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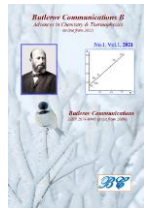

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# Study of corrosion facture of steel-3 equipment of petrochemical production and estimation of the efficiency of the use of inhibitors

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## Abstract

Today, all industries operating heat exchangers face the following main problems: – the formation of deposits on heat exchange surfaces, which leads to a decrease in heat transfer and, in the future, excessive consumption of fuel; – intensification of corrosion processes, determined, first of all, by the growth in the environment of industrial zones of concentrations of aggressive compounds (sulfur dioxide, etc.).

Thus, corrosion, if not controlled, can lead to disasters, and by controlling corrosion processes, it is possible to reduce their risk in the oil, gas and oil refining industries and its negative impact on the environment.

In this work, the corrosion rate of Steel-3 was determined using the Monicor-2M device in aggressive solutions of a heat exchange unit for primary oil refining (AVT) and the selection of inhibitors was carried out. The readings are indicated in units of the corrosion rate of the sensor electrodes: mm/year. The operation of the device is based on the Stern-Geary principle, obtained theoretically by differentiating the equation of the polarization curve near the stationary corrosion potential and confirmed in practice. It has been established that the corrosion rate of St-3 in the waters of heat exchange units of the AVT process is aggressively high. To reduce the aggressiveness of water in heat exchange units of AVT processes, sodium nitrite with a concentration of 0.5 g/l was proposed as an inhibitor. It has been shown that when using this inhibitor, the degree of protection of St-3 is 70%. It was revealed that the corrosion rate of St-3 decreases at a solution pH of 11.

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