

## **Heavy Fuel Oil-Is that the final measure?**

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In the past few years, the cost of diesel has steadily increased and long range forecasting projects even higher costs. Since many electric utilities in the Caribbean depend on diesel to produce energy, the operating cost has in turn skyrocketed. The utilities are thus faced with a dilemma – recoup the higher operating costs through customer surcharges in utility tariffs or watch the profits erode. Because selecting either option is unfeasible as a long-term solution, many utilities in the Caribbean are exploring yet another alternative – a switch over to Heavy Fuel Oil (HFO).

In considering the switch to HFO, three important factors need critical evaluation: plant modifications, supply logistics, and environmental effects. Modifying the existing generation plants is an arduous and capital intensive task. Furthermore, the addition of a steam production plant is essential to convey the HFO from the storage tanks to the engines. Steam production in turn demands a source of water which is another precious commodity in the Caribbean. The hot water resulting from the generators needs disposal adding maintenance and disposal costs. Also, the operation of HFO-based generators presents greater maintenance challenges with false starts, centrifuge malfunctions, and other related issues.

Supply logistics are especially challenging for those utilities that are located in remote locations. Many of the major oil suppliers currently have a streamlined supply of diesel and other lighter fractions in the Caribbean but do not ensure a reliable supply of HFO. Consequently, the suppliers may not be motivated to supply HFO unless utilities are willing to sign long-term contracts and accept additional financial investments to implement supply changes. Even if the utilities are willing to entertain these issues, the switching over is a long and tedious process. With dwindling oil reserves, the long-term oil supply itself is in question. It is uncertain, therefore, if the HFO supply to the islands is assured on a long-term basis.

From an environmental perspective, HFO based power plants produce vast quantities of oily wastes that require management and disposal. Waste oil can accumulate rapidly demanding frequent off-site disposal or significantly larger storage capacities in detention. Managing waste oil increases the risk of leaks and spills and the associated burden of environmental cleanup. In addition, the waste oil disposal is becoming progressively difficult and comparatively expensive due to increased environmental regulations in the Caribbean.

Moving forward, some economists project that the oil prices could reach over a \$100 per barrel creating additional pricing pressures to utilities. It is well justified, therefore that the utilities should explore options to combat the rising energy costs. Based solely on price differential of the fuels, switching to HFO appears to be an attractive option. But is that the final measure? Have the utilities explored other practical solutions?

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- The paper has not been previously presented at any conference.
- The paper will be presented utilizing Microsoft Power Point software.
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Mr. Raj Mahadevaiah is President and CEO of Environmental International Corporation- an environmental engineering firm headquartered in the Atlanta metro area in southeast United States of America (USA) with branch offices in USA, The Middle East, and Asia. He has a B.E degree in Civil Engineering from Bangalore University and a M.S. degree in Civil Engineering (Groundwater Emphasis) from the University of Oklahoma, USA and is a registered professional engineer in over 13 states within the USA. With over 21 years of experience, Mr. Mahadevaiah has experience in the environmental engineering (petroleum emphasis) field conducting, environmental assessments, Remedial Action Operations (RAO), Long Term Management (LTM), project management, and litigation support at over 100 sites in the North America, The Caribbean, The Middle East, South Asia, and other nations world-wide. He has designed, implemented, operated, and maintained remediation systems at petrochemical storage and distribution facilities, public and private electric utilities, refineries, conveyance facilities, superfund sites, landfill, RCRA sites, and other hazardous waste facilities. He has also conducted due diligence and compliance audits of ISO 140001-related elements concerning air, surface water, soil, groundwater, hazardous waste, and noise issues at various facilities. At several facilities, Mr. Mahadevaiah has critically evaluated existing remediation systems and developed cost-effective alternatives. He also developed telemetry-based remediation systems to manage remote sites in the Caribbean. Apart from over a dozen technical papers presented at various locations worldwide, Mr. Mahadevaiah has also served as a panelist representing the Electric Utility Industry concerning "The RCRA Reauthorization Bill proposed by the US Congress," at the Air and Waste Management Conference held in Vancouver, British Columbia.