

PRODUCING WATER IN A BURIED PIPE USING SOLAR AIR DRYER

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Abstract

This study is investigating the possibility of using warm humid air for irrigation and drinking water production, by flowing air over the water surface in a solar still with saline or polluted water. Vapor will be saturated during mixing with the warm air in buried pipe.

Finite difference method is employed to simulate the flow of the air long the pipe. The amount of water produced and buried pipe length depends upon the flow velocity, humid air properties and buried pipe diameter. The amount of water produced is 0.02525kg/s (0.0909m³/h). The length of the buried pipe needed in this study is 77.36m for a selected air flow velocity 5m/s with the properties of 70°C, 100% relative humidity at pipe inlet, 40°C and 100% relative humidity at pipe outlet of 0.2m pipe diameter. The results are in agreement with Bo Nordell (year) study within -4.0% deviation in terms of water produced and 7% in terms of pipe length.

Keywords

Water Production, Condensation, Humid Air

Biography

Dr. M.A.Muntasser is presently professor in Mechanical Engineering Department, Tripoli-University. He is also the Chairman of the board of LAPEDI (Oil and Gas Co.) registered in Spain.

He started his carrier in ESSO Standard Company in Libya, as pipe line Construction Engineer. He worked also different committees at Tripoli University, he joined as member of Supervisor committee for the construction of Brega – Misurata new Pipe Line. He introduced many companies to the oil industry

Dr. M.A. Muntasser degree includes, B.Sc. in Mechanical Engineering (Thermal Science), University of Tripoli, Libya (1969), M.Sc. in Mechanical Engineering (Thermal Science) Purdue University, W. Lafayette, Indiana, USA (1972) and PhD in Ph.D. Mechanical Engineering (Thermal Science) North Carolina State University, Rayleigh, North Carolina, USA (1978).

He authored 100 papers on energy and environment and contributed numerous technical presentation at major conference. Dr. M.A.Muntasser served different posts at Tripoli university till become the Associate Dean of Engineering. He served as a chairman of MPC's series conference.

Currently, Mr. A Elhemmali studying a master program in mechanical engineering at Memorial University in Newfoundland, Canada.

He undergraduate from Tripoli-University, Libya (2007) from Mechanical and Industrial Engineering (Thermal science).

Mr. Elhemmal has almost five years of experience in oil industry as a Field Engineer who specialized in service well testing, applying a variety of measurement, sampling, and analysis technologies and techniques to provide information such as petroleum composition, flow rate, and downhole pressure and temperature.