

Investigation Report Summary

Testing and validation of an economical corrosion sensor for the measurement of uniform oxygen corrosion in HVAC systems
February 2013

The measurement principle of the Risycor corrosion sensor has been extensively tested and validated by the EMIB research group (Energy and Materials in Infrastructure and Buildings) of the University of Antwerp.

Investigation method

The behavior of the Risycor was examined in a known and controlled environment in various laboratory tests. The relationship between the corrosion rate indicated by the Risycor and the actual corrosion process was analyzed in a controlled manner by considering variations of the most important corrosion parameters, such as the oxygen concentration, the water temperature, the liquid velocity and the degree of acidity (pH).

The measurement results from the Risycor were additionally verified using corrosion measurement principles from previous industrial applications (LPR, Linear Polarization Resistance), which are generally considered to be the reference for accuracy.

As the acid test, the decrease in thickness of the Risycor coupon was monitored by weighing (determination of the mass of the coupon) at the end of each endurance test.

Results of the investigation

The various laboratory tests indicated a very good correlation between the measured corrosion parameters and the corrosion rate indicated by the Risycor. The results are thereby in line with the theoretical background.

In comparison with the LPR measurement principles of the reference industrial sensors that already exist, the Risycor shows a better causal relationship between the corrosion rate and the measured corrosion parameters. The existing LPR sensors also appear to require very high maintenance, and specialized knowledge for their correct interpretation.

The direct measurement principle of the Risycor provides a highly accurate correlation with the actual corroded mass.

Please refer to the investigation report for more details.