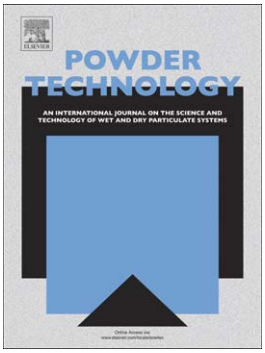

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ABSTRACT

Empirical correlation (EC) equations are still of a great designing importance for industrial plant construction. They are an indispensable modelling tool for engineers, reducing the time to find the optimal operating conditions. Nonetheless, numerical method complexity and product yield optimisation are advancing. Computational fluid dynamics (CFD) is thus nowadays applicable for optimizing chemical reactors. In contrast to EC, CFD acknowledges specific vessel geometry, where local physical and chemical phenomena, contributing to apparent catalytic turnover, prevail. Presently, EC and CFD were compared considering the pressure drop predictions within the packed bed columns for spherical, cylindrical, trilobe and quadrilobe particle packing, in order to determine the limits of EC accuracy. 52 configurations