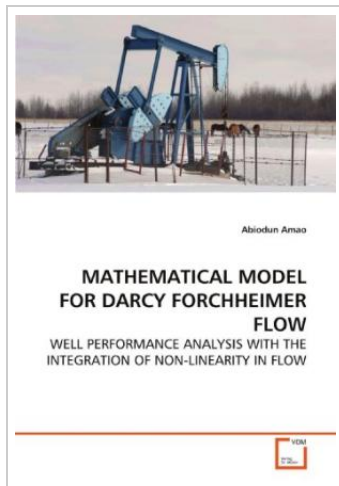



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MATHEMATICAL MODEL FOR DARCY FORCHHEIMER FLOW

By Amao, Abiodun

Condition: New. Publisher/Verlag: VDM Verlag Dr. Müller | WELL PERFORMANCE ANALYSIS WITH THE INTEGRATION OF NON-LINEARITY IN FLOW | This work reviewed several scenario where non-Darcy or non-linearity in flow exists in the reservoir. It showed the inadequacies inherent in Darcy's law as a modeling equation for flow in porous media. Laboratory experiments were conducted to determine the criteria for and the onset of non-linear flow in core samples. It was discovered that non-Darcy flow will occur in a porous media as long as the pressure gradients in the porous media is sufficient. The main determining property for non-linearity is the permeability of the porous media. A mathematical equation was developed to model non-Darcy flow, following standard scientific procedures. The mathematical model developed was used to simulate reservoir behavior while considering Darcy and non-Darcy flow in the reservoir. COMSOL Multiphysics, a software used for solving partial differential equations (PDE) was used for the simulations. The results were presented, discussed and analyzed for several reservoir geometries. The results of this work is useful for reservoir engineers and production engineers who need to optimize flow rate and well performance. It will also be applicable in well diagnosis for remedial action or work over. | Format: Paperback | Language/Sprache: english | 132 pp.



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