Extended maintenance interval for tap-changers type UC
Product information

The production of the in-tank tap-changers type UC started in 1963, and since then more than 15000 units have been delivered.

The UC type has a unique open design for quick and easy maintenance, requiring no special tools or specialist skill. Maintenance can be carried out in any tap-position and without dismantling the shafts.

Network applications
An tap-changer in a network transformer carries out approximately 5–20 operations a day in a stable network and the average load is normally far below the rated load. The contact life is typically 400 000 to 500 000 operations depending on the through current. The low operation frequency means that the contact life is normally as long as the transformer’s.
Normal maintenance intervals
Maintenance requires that the transformer is taken out of service and is normally required every 7 years of service or every 80,000–100,000 operations (1/5 of the contact life), whichever comes first. The 7-year interval is the normally set limit in network applications for the reasons described above. The reason for requiring maintenance every 7th year is concern of oil deterioration, contamination, lubrication and moisture.

Extended maintenance intervals
The time-based maintenance intervals can be extended from 7 to 15 years, provided that insulating oil of class “Transformer oil -30 °C” according to IEC 60296, 2012-02, is used. The maintenance intervals based on the number of operations are extended up to 170,000 operations (2/5 the expected contact life), provided an oil sample is taken prior to commissioning the tap-changer and then every 4th year sampled and analysed as described in IEC 60422. In addition, the following minimum dielectric breakdown voltage of the insulating oil according to IEC 60156 apply:
• Neutral point application: 30 kV.
• Delta, single phase and Auto transformer with the highest system voltage up to 72.5 kV: 30 kV.
• Delta, single phase and Auto transformer with the highest system voltage above 72.5 kV: 40 kV.

To maintain a dielectric strength of 40 kV, an oil filter for continuous filtering may have to be fitted, see below.

Order information
It is important to specify in the ordering data the tap-changer is going to be used in an application requiring extended maintenance intervals. The extra piping required for allowing oil samples to be taken during service will then be fitted and, if required continuous oil filtration provided.

The ABB oil filter unit operates continuously providing very good filtration, low flow rate and simple control equipment. The oil filter unit reduces the amount of particles to approximately 0.1% of that of non-filtered oil. At maintenance no oil filtration or cleaning of the tap-changer compartment is necessary, which reduces the maintenance time and cost considerably.