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TRANSFORMER SERVICES

Repairing :: Rewinding :: Overhauling



At alfanar Technical Services (ATS), our Mission is to sustain our prominence as the provider of high-quality, precision-engineered repair and rewind services for all types of medium and high voltage static and rotating equipment like Transformers, Motors and Generators. ATS also manufactures Magnet Wires, Insulated Conductors and Preformed Coils for various electrical applications including medium and high voltage electrical equipments.

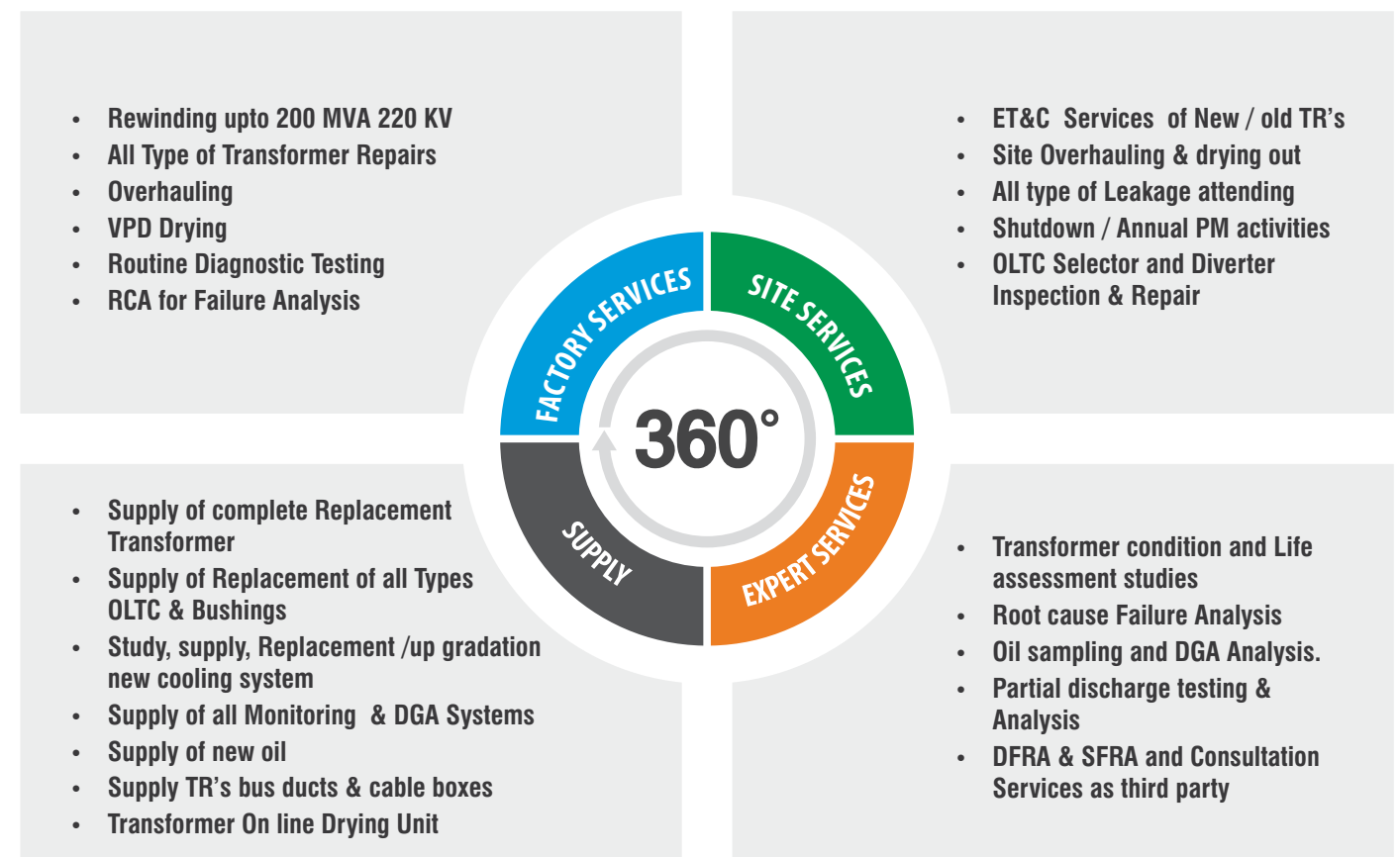
The use of modern technology in our factory at Jubail, Saudi Arabia, and the years of practical experience has enabled us to offer a wide array of engineering, technical services and logistical resources catering to the needs of our customers in the power, petrochemical and manufacturing sectors in the middle east region.

Our unique edge is in our conformance to international standards on quality by extending an as-new warranty for the repair works done at ATS.

alfanar Technical Services is a specialised unit of alfanar Engineering Services that provides solutions in testing & commissioning, steel fabrication, operation and maintenance, equipment calibration and technical training institute.

ATS has the privilege of the only facility in the Middle East to repair and rewind transformers of high voltage levels locally, so far the range up to 200MVA, 125MVA and 100MVA!

TRANSFORMER 360° SERVICES



REPAIR & RETROFIT

Rewind, Overhaul, Retrofit and Refurbished to New life time

Power transformers are vital to ensure a trouble-free supply of power with no interruptions. Whether your transformer has failed or you are planning timely corrective maintenance our team of experts is available for short-term and long-term repairs.

alfanar Technical Services performs the repair, overhaul, and modernization of your power transformers that are performed in our dedicated repair shop.

Our repair facilities handle to overcome all problems which arise during operational life cycles of the transformer including:

- Rewinding to meet original specification with thermally upgraded Insulation
- Installation of advanced technology on-load & Off load tap changers
- Replacing old and absolute bushings and new hybrid bushings
- Replacement of old rusted and leaked tanks, Radiators.

- Drying out and overhauling of transformers
- Replacement damaged core
- Installation of Technologically upgraded measuring and monitoring devices on transformer
- Rewiring protection accessories with new added features

Out-performing features of our Facility:

Our facility is fully enriched with all type of winding machines. The windings are carried out in a controlled and dust-free environment. Onwards core coil assembly is dried out by advanced technology oven (VPD oven). The testing facility at ATS meets international quality standards and conforms to trouble-free operational healthiness.



Why Us?

Other key benefits that we offer are as follows:

- We offer economically attractive and technically sustainable solution that meets the highest ecological standards
- Own copper manufacturing facility with highest quality standard
- Highly skilled manpower from different OEMs
- In business for close to 2 decades
- We provide Pad to Pad solution by picking up transformers from customer premises and guarantee safe round-trip transport with our own logistic and jacking-sliding services
- We offer long and short terms contract based on customer requirement.
- Idle location for all customer based on OPEN door Policy
- ATS has proved to be a one stop shop solution while it comes to Transformers

VAPOR PHASE DRYING PLANT

reduces moisture below 0.5% in transformer's active parts

At alfanar Technical Services (ATS), our Mission is to sustain our prominence as the provider of high-quality, precision-engineered repair and rewind services for Transformers upto 200MVA, 230kV. And to reinstate our commitment, we have commissioned the largest Vapor Phase Drying plant in the region, assuring higher and efficient quality and a much lesser delivery period.

Applications

VPD is used in drying of cellulosic insulation of the transformer winding which requires that the moisture content be brought to 5 ppm levels before impregnation of the winding with transformer oil, recovery of the oil and discarding the moisture. The fluid basically acts as a heat carrier to the insulation.



Before VPD



After VPD



Few of the Transformers that we have Successfully Processed Using VPD Oven

VOLTAGE LEVEL	CLIENT
132kV	SEC-PP7, 200 MVA
230kV	SEC-Shadgam, 110 MVA
116kV	SEC-PP3, 73 MVA
33kV	SEC-PP4, 20 MVA
115kV	ARAMCO(Berri Gas Plant), 63/84/92 MVA
115kV	SEC Jubail(MDNOD), 40 MVA
115kV	SEC Jubail, 40 MVA
13.8kV	Sadaf(Sabir), 2 x 14.66 MVA - 2 Nos.
34.5kV	IBNRUSHD, 14/20 MVA
66kV	SEC East Airport, 30/40 MVA
132kV	SEC, Bisha, 100 MVA

Advantages of Vapour Phase Drying Plant

Reduction in Process Time :

Typical processing time for a 50MVA transformer of 132 KV class in a conventional air heated oven is 7 days while in a VPD it is just 2 days. For larger transformers the difference in processing time is also large.

- The main reason for the reduction in process time is the rapid heating rate. e.g. VPD 500-1000 W/m² oc compared to Air 5-10 W/m² oc

Prevents Oxidation During Drying :

In conventional drying, transformer is heated by heating the Autoclave walls first then conveying heat from wall to transformer by air media, whereas in VPD, heating is being carried out by kerosene vapor in vacuum in the absence of air, hence no oxidation during the heating & drying process of copper.

Uniformity of Temperature (Heating) :

In VPD, the solvent vapor reaches the coldest & inner most part of the transformer and heats all over insulation directly, whereas in air heating, the heat is first delivered to the outermost layer of windings and then it transfers to inner layer of windings. As a result,



there is non-uniformity in heating that causes depolymerisation effect more to outermost layer. In VPD process, this can be avoided.

Excellent Quality of Dryness :

Due to uniform temperature and heating all over insulation, quality of dryness can be achieved at highest level.

Associated Components Drying :

For smooth operation of transformer, associated components, such as Instrument transformers, bushings, On Load Tap changer an

TEST FACILITY

suitable for 200 MVA, 230kV class
with 1400 kV impulse generator

Testing laboratory of ATS is well equipped to carry out following tests on transformers as per various standards like IEC , IEEE etc.

Routine Tests

- Measurement of voltage ratio and check of phase displacement
- Measurement of no load losses and Magnetizing Current
- Measurement of short-circuit impedance and load loss
- Separate Source AC withstand voltage test
- Induced AC voltage test
- Partial discharges Measurement
- Insulation Resistance Measurement
- Lightning Impulse Test
- Switching Impulse Test
- Tests of on-load tap-charges

Special and Type Tests

- Temperature Rise Test (Short-circuit method)
- Measurement of Sound level
- Lightning Impulse chopped on the tail test
- Capacitance and power factor measurement
- Measurement of zero-sequence impedance
- Measurement of harmonics in no-load current
- Measurement of vibrations
- Frequency Response Analysis (FRA test)
- Dielectric Frequency Response Analysis (DFRA)

Oil Tests

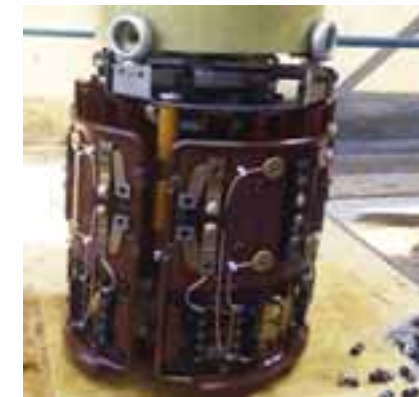




SITE SERVICES

ON SITE SERVICES

- Assembly Testing & Commissioning of new and Old transformers
- Attending Shutdowns and preventive maintenance activities
- On site OLTC inspection and preventive maintenance
- Oil Filtration / Regeneration / Passivation activities
- Internal inspection of core and windings with repair
- Drying CCA at Site
- On Site Winding Replacement
- Shifting of transformers & other sub station equipment
- Attending all types of leakages
- Refurbishment / Repair / Replacement Cooler Installations



SITE SERVICES

TRANSFORMER DRYING-OUT, OIL FILTRATION AND PASSIVATION

We dry out moist transform at Site by various methods

- Oil filtration & heating.
- Vacuuming ,Oil filtration and heating
- Vacuuming ,Oil filtration, heating and Nitrogen

Carry out Oil filtration as PM and oil replacement activities

- We have full range of Filter machine from 250 Ltrs to 10,000 LPM.
- We have more 100 ,000 ltrs of Mobile Storage Tanks
- We have separate vacuum system

We carry-out supply of Passivator and passivation services of the oil



SITE SERVICES

OIL REGENERATION

On-site Regeneration and Desludging



Benefits achieved through Transformer Oil Regeneration:

Life extension of a limited resource:

- The same oil that has been aged can be regenerated without decreasing in efficiency

Control of strategic asset is retained:

- Reduced maintenance costs.
- Use of regeneration technology removes dependence on oil companies to deliver replacement supplies.
- Isolates from wildly fluctuating external market prices.

Economically advantageous:

- Reduced risk of unplanned outages
- The price of purchasing regenerated oil is typically less than 80% of new oil and can be as low as 50%

- Ancillary savings increment when considering there is no downtime when reclaiming on energized equipment, replacement with new oil and hot oil flush requires equipment switch off
- In site treatment of the oil on an energized transformer requires reduced labour costs and eliminates transportation or rigging expenses
- Practically implemented examples indicates that it should normally be between 30 % and 60 % less expensive to regenerate transformer oil within the transformer tank compared to the alternative of draining, flushing and refilling the transformer with regenerated oil
- This saving margin should increase substantially whenever on-line regeneration prevents revenue loss due to load shedding requirements.

EXPERT SERVICES

by the professional hands with care

- Harmonic Measurement study
- As Third party Inspections for FAT & SAT and witness for Insurance cases
- Transformer feet screening & Report preparation
- Transformer Interchangeability Study
- Based on customer requirements we offer in house & on Site training programs in:
 - Transformer Manufacturing and testing
 - Preventive maintenance on the job for transformer and OLTC
 - Oil sampling and testing
 - On Site testing and calibration



SUPPLY

fulfilling your needs for transformers and associated requirements

- Supply of complete Replacement Transformer as Turnkey Project
- OLTC and Bushings and transformer Components
- Study supply Replacement /up gradation new cooling system
- Supply installation of transformer and DGA monitoring systems
- Supply of new oil
- Supply, Modification and installation of Transformer bus-duct and cable boxes
- Supply, Installation and handover of Transformer on-line oil drying unit

