

## **How Gas-To-Liquids (Gtl) Based Technology Can Help To Enhance The Reliability Of Transformer**

**Volker Null**  
**Product Application Specialist, SHELL**  
**Germany**

**Keywords:** *Transformer oil, Grid, Gas to Liquid*

### **Abstract**

Power transformers are very expensive, business-critical assets for which reliability is paramount. Failures can be catastrophic, as the economic losses and non-delivery penalties that may be incurred during power interruptions can be severe. Shell recently introduced the first transformer oil to be based on GTL technology and it believes that this, coupled with scientific findings from a major research programme, could help to revolutionize the reliability and lifespan of transformers now and in the future.

The world's transformer fleet is relatively old (the average age of a transformer in many countries is 30–40 years) and many companies are operating transformers close to their original recommended lifespans. Some are even being run beyond their expected lifespan, and the high capital cost involved in replacing a unit, up to \$4 million, means that there is an economic incentive to do this if the unit's reliability can be managed.

Shell GTL base oil is a manufactured hydrocarbon (primarily iso-paraffinic in structure) derived from natural gas rather than from crude oil. Natural gas is purified and then converted into a range of liquid products using proprietary technology. One of the key characteristics of this transformer oil is that it can be more quickly consumed by microorganisms than naphthenic oils.

Shell believes that this programme could help to revolutionize the lifespan of the transformers of the future because it is enhancing the body of scientific knowledge in this specialist area. For instance, it has provided better understanding of how oils and transformers age, and has helped to identify the key attributes that need to be improved to increase the reliability and longevity of both oil and transformer in service.