

1.13.10. THE RESULTS OF CRUDE REFINING EQUIPMENT DIAGNOSTICS AND THEIR ANALYSIS

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An analysis has been conducted on non-destructive testing results of reaction, column and capacity equipment used more than twenty years at one of the Russian oil refining plants for common oil refining processes: hydrocracking, oil desalting, fuel-oil distilling etc.

The paper demonstrates production and operational defects distribution according to types of apparatus, technical operation principles (with and without corrosion protection), and also main elements of equipment under testing: main metal, longitudinal, circle and angle joints.

The general level of defect rates of apparatus with corrosion-resistant protection exceeds the defect rate of apparatus without such protection thrice. However, the operation defect rate is more than fivefold higher. For apparatus made from 16GS and Vst3sp steels with cladding layer of 08Ch13 steel, most operational defects (40%) fall within corrosion damage and cracks on circle joints and for H18N10T steel made apparatus – angle joints cracks (65%).

The present report suggests approaches for apparatus quality evaluation norms in accordance with their operation conditions. Apparatus without corrosion-resistant protection operate in conditions of normal performance in comparison with the ones without such protection for which the quality evaluation approach can be adjusted towards stiffening.