

Fuel Management in Rising Energy Costs

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A large number of utilities in the Caribbean depend on fuel oil as an energy source in producing electricity. Over the last few years, the oil prices have skyrocketed to over \$50 per barrel creating significant pricing pressures for operating utilities. Some economists project that the oil prices could reach over a \$100 per barrel in the next few years creating severe pricing pressures. In addition, fuel loss due to leaks and spills leads to loss of valuable inventory, additional financial burden, and imposes long term environmental liabilities. Consequently, fuel has become a precious commodity and needs to be effectively managed.

The first step towards effective management is the completion of a cradle-to-grave survey-tracking the fuel's pathway through the entire facility identifying areas of concern (AOC). At a minimum, the AOCs will focus on deficiencies in the receiving system, storage system, conveyance system, waste oil collection systems, waste oil conveyance systems, and waste oil disposal systems. Each AOC should be critically evaluated to identify various means of process improvements and environmental safeguards. Two lists should emerge from such an exercise. The first list entails engineering design improvements that enhance efficiencies with safety and environmental safeguards. The second list should outline process improvements.

Examples of design improvement include efficient fuel receiving stations, storage systems capable of containing both acute and chronic spills and leaks, automated water-draws that prevent accidental fuel releases, conveyance systems with leak detection and control systems, waste handling systems, and waste recycling or disposal systems. Process improvements focus on monitoring and consistently harnessing the increased design efficiencies to minimize operational threats to the integrity of the storage and conveyance systems. The key to successfully completing such a vital task is to form an integrated team of multidisciplinary experts.

As with most industries, the utility industry is highly segmented with various departments that have independent roles such as engineering services, plant operations, production, emergency planning, safety, environmental, and related departments. An integrated multidisciplinary team drawn from various disciplines within the utility is essential to serve a common cause-continuous improvement to increase efficiency in energy use, safety, and consistently reduce environmental liabilities. An external professional can provide additional insight into latest advancements in science and technology and help the team compile a list of improvements for management consideration.

To the extent practical, the management should evaluate the feasibility of implementing selected engineering and process improvements in a phased approach. Where possible, in situ treatment technologies and recycling options should take precedence over traditional processes in addressing fuel oil releases and oily water discharges. Effective fuel management should therefore both combat the rising energy costs and minimize environmental liabilities.

Mr. Mahadevaiah 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 United States. 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 compliance audits of air, surface water, soil, ground water, hazardous waste, and noise elements 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.