

Quality Evaluation of Treated Ballast Seawater for Potential Reuse

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Abstract : The International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention) will commencing on 8 September 2017 after ratified by 51 States in September 2016. However, there is no value recovered for the treated ballast water as it simply discharged during de-ballasting. In order to evaluate value creation of treated ballast water, three seawater applications which are seawater toilet flushing, cooling tower and desalination was studied and compared with treated ballast seawater. An exploratory study was conducted in Singapore as a case study as this country is facing water scarcity issues and a busy port in the world which received more than 28 billion m³ of ballast water in 2015. Surprisingly the treatment technology between seawater toilet flushing and ballast water management has similarity as both applications use screening and disinfection process and quality standard and analysis between treated ballast water with seawater applications found that seawater toilet flushing have the same quality parameter with treated ballast water. Thus, the treated ballast water can replace the raw seawater for seawater desalination. As such, with reduction of cost for screen unit, desalination water can exceed water production by NEWater in Singapore as the cost can recover the energy needed for desalination. It can conclude that treated ballast water has high recovery value and can be reused in seawater application.

Keywords : ballast water treatment, desalination, BWM convention, ballast water management

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