

Thesis Title	Application of Pinch Technology for Better Water Utilization in Tapioca Starch Factories
Thesis Credits	12
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Degree of Study	Master of Engineering
Department	Chemical Engineering
Academic Year	1998

### Abstract

In this thesis, we applied Pinch Technology to improve water utilization and reuse in the tapioca starch production process by systematic matching of water sources and sinks. The potential for operating cost saving from the reduction of starch loss and water and wastewater treatment costs were evaluated. From the survey data and analysis based on this method of three selected factories, it was found that the annual saving of these operating costs were 1.3-3.09, 0.24-0.48 and 1.14-4.45 Million Bath, respectively. Among these three factories, the second is the best in water management, and the water usage can be further reduced to 5.2 m<sup>3</sup> per ton starch when the specific water consumption of some equipment in the production process were reduced and some of the fresh water used was substituted by recycle water from regeneration process. The obtained result of water usage from the proposed improvement was then used as a reference for estimation of the total production cost saving potential for 50 tapioca starch factories with the total production capacity of 7,200 tons starch per day. It was found that the total reduction of operating cost on water and starch loss was 26.9 – 252.4 or 41 – 347.5 Million

Bath per year, depending on whether the water treatment system was either open-pond or fixed film reactor.

Keywords : Pinch Technology / Tapioca Starch / Water Management /  
Water Minimization.