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STUDY OF ENERGY EFFICIENCY IN EXPERIMENTAL SEWAGE EFFLUENT REPROCESSING PLANT

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Preservation of the environment and energy efficiency from the use of renewable energies are currently recurring themes that will define the continuity of human society in the near future. The increasing demand for energy and its finite resources make it imperative to use these resources efficiently. Efficient use is directly linked to the treatment and reuse of waste from human productive processes. The simple equation that predicts that a system is not viable when it consumes more energy than it produces can be revised if it brings a very low environmental cost compared to a system that although very efficient brings a very high environmental cost afterwards. The correction of the environmental cost is inefficient, because it will require much more energy for its correction. The integration of energy systems with renewable and non-renewable sources can be a transition step for green systems where harm must be minimal to the environment. In order to solve a historical environmental problem, many cities are attempting to reduce or eliminate the volume of sludge discarded in the landfill. Specifically for the city of São Paulo- Brazil- this amount is approximately 500 tons per day. The concentration of solar rays through the parabolic reflector has a relatively simple construction showing its viability for use may reach temperatures up to 350° C. Adding thermal energy to photovoltaic energy increases the efficiency of solar energy use by not restricting itself in a single way of solar energy conversion. The proposal in question is to add thermal energy from the sun and its photovoltaic energy to the treatment of domestic sewage and provide purified water to low-income populations using solar energy more efficiently. This treatment could be distributed and not concentrated in a single treatment plant, but its application becomes facilitated in an already constructed sewage treatment plant.

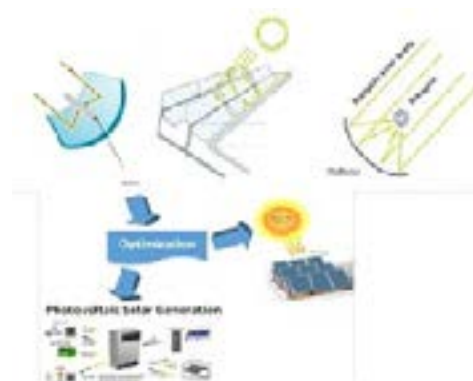


Figure 1: Optimizing use of solar energy

Biography

Silvio Renato Messias de Carvalho is currently working as a Professor in photovoltaic systems courses at Unicamp's Extension School (EXTECAMP) and he is a Ph.D by the Department of Communications (DECOM) of the Faculty of Electrical and Computer Engineering (FEEC) at State University of Campinas (UNICAMP), SP-Brazil. He is also a Reviewer of Brazilian Technology Symposium (BTSym). Yours interested research area are renewable energy, energy efficiency, telecom in RF areas and video.

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