

# TIPS FROM THE TRANS- FORMER DOCTOR

Constantly handling voltage takes a lot out of transformers, so regular check-ups are essential to ensuring that both

they and their on-load tap-changers – the beating heart of this type of equipment – have a long and healthy life.

Richard Bates,  
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Manufacturing USA, worked as a technician, service manager, and operational manager in the field for several years,

so he knows exactly what it takes to keep transformers running smoothly.

## Richard Bates

is Director of Asset Management Business at Reinhausen Manufacturing USA. In addition to manufacturing tap changers, the subsidiary offers an extensive range of services including comprehensive diagnostics, tap-changer maintenance performed by premium service providers (also for tap changers produced by other manufacturers), turnkey retrofitting projects, as well as installation and commissioning of new transformers. It deploys around 50 service technicians to perform this work.

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**OBSERVE MAINTENANCE INTERVALS** Make sure that your on-load tap-changers are undergoing maintenance at the appropriate intervals. The date of a next maintenance appointment will depend on how long it has been in use or how many switching operations it has performed. As an example, some tap-changer types may be due for maintenance after seven years or 70,000 switching operations, whichever comes first.



**USE QUALIFIED STAFF** Performing maintenance on a transformer is a job for an expert—not just any technician will be familiar with the specific demands that transformers and tap changers pose. Having maintenance performed by qualified staff will make it possible to identify any irregularities in operation early on.



**CHECK THE OIL** Check the oil at least once a year. The state of the oil can shed some light on the fitness of a transformer—just like a blood test can give a doctor insights into a patient's health. For example, low water content, high surface tension, a high level of dielectric strength, and a low power factor are all indicators of good oil quality.



**PERFORM A DGA** An even more in-depth analysis involves an additional investigation of the gases. We recommend performing such a dissolved gas and oil analysis (DGA) once a year. This involves checking the ratio of dissolved gases in the oil. Each of the gases is generated in the transformer by a certain state or certain conditions. Once the analysis is complete, we can tell whether the transformer is in good condition.



**CHECK THE OIL LEVEL** Each oil chamber must have enough oil in it, so it is important to check the levels. This includes the main tank, the on-load tap-changer container, and the bushings. Checking oil levels is important because the oil acts as an insulating material, coolant, and lubricant all at the same time.



**CHECK THE DEHUMIDIFICATION** Check the dehumidification unit regularly to ensure that no impermissible moisture is entering the oil expansion vessel from the outside, because moisture in the oil will shorten the transformer's service life. Have an expert check whether the device is working reliably. It may be that the silica gel—which is vital for removing water—needs to be replaced.



**HAVE REGULAR INSPECTIONS CARRIED OUT** Regular inspections are extremely important. Our specialists check all of the installed components—including bushings, fans, displays, valves, motor-drive units, and control cabinets—for issues such as leaks or corrosion in order to detect them early on. Function checks on protective devices allow us to ensure that the transformer will switch off immediately in the event of a fault.