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BOOK OF ABSTRACTS

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A panel data analysis of the electric mobility deployment in the European Union

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Governments all over the world have been promoting electric mobility as an effort to reduce the transport sector's greenhouse emissions and fossil fuel dependency. This work analyses the deployment of electric vehicles in the European Union countries, between 2015 and 2019, and the variables that may influence it, using a panel data methodology. The present work focuses on the deployment of battery and plug-in hybrid electric vehicles, individually and jointly. Nine explanatory variables were included in the model: density of recharging points, gross domestic product per capita, cumulative number of policies on electromobility, share of renewable energy in transport, greenhouse gas emissions from fuel combustion in road transport per capita, tertiary education attainment, electricity price, employment rate and new registrations of passenger cars per capita. The results showed that the indicators influence differently the deployment of the different types of electric vehicles. The most significant factor driving the battery electric vehicles deployment was the density of recharging points, while for plug-in hybrid electric vehicles was the share of renewable energy. Policy makers should focus on adjusting actions to the demand for the different types of electric vehicles.

Dynamic Response Surface Method combined with Genetic Algorithm to Optimize Extraction Process Problem

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This study aims to find and develop an appropriate optimization approach to reduce the time and labor employed throughout a given chemical process and could be decisive for quality management. In this context, this work presents a comparative study of two optimization approaches using real experimental data from the chemical engineering area, reported in a previous study [4]. The first approach is based on the traditional response surface method and the second approach combines the response surface method with genetic algorithm and data mining. The main objective is to optimize the surface function based on three variables using hybrid genetic algorithms combined with cluster analysis to reduce the number of experiments and to find the closest value to the optimum within the established restrictions. The proposed strategy has proven to be promising since the optimal value was achieved without going through derivability unlike conventional methods, and fewer experiments were required to find the optimal solution in comparison to the previous work using the traditional response surface method.
