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Study of the effect of narrow fractions of disulfide oil on the degree of dissolution of asphalt-resin-paraffin deposits on the heat exchange equipment of the Orenburg gas processing plant

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Abstract

Currently, there are a number of unsolved problems in oil and gas processing, one of which is the search for an effective and relatively cheap solvent for asphalt-resin-paraffin deposits. This article discusses the features of asphalt-resin-paraffin deposits, which are a complex structured system with a pronounced core of asphaltenes and a sorption-solvation layer of oil resins (CCE), and features of the asphalt-resinous substances (DIA), which are heterocyclic compounds of complex hybrid structure, in which includes nitrogen, sulfur, oxygen and metals. In the course of the study, the choice of optimal methods for controlling asphalt-resin-paraffin deposits was carried out and the effectiveness of various methods depends on many factors, in particular, on the properties of oil or gas condensate, the mode of operation of the installation, surface roughness and equipment design. The article describes the process of removing already deposited asphalt-resin-paraffin deposits using the most promising chemical method. Both individual solvents and multicomponent compositions are used as remover reagents. In some cases, to increase the efficiency of the solvent is heated or it is served together with the steam. In the process of selecting the solvent, you need to consider that each type of oil will be suitable for a certain type of reagent, there are no universal solvents. This article describes the process of removing asphalt-resin-paraffin deposits, where the supply of reagents occurs through special devices. Various solvents were selected, in the process of research their properties, features, characteristics were studied and a practical study of its declared characteristics and determination of its effectiveness were carried out. As part of this study, the fractionation of disulfide oil was studied according to GOST 2177-99 «Oil products. Methods for determining the fractional composition» and studied the effect of individual fractions on the sediments taken from the walls and tube bundles of heat exchange equipment of the condensate stabilization plants of the Orenburg Gas Processing Plant. The results of the experiments helped to calculate the effectiveness of the solvents taken.

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