

Abstract

Shell-and-Tube Heat Exchanger with Wear-resistant Tube Plate Lining

The invention relates to a shell-and-tube heat exchanger which contains a wear-resistant tube plate lining. In spite of short exposure periods, cracking gas flowing out of the cracking oven of thermal cracking equipment at high speeds contains coking particles that impact the tube plate on the gas inlet side of the shell-and-tube heat exchanger in a highly erosive manner. It would be highly desirable to be able to apply a metallic lining to the tube plate and the inlet region of the cooling tubes which is extremely resistant to high-temperature corrosion. It is proposed to develop a shell-and-tube heat exchanger which includes a wear-resistant tube plate lining for application in thermal cracking equipment which contains cooling tubes (1) through which the gas to be cooled is circulated, each tube being secured by a tube plate at both ends of the tube and enclosed in a casing through which a coolant material is also circulated. (2) The surface of the tube plate on the gas inlet side which is impacted by gas as it enters the shell-and-tube heat exchanger should be faced, at least partially, by a protective layer which is created by aligning individual sleeves of a heat-resistant metallic material side-to-side and end-to-end at the outer edges and inserting them into the tube ends (Fig.1).



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