

Nattawan Thipcharoenporn 2007: Web-based Application for Cleaner Technology and Energy Conservation with Expert System by PHP and SQL. Master of Engineering (Chemical Engineering), Major Field: Chemical Engineering, Department of Chemical Engineering. Thesis Advisor: Associate Professor Penjit Srinopakun, Ph.D. 130 pages.

This research developed the computer program by Expert System for cleaner technology and energy conservation. This prototype used PHP and MySQL for developing Web-based Application. This Web-based Application can be used in any web browsers especially Microsoft Internet Explorer. This research studies 3 cases; canned tuna, electroplating and rubber industries. As results from expert system; the first case is to install spray nozzle, and pump, the second case introduced a tank between dripping tank and cleaning tank, and the last case is to install a motor for control system. Feasibility study of the first case are Net Present value (NPV), Internal Rate or Return (IRR) and Payback period which gives 944,107.46 Bath, 476% and 0.19 year respectively. The second case gives NPV 196073.3 Bath, IRR 544% and Payback period 0.17 year. And the last case gives NPV 43149.32 Bath, IRR 18.98% and Payback period 3.46 year. Energy conservation opportunities for high energy consumption units i.e. boiler, retort and cooking were calculated. Boiler can reduce fuel oil when this unit is improved by setting with economizer, air heater, and blow-down for recovery system. For retort, the introduction of insulation can reduce the fuel to 329.5 L/year. For the cooking unit in the study, this unit can also reduce the fuel to 1,907.12 L/year with suitable insulator.

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