

## CFD modeling of the emulsions (oil-water) on pipelines corrosion

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The aim of this research study is to investigate the use of emulsions (oil-water) flow in the steel pipelines. Computational Fluid Dynamic (CFD) was used as the simulation to study the flow, velocity and pressure gradient on pipe wall. The crude oil and water emulsion is a significant method in the oil and chemical industry. The shape geometry is a pipe and the evaluated amount is the wall corrosion obtained by the fluid mixture of two liquid phases. Naphthenic acid (NA) is present in crude oil and leads to corrosion problems within the pipeline. Among the objectives of this study is to calculate the velocity profile based in the rheological models such as Herschel-Bulkley model and Ostwald model. The solution of the corrosion of the pipeline is based on the diminution of the concentration of crude oil or emulsion for reduce total acid number (TAN).

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