

## عنوان مقاله:

Assessment and Performance Evaluation of a Water Tube Industrial Steam Generator Using Coal-Diesel Oil Colloidal Fuel (CDOCF)

## محل انتشار:

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## خلاصه مقاله:

This paper describes the assessment and performance evaluation of a water tube industrial steam generator using coal-diesel oil colloidal fuel (CDOCF). It also involves the determination and utilization of the most suitable CDOCF proportion as an alternative fuel for diesel-oil fired industrial steam generators. Mined coal samples from Calatrava, Negros Occidental, Philippines were beneficiated through oil agglomeration process and mixed with diesel oil to form CDOCF at different blends. CDOCF's physical, chemical and thermal properties such as: ash content, carbon residue, flash point temperature, specific gravity, density, viscosity, sulfur content, water and sediment, and higher heating value were investigated based on American Society on Testing Materials (ASTM) Test Standards. The properties of the CDOCF were compared with that of diesel oil to determine the most suitable alternative fuel. A fuel oil day tank made up of cylindrical steel housing and fuel oil piping system were fabricated and installed to the industrial steam generator to measure the fuel consumption. An electric motor-stirrer unit was also installed in the day tank to ensure a thorough mixing of the CDOCF. Comparative performance evaluation of industrial steam generator using diesel oil and selected CDOCF were conducted based on American Society of Mechanical Engineers (ASME) Power Test Code. Results showed that the CDOCF with a particle size passing 200 mesh or 75 micrometer sieve having a blend of 5% pulverized coal and 95% diesel oil, could be handled throughout the test run of the industrial steam generator. By using the selected slurry fuel, the combustion and steam generator efficiencies were not affected and approaches that of using diesel oil.

## کلمات کلیدی:

Assessment, Performance Evaluation, Coal - Diesel Oil Colloidal Fuel, Pulverized Coal, Industrial Steam Generator

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