



# heat transfer engineering

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The cover shows the tube sheet of a shell and tube heat exchanger with three tube-side passes. The heat exchanger has been used as an evaporator in a sulfuric acid recovery plant. Due to the extremely corrosive nature of the highly concentrated sulfuric acid, tubes and tube sheets have been manufactured from tantalum. Severe deposition of material originally dissolved in the acid requires cleaning at weekly intervals. The deposits inside the tubes were found to be extremely hard and adhesive, resisting even flow velocities up to 5 m/s. Cleaning was accomplished manually by high pressure water blasting with a pressure up to 800 bar.

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