



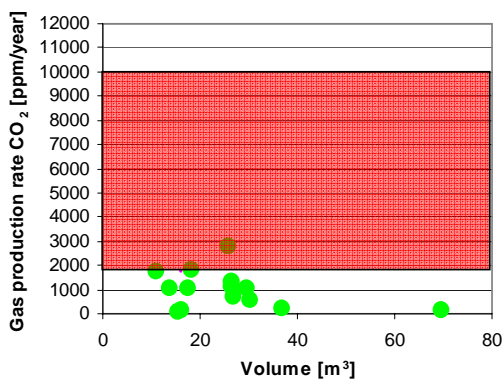
**News letter from Redfox AB**

**Now we have evidence!**

Since some time we have made a follow –up on transformers equipped with Redfox continuous degasser. After some time in operation will the exhaust gasses from the Redfox unit correspond to the actual production rate of the gases in the transformer, except of oxygen and nitrogen being transported into the transformer via the expansion vessel.

This production rate can now be related to what is said to be normal for the large number of transformers. This is made by comparing with the values of experience from IEC for 90 % of the transformers. Of special interest is the carbon dioxide production rate since it is indicating the ageing – or degradation rate of the cellulose. The lower values on the CO<sub>2</sub> production, the lower the degradation rate. With other words is the CO<sub>2</sub>- gas production rates a very powerful tool to judge how fast the cellulose of the transformer is ageing. In addition, the reduced oxygen - and water content, which are the results of the continuous degassing, will lead to a reduced degradation rate.

This is illustrated by a figure for CO<sub>2</sub>. The points correspond to measured values corrected for the release through the expansion vessel and the coloured area corresponds to the values of experience for 90 % of the transformers (1700-10000 ppm/year).



*Fig.1 Gas production rate in ppm/year for CO<sub>2</sub> for transformers equipped with Redfox compared to the values of experience from IEC (in red).*

The difference in production rate is easily seen. This difference leads to a significant prolonging of the life time of the cellulose and is in the long run leading to a better economy for the customer. In addition, an important aspect to point out is that one effect of the reduced ageing rate is a reduced need for expensive oil regeneration.

As a complement to our main unit we have now equipped earlier installations with our service portal Redfox SP, see image below. By use of Redfox SP the sampling is made easier and the total production rate can easily be derived in ml/24h. After analysis of the gas, the result can be translated into ppm/year and further related to the values of experience from IEC for 90% of all transformers.



*Fig. 2 Redfox C-Ty together with the newly developed Redfox SP.*

Redfox SP is now included as standard on the degassing equipment. The work is continuing to follow – up the remaining transformers equipped with Redfox in order to obtain an as complete image as possible of the benefits of the Redfox continuous degassing.

Have a nice summer!

Redfox AB