

## البحث رقم (5)

عنوان البحث	تقييم الطاقة والتقييم الاقتصادي لخيارات كفاءة الطاقة لمناطق الطاقة: دراسات حالة في إيطاليا ومصر
المؤلفون	<b>Energy and Economic Assessment of Energy Efficiency Options for Energy Districts: Case Studies in Italy and Egypt</b> فرانشيسكو كاليس ، وفرانشيسكو إل كابيلو ، وماريا فيشيدوميني ، وجيان سونغ ، وأنطونيو إم بانتاليو ، <b>وسوزان عبد الهادي</b> ، وأحمد شعبان ، وكريستوس إن ماركيدس Francesco Calise, Francesco L. Cappiello, Maria Vicidomini, Jian Song, Antonio M. Pantaleo, <b>Suzan Abdelhady</b> , Ahmed Shaban, and Christos N. Markides
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<p>In this research, a technoeconomic comparison of energy efficiency options for energy districts located in different climatic areas (Naples, Italy and Fayoum, Egypt) is presented. A dynamic simulation model based on TRNSYS is developed to evaluate the different energy efficiency options, which includes different buildings of conceived districts. The TRNSYS model is integrated with the plug-in Google Sketch Up TRNSYS3d to estimate the thermal load of the buildings and the temporal variation. The model considers the unsteady state energy balance and includes all the features of the building's envelope. For the considered climatic zones and for the different energy efficiency measures, primary energy savings, pay back periods and reduced CO<sub>2</sub> emissions are evaluated. The proposed energy efficiency options include a district heating system for hot water supply, air-to-air conventional heat pumps for both cooling and space heating of the buildings and the integration of photovoltaic and solar thermal systems. The energy actions are compared to baseline scenarios, where the hot water and space heating demand is satisfied by conventional natural gas boilers, the cooling demand is met by conventional air-to-air vapor compression heat pumps and the electric energy demand is satisfied by the power grid. The simulation results provide valuable guidance for selecting the optimal designs and system configurations, as well as suggest guidelines to policymakers to define decarbonization targets in different scenarios. The scenario of Fayoum offers a savings of 67% in primary energy, but the associated payback period extends to 23 years due to the lower cost of energy in comparison to Naples.</p>	
المرفقات: شواهد تصنيف الدورية.	