Algoritmo computacional para predecir el gradiente de presión en pozos verticales mediante la correlación de flujo multifásico de Hagedorn y Brown [

2015

text (article)

Analítica

The accurate prediction of the pressure drop expected to occur during the multiphase flow of fluids in the flow string of a well is a widely recognized problem in the petroleum industry. There are many correlations and mechanistic models that estimate pressure gradients in wells as correlations: Duns & Ros (2008); Orkiszewski (1967); Hagedorn & Brown (1965), Beggs & Brill (1973), Govier & col. (1999), etc. Each one is based on application criteria that transform it into theoretical approaches that solve practical problems, normally built on physical laws that govern the fluids dynamic through formulation and solution of Navier-Stokes equation. The study of the pressure gradients which occur during multiphase flow of fluids in pipes is exceedingly complex because of the large number of variables involved. For these reasons this article propose a software of the Hagedorn and Brown's Correlation (1965), showing the mathematical model of the Generalized Hagedorn and Brown's Correlation (1965), the numerical approach and numerical correlations of the fluids and reservoirs properties, to establish a computational algorithm for making nodal analysis of vertical multiphase flow in pipes, to make the code in Microsoft Excel VBA 2010 and finally validate the software with a commercial software PIPESIM 2009 for getting comparisons of the accurate got. This software is very important because allows to predict flow`s energy drops in vertical pipes easing the analysis of the pressure gradient Keywords: multiphase, Hagedorn and Brown, correlation, software, fluid dynamics

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