

High-Temperature Potential Probe (HTPP)

Online Measurement of Corrosion and Redox Potential up to 300 °C and 120 bar

The knowledge of the electro chemical potential (corrosion potential) indicates whether reducing or oxidizing water conditions exist in the water circuits observed, which is decisive for avoiding corrosion and optimizing process flows.

You want to monitor water circuits and optimize process flows, whether in the lab or in industrial plants? Use the benefits of the Framatome-developed high-temperature potential probe for online measurement of corrosion and redox potential up to 300 °C and 120 bar. The corrosion potential of a material as well as the redox potential of the medium are significant in every respect for assessing the electrochemical behavior of a material within its environmental conditions.

The description of the corrosion system — consisting of material, environment and mechanical stress — represents the basis for every corrosion protection. Especially the environmental conditions in the water circuit may greatly vary in practice depending on the process status.



Laboratory version of the high-temperature reference electrode

With the application of the high-temperature potential probe, Framatome offers you the online measurement of corrosion potential in the relevant conditions of use and test temperatures. Based on the measured values achieved with the high-temperature reference electrode, oxygen can thus be induced directly into a system section to form a protective coating on surfaces with medium contact.

Framatome's internationally acknowledged corrosion experts and competent specialist staff will diligently support you in issues of corrosion and redox potential measurement.

The service portfolio at a glance:

- The HTPP system consists of an externally cooled reference electrode (Ag/AgCl) with an electrolyte bridge and a platinum electrode for measuring the redox potential.
- The electrolyte bridge serves as electrolyte contact (ionic bridge) between the measuring electrodes and the reference electrode.
- For defining the corrosion potential, the relevant component in the system itself is used. However, it is also possible to integrate special electrodes made of the appropriate material within the probe.
- In addition, the temperature (thermocouple NiCr/Ni) can be measured at the measuring point.
- Since the reference electrode itself is not exposed to the high-temperature water, it exhibits a very stable reference potential and a long service life.

Your performance
is **our** everyday **commitment**

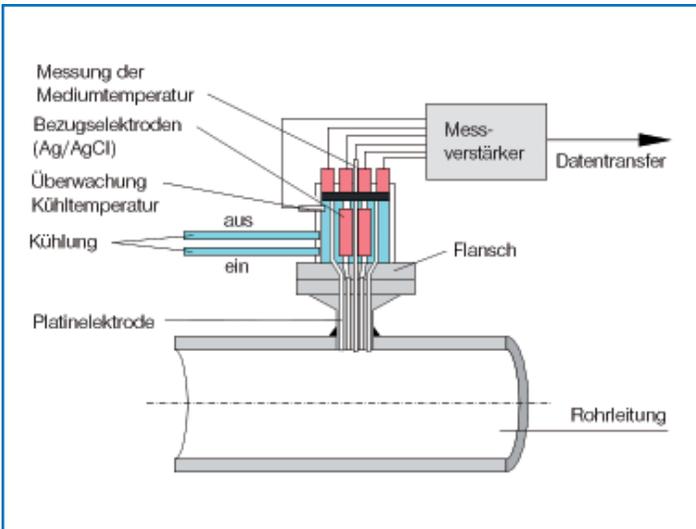
Material corrosion technology competence from one source

Framatome's team is involved in the complete life cycle of nuclear power plants — ranging from the development, design, production and assembly monitoring to the operation and failure evaluation. The experience of our internationally acknowledged corrosion experts gathered from failure analyses and defining remedial actions is integrated in the selection of materials and in new material concepts as “lessons learned”. Our portfolio includes discussions with inspectors and third parties as well as the cooperation in relevant expert groups and the performance of customized laboratory testing. This results in a high competence in the field of materials and their corrosion as an integrated targeted approach.

The description of a corrosion system begins with the measurement of the corrosion potential. This enables an effective corrosion protection.



Flange version of the high-temperature reference electrode



Schematic representation of the measuring principle

Your Benefits at a Glance:

- Measurement of the corrosion potential under increased temperature and pressure conditions
- Long-life, stable high-temperature reference electrode that has been well proven for more than 20 years in power plant and laboratory use
- Description of the actual environmental conditions of material in the water circuit of technical installations
- If necessary, targeted optimization of system parameters for avoiding corrosion in practice
- Using our experts' know-how in material and corrosion technology in the assessment of your corrosion system
- Material-related competence from one source based on numerous interdisciplinary interfaces

Contact:

materials@framatome.com

www.framatome.com

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