Transformers are important components of the High Voltage electrical grid and electrical power installation in industrial plants such as the petroleum industry. In case of an unexpected failure the possibility to reduce the outage time is usually of prime importance. It allows the plant manager to minimize financial impact due to loss of production.

In this paper we will describe transformer condition assessment methodologies as well as on-site repair solutions as means to increase both the reliability and availability of transformers.

Over the last decade there has been an increasing interest in transformer life evaluation and monitoring. The main reason is that a large number of the transformers world population is approaching its expected end-of-life and the need increases for better methods to see whether the transformers are still fit for use or need to be retrofitted or replaced.

The diagnosis of the transformer condition is used to recommend maintenance actions and identify defects even before un-tanking the transformer. It allows therefore to reduce unexpected failures and anticipate to reduce repair time especially when transformers are repaired at site.

Repairing at site usually allows to bring transformers back in service within a shorter time by avoiding transportation from the site to the factory and return. Also it reduces costs and risks associated with heavy transport.

To date more than 400 transformers including utility, industrial, HVDC transformers and reactors have been successfully repaired on site. In many cases transformers were upgraded to provide an increased rating.

This paper shows how transformer condition assessment and on site repair can help the petroleum industry to:

- Reduce unexpected failures and outages
- Optimize maintenance budget and better plan maintenance activities
- Reduce loss of production by bringing back failed transformer in service within a shorter time