عنوان مقاله:

Destruction of Nitrite- Based Corrosion Inhibitor in Cooling Water Systems

محل انتشار:

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خلاصه مقاله:

Nitrifying bacteria are known as micro organisms that can cause operating problems in cooling water systems which use sodium nitrite as a corrosion inhibitor. Loss of nitritebased corrosion inhibitor is one problem in cooling tower which causes the increase in the consumption of inhIbitors. The growth of these bacteria in such cooling systems is first noticed by a reduction in the pH of the cooling water due to the production of nitric acid. This will obviously lead to increased corrosion of metallic equipment in the cooling water system due to low pH conditions. Nitrite oxidizing bacteria can be found actively growing in cooling systems which use sodium nitrite as a corrosion inhibitor. These groups of nitrifying bacteria are typically found attached to surfaces and interface of sediment and water in cooling tower systems, areas where they will be exposed to high concentrations of oxygen. This investigation reports the role of the nitrifying bacteria in destruction of nitritebased corrosion inhibitor in cooling water and its role in increasing corrosion rate of cooling systems (in Yazd Alloy Steel Co.). Most of closed-cooling use nitrite-based. corrosion inhtbitor. In these systems nitrifying bacteria can convert sodium nitrite to sodium nitrate. Sodium nitrate has no corrosion inhtbitor properties. In addition, this type of bacteria can produce biological slime and finally blockage pipe lines and pumps. This report is based on accomplished research in Yazd Alloy Steel Co-closed-cooling system. Because of high leakage in this system and dissolved oxygen in cooling water, nitrite bacteria were growing in system and causing serious problems in it. In Yazd Alloy Steel Co. for detection of nitrite bacteria, a sample of cooling water was prepared and the water sample was transferred into selective media for nitrite-bacteria. Also, nitrite-bacteria were obtained from soil as positive control and even a positive control of nitrite bacteria (nitrobacteria winogradski-DSM 10237) was bought from Iran Document and Research Organization. This positive control of the bacteria was .compared to the sample of cooling water and the existence of nitrifying bacteria in Yazd Alloy Steel Co. was proven

کلمات کلیدی:

Nitrite bacteria, Nitrification, Nitrite-based corrosion inhibitor, Nitrite reduction