

Sustainable Energy Management in WWTP's

Rainer Hoffmann

Abstract

Significant increases in energy costs with additional user charges such as carbon tax, make energy efficiency increasingly attractive. Applying energy efficiency measures to existing operational facilities and introducing energy and greenhouse efficient plant and processes is one way of reducing costs and helping the environment.

MWH has been engaged by various Councils in the preparation of energy audits and in identifying opportunities to reduce energy at existing wastewater treatment plants (WWTP's). For example, aeration is applied widely in the treatment of municipal and industrial wastewater treatment and is the single largest energy consumer typically representing 40 to 90 percent of the total plant energy requirement. It has been shown that through efficient aeration systems and advanced control of dissolved oxygen 20 to 30 percent energy savings can be achieved on the aeration portion.

The paper presents the power savings of the aeration upgrades at the Chapel Street and Te Maunga WWTP's which included the provision of fine bubble aeration and an advanced control system for aeration. Also the development and installation of an advanced regulatory control loop (feed-forward plus feedback) for nine reactor-clarifiers at the Mangere WWTP will be presented.

Bio

Rainer Hoffmann BSc, MSc (Eng)

Rainer Hoffmann is a senior wastewater engineer with over 30 years post-graduate experience in the field of water and wastewater treatment.

Rainer's experience covers a wide range of wastewater related projects and skills. He has been involved in the process design and optimisation of numerous wastewater treatment plants, treating both municipal and industrial wastewater. He has specific expertise in the design of biological nutrient removal plants (P & N removal), aeration control optimisation and appropriate technology type plants and upgrading of pond systems.