

ENERGY EFFICIENT SILK REELING PROCESS USING SOLAR WATER HEATING SYSTEM AND USHMA SHOSHAK UNIT IN MULTIEND SILK REELING UNIT

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ABSTRACT

A new system for energy efficient management of silk reeling process has been formulated with solar flat plate collector water heating system and Ushma Shoshak unit as additional components for multiend silk reeling unit. The energy consumption for cooking, reeling and re-reeling operations was derived and compared with that of conventional process. On an average, 570, 1000, 100 and 375 l of water is consumed for cocoon cooking, reeling, re-reeling and boiler operations, respectively for production of 10 kg multivoltine raw silk (20/22 denier) in 10 basin multiend silk reeling unit, leading to considerable amount of firewood consumption to produce heat energy for cocoon processing. The new, energy efficient management process with the combined use of solar water heating, Ushma shoshak unit and boiler yields 46 % saving in firewood consumption compared to conventional process with 2.26 years payback period on investment.

Key words: Cocoon cooking, firewood, heat recovery, insulated hot water tank, silk reeling, solar water heating system, Ushma Shoshak Unit.