J Fundam Renewable Energy Appl 2017, 7:4(Suppl)
DOI: 10.4172/2090-4541-C1-030

5th World Bioenergy Congress and Expo

June 29-30, 2017 Madrid, Spain

Energy efficiency and applications to the municipalities in USA

Bhaskar Kura
University of New Orleans, USA

Municipalities have started paying attention to the energy efficiency opportunities and associated carbon savings from their energy intensive processes. Energy consumed for a variety of operations by municipalities include water treatment/supply, storm water pumping, wastewater collection, treatment/disposal. Energy demand from wastewater collection is a function of the terrain with flat terrains typically requiring higher energy because of increased pumping at lift stations. The University of New Orleans (UNO) is collaborating with the local municipalities and their public works departments to develop strategies for reducing energy consumption and associated carbon footprint from their wastewater collection systems. One such case study involves 500+ lift stations that have about 1000+ pumps. The scope mainly includes creating an online knowledge base for the municipality's wastewater collection system's assets/infrastructure, energy data, and associated logic to develop strategies for energy saving decisions. The knowledge-based system (KBS) developed, includes features to track historic energy consumption trends, compute and rank the pumps/lift stations based on their energy consumption, and others. KBS data was used to identify a lift station for performing pilot study to evaluate the energy saving potential from the use of variable frequency drive. This project is scalable to any municipality or any city and the system can assist in making strategic decisions for obtaining energy efficiency while reducing their carbon footprint. Efforts are being made to apply this model in the future to other major cities in the United States, India, Brazil, and others. This project involves interdisciplinary experts (mechanical engineers, civil engineers, environmental engineers, information technology specialist, computer engineers, and more) under the direction of the principal investigator.

bkura@uno.edu

Influence of bulk density charcoal in the production of silicon metal

Crismeire Isbaex
Federal University of Viçosa, Brazil

The need for metal-steel for charcoal quality and quantity satisfactory causes forest plantations, high cost and long-term, are well conducted. In addition, the vulnerability of the Brazilian energy system is to raise production costs in electro-intensive industries. On the assumption that the metal-steel don't get charcoal with appropriate properties, especially in terms of density, the general objective of this study was to evaluate the influence of bulk density charcoal in silicon metal production process (Si-met.). As the literature was scarce, it was necessary to apply methods of interviews with the professionals of the company studied and analysis of material consumption raw material in electric arc furnaces. It is found that the density of charcoal has a share of influence on electricity costs. With an annual production 48844.334 t. Si-Met., the variation in energy prices in the market may result in an opportunity cost of R$ 6,105,755 million when using a denser charcoal (230 kg/m^3), consuming 10.87 MWh/t. Si-Met and a cost of R$ 61,073,304 million when using a lighter charcoal (199 kg/m^3), consuming 13.37 MWh/t. Si-Met. Thus, the densest possible for charcoal, better and more efficient production of silicon metal process therefore takes up less space with charcoal within the furnace; reduces the occurrence of charge segregation and formation of voids; stoichiometric improves stability within the furnace; increased productivity; generates less slag; and reduces the consumption of electrode and electric power.

engisbaex@gmail.com