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Abstract

Valorization of hazardous waste in desalination of water and drying of agricultural products

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Statement of the Problem: Waste recovery is an extremely important operation. It not only makes it possible to reduce the consumption of products of natural origin such as petroleum and metals, but it also makes it possible to limit discharges and emissions in different phases. Therefore, environmental protection and economic growth are at least the two advantages of waste recovery. Methodology & Theoretical Orientation: This work aims at the recovery of hazardous waste by the process of pyrolysis followed by combustion. The transformation of pyrolyzed waste into a usable energy source aims to enhance the economic potential of the waste. A process for pyrolysis of waste and desalination of water and drying of agricultural products has been designed, implemented and tested. Conclusions & significance: The process implemented makes it possible to produce more than 100,000 m3 / day of pure water by Humidification-Dehumidification Desalination process and to dry more than 3,000 kg of solids per day. Natural resources such as oil and gas are replaced by pyrolyzed hazardous waste. This process promotes sustainable development and the circular economy.

Biography:

Adel Oueslati is a Associate Professor of Processes Engineering Department, Institute of Technological studies of Zaghouan, at University of Tunis ElManar, Tunis, Tunisia. He is a head of a research project of applied Process engineering technologies. His areas of interest include Unit operations, Waste management and valorization, Renewable energies, Safety processes, Sustainable development, Chemical and physical analysis of matters, Metrology and measurements, Hysys simulation.

Recent Publications:

1. Oueslati Adel, Hannachi Ahmed, Elmaaoui Mohamed. Effect of air humidification on the pumping efficiency of water in a packed column humidifier. Energy Procedia 74 (2015) 1381 – 1393.
2. Weslati A., Megriche A., Recent advances in bio-corrosion inhibition, 3rd international congress of biochemistry and Microbiology applied technology. 31 october-03 November 2019, Hammamet Tunisia.
3. Oueslati A., Megriche A., Design and performances tests of a new setup for solvent recovery and separation, International Conference on Sustainable Energy and Environmental Protection, 'SEEP 2017', Slovenia, from 27th to 30th June 2017.

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