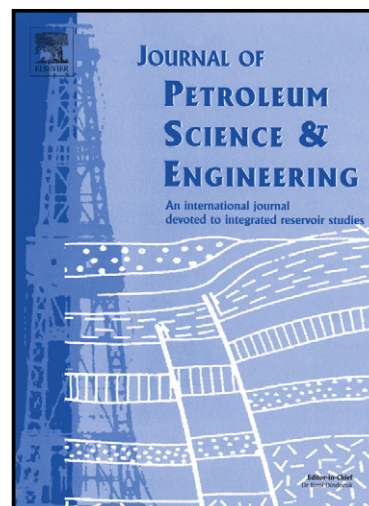


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# **A hybrid approach for litho-facies characterization in the framework of sequence stratigraphy: a case study from the South Pars gas field, the Persian Gulf basin**

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## **Abstract**

The Upper Dalan and Kangan formations with dominant lithology of limestone and dolomite associated with anhydrite nodules and interbeds form the Permo-Triassic succession of South Pars gas field (SPGF) and host the largest none-associated gas reservoir in the world. The current study focuses on preparing a comprehensive litho-facies model in the framework of sequence stratigraphy. For this purpose, Self-Organizing Map Neural Network (SOM-ANN) and hierarchical cluster analysis (HCA) were utilized as effective tools to prepare the preliminary data for litho-facies mapping. Neural networks (self-organizing maps) and hierarchical clustering approaches were applied to characterize litho-facies in un-cored but logged wells. Particularly, the powerful visualization tools of the SOM-ANN which provide more information in comparison to HCA facilitate the task of establishing an order of priority between the distinguished litho-facies groups. The mentioned method of SOM-ANN clustering algorithm showed a good performance in petrophysical data clustering and litho-facies determination.

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