

# Reduction of Langelier index of cooling water by electrolytic treatment with stainless steel electrode

**Rapeepat Rungvavmanee<sup>1,2</sup> and Chantaraporn Phalakornkule<sup>1,2\*</sup>**

*<sup>1</sup> The Research and Technology Center for Renewable Products and Energy*

*<sup>2</sup> Department of Chemical Engineering, Faculty of Engineering, King Mongkut's University of Technology North Bangkok, Bangkok, 10800 Thailand*

## **Abstract**

The efficiency of electrolytic treatment in reducing the Langelier saturation index (LSI) of the cooling water from a cooling tower of a textile industry was investigated. Sacrificial anodes were employed which prevent obnoxious chlorine generation. A series of batch experiments using stainless steel electrodes were conducted with 4 different current densities (5, 7, 10 and 15 A/m<sup>2</sup>) and 6 different electrolysis times (20, 30, 40, 50, 60 and 70 min). The use of 7 A/m<sup>2</sup> for 50 min electrolysis time yielded a satisfactory efficiency in reducing the LSI index from 2.57 to zero, indicating that the treated water was of sufficient quality to be reused in the cooling process.

**Keywords:** cooling water; electrolytic treatment; hardness; Langelier saturation index; water reuse