**EKOR** Limited Liability Company Research & Engineering Enterprise

### **Corrosion rate monitoring system**





#### **The High-Resolution Electrical Resistance Method**

The High-Resolution Electrical Resistance method is used for corrosion monitoring. The method is based on precise measurements of the wire or tape sample geometry in the corrosive environment (liquid, gas, concrete, soil, etc.).



External view of the corrosion rate monitoring system

## The advantages of the High-Resolution Electrical Resistance method are:

- possibility of the real-time corrosion rate monitoring using 4 or more sensors;
- possibility of the corrosion rate monitoring in the range of 0.01 500.0 mm / year;
- high accuracy of corrosion rate determination, confirmed by the State metrological certification;
- possibility of automation of the corrosion data continuous registration;
- possibility of measurements in gaseous media and liquids at elevated temperature and high pressure;
- possibility of measurements in electrochemical protection conditions (anodic, cathodic).

#### The System passed the metrological certification

For the first time the State Metrological Attestation Certificate for corrosion rate measurement tools was received – for the continuous corrosion rate monitoring system.

ГОСУДАРСТВ НАУЧНО-ПРОИЗВ( (Г	МИНИСТЕРСТВО РАЗВИТИЯ И ТОР ЕННОН ПРЕДПРИЯТ ОДСТВЕННЫЙ ЦЕНТ СЕРТИФ	ЭКОНОМИЧЕСКО РГОВЛИ УКРАИН ТИЕ "ЛУГАНСКИЙ ГР СТАНДАРТИЗА ИКАЦИИ" ИДАРТМЕТРОЛО	ГО Ы I РЕГИОНАЛЬНЫЙ ЦИИ, МЕТРОЛОГИИ ГИЯ »)
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Результаты метрологи Наименование метрологической характеристики	ических исследований: Нормированные значения метрологических характеристик при данной температуре	Полученные значения метрологических характеристик	Тип, разряд эталонов, использованных при определе метрологических характерист
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Диапазон измерения скорости коррозии			Микрометр МК-25-0,01 Штангенциркуль ЩЦ-Ш Амперметр-мультиметр Секундомер механический СОО
Днапазон измерения скорости коррозии Относительная погрешность измерения скорости коррозии	$\delta \leq \pm 25\%$	7,7%	Штангенциркуль ЩЦ-II Амперметр-мультиметр Секундомер механический СС

#### **Corrosion rate monitoring system consists of:**



- corrosion sensor ДКП (1)
- corrosimeter «ЭКОР-ЭС-2» (2)
- industrial PC with the software (3)

The signals from the corrosion sensor are measured by the corrosimeter and after processing and conversion are transferred to the computer for further analysis, visualization and archiving.

#### **Mounted corrosion sensor**

The design of the corrosion sensor provides its operation:

under an elevated
temperature (up to 200°C)

under a high pressure (up to 50 atm)

in aggressive environments



The corrosion sensor may be placed directly in the process solution flow inside the apparatus or pipes.

#### **Corrosimeter «ЭКОР-ЭС-2»**

Corrosimeter measures the signals from the sensors, performs signal filtering (low and high frequency noise removal) and converts the signals for transmission over the digital interface RS-485.



#### **Industrial PC**

Processes the received data, displays it on the graphic and text screens and saves the data. It is possible to view the data received daily and monthly and to change the scale of graphs and data processing mode.



Using of the system in industrial conditions allows to control the corrosion rate of structural materials in association with other indicators of the process.

# Works and engineering services performed during the system implementation:

- completing and supplying of the system;
- supervision of the input units of sensors assembling;
- installation of the sensors and instrument part;
- adjustment of the system;
- technical description and user's manual delivery;
- metrological attestation;
- service staff training;
- carrying out of guarantee tests, system commissioning.

The proposed system is implemented during 3 months.

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