

Two-effect distillation of a seawater distiller utilizing waste heat of a small electric generator

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Received 30 November 2010; Accepted in revised form 27 March 2011

ABSTRACT

We have designed and developed a stand-alone small-scale desalination unit using waste heat of exhaust gas from a small diesel electric generator which is used in various places such as islands and remote areas. The distiller developed consists mainly of a multiple-effect diffusion still and an evaporation chamber that recovers waste heat of exhaust gas from the generator engine. With experimental results of two-effect distillation of this distiller, we have shown its production capability of 6.80 kg/d fresh water and have estimated at least 19.4 kg/d for a ten-effect distiller. The distiller suggested is considered to be applicable for a small-scale distillation unit, comparing to performance of a solar thermal distillation unit. Moreover, the distillation part of our designed unit is easily converted to a solar still type-distiller by changing the evaporation chamber to a solar-heating wall, if the engine is not available.

Keywords: Seawater distiller; Waste heat; Electric generator; Multi-effect; Desalination; Small-scale

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