

1.13.1. DETECTION OF CORROSION DAMAGES IN VESSELS AND PIPELINED BY NONDESTRUCTIVE METHODS

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Equipment at oil-refining, petrochemical and chemical enterprises functions in conditions of aggressive operational media (acids, alkali, sulphur compounds, chlorides, amines, cyanides, etc.), high temperatures and pressures. In these conditions, metal of equipment is subjected to increased corrosion. Corrosion is one of the most urgent problems defining reliability and safety of said equipment.

Problem of detection and evaluation of corrosion in operated equipment and pipelines in oil-refining, petrochemical and other branches of industry is topical especially during examination of its technical state in order to determine the remaining term of operability of equipment or pipelines.

Nondestructive physical methods of this equipment testing play a decisive role in detection of corrosion seats and evaluation of the extent of their hazard in operated equipment. Depending on equipment type, material and structural execution, operation conditions, most diverse methods of nondestructive testing can be applied.

Paper by the way of specific examples discusses various types of corrosion (general, local, pitting, knife-line, intercrystalline corrosion, corrosion under stress, etc. in various working media like hydrogen, hydrogen sulphide, etc.) and methods of detection and evaluation of one or another type of corrosion by the most efficient in specific case methods of nondestructive testing like visual, ultrasonic, radiographic, liquid penetrant, thermal imaging, acoustic-emission, etc.

In conclusion, paper discusses reasonability and efficiency of application of some nondestructive testing methods for monitoring (continuous testing during operation) of equipment. This makes it possible to follow up continuously the technical state of equipment, to abandon scheduled preventive maintenance and to carry out equipment shutdown for repair in accordance with its actual state, thus increasing operation time of equipment and preventing emergency situations and, hence, to increase economic efficiency of equipment operation.