Oil Assessment

The condition of a transformer can be assessed from detailed oil analysis and DGA (dissolved gas analysis) results. But far too often only a brief study of the results is made and a possible deterioration or fault mode may be missed. The presence of particular gases, (Acetylene, Hydrocarbons, Carbon Monoxide, Hydrogen, Oxygen) each indicate unique issues, and often intervention would be recommended. The trend in gas generation is also important, measured from sample to sample or by continuous monitoring. This information can then lead to a realistic estimate of the transformer End-of-Life allowing for controlled asset replacement planning.

Failure Investigation

Should a site experience a major outage or catastrophic fault, we can carry out a Failure Investigation. Typically managing or supervising the systematic inspection and dismantling to obtain evidence as to the failure mode and root cause. Such a transformer post-mortem would look at both the internal and external condition of the equipment and associated systems; the review of historical and recent test results.

Insurance Reports

If the condition and performance of a transformer is regularly reviewed and assessed, then ideally: Safety can be maintained; Revenue can be safeguarded; and Performance can be optimised. Thus providing confidence to all relevant Stakeholders. Good Asset Management should be communicated to various insuring bodies which may be reflected in lower premiums. Insurance companies themselves can use Threepwood to assess their clients: either routinely or following an incident.



Technical Documentation

Threepwood can offer a full **Chief Author Service** and take on the management of a company's Transformer Technical Documentation. It offers fully managed technical authoring covering all aspects of Policy, Procedures, Specifications, Standards, Operation and Maintenance and Training manuals.

Training

We can offer standard and bespoke Specialist Training Courses to cover general transformer training, transformer fittings and transformer maintenance.

Standards

Threepwood Consulting is active in several Standards Groups and Committees, including the ENA (Energy Networks Association) and the BSI (British Standards Institution) PEL/14 - Transformers: "Expert".

Transformer Consulting

The Transformer Proposition Set is managed by Elizabeth MacKenzie.

Elizabeth is a Principal Consultant at Threepwood Consulting; a Chartered Engineer and Fellow of the Institution of Electrical Engineers, (IET) and a Cigre member previously having been a member of the Cigre working group (WG A2-44) looking at Transformer Intelligent Condition Monitoring.

She has enjoyed an extensive career in the transformer industry having worked with Winder Power as Technical Director and General Manager; with GE as Lead Product Manager for Transformer Monitoring Products; with Hawker Siddeley as Transformer Development Manager; and with ABB as Engineering Director.

Elizabeth now represents Threepwood Consulting to augment their wide-ranging expertise in Transmission, Transformers, Switchgear, Cables and Generation.



Contact Us

Please give us a call for more information about our services and products.

We will do our best to get back to you within 24 hours wherever possible.

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