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ISO 14000 and Global Energy Management

by Robert Farmer, ©1997

ISO 14001 is an environmental management system (EMS) standard, but where the burning of fossil fuels is concerned it might also be considered an *energy* management system standard.

The ISO 14000 family of environmental management standards, of which ISO 14001 is one of the pillars, is much too important for me to suggest it's named incorrectly. To the contrary, I'm suggesting that where the burning of fossil fuels is concerned, energy and environmental management are one and the same thing and always have been. The association is important and was confirmed when Niagara Mohawk Power Corporation's Albany Steam Station recently achieved EMS registration to ISO 14001.

When fossil fuels are burned in a combustion engine to produce electricity or other forms of stationary power, roughly 2/3 of the fuel used to produce a unit of electricity is lost to the environment as exhaust and waste heat. Only 1/3 of the fuel is actually converted to electricity.

Automobile engines have even more lamentable inefficiencies because of their part-load operating characteristics. For every 20-gallon tank of gas, only 4 gallons produce power while 16 gallons are lost to exhaust and waste heat.

You may be thinking: "Surely something can be done to improve efficiencies!" I'm afraid not. It's important to understand that technological innovation cannot improve first stage combustion efficiencies much more because we are constrained by universal scientific laws of thermodynamics that preclude our ability to circumvent them.

Where we can make efficiency gains, and therefore environmental improvements, is in the optimization, or minimization, of the by-products of the combustion process. Combined-cycle turbines and cogeneration are examples of process stream optimization in power plants. Hybrid cycle automobiles are examples of improved power processes that minimize the by-products.

The importance of ISO 14000 is that the standards are similarly process-solution oriented. The ISO 14000 family of Environmental Management Standards have been modeled on their internationally successful precedent, the ISO 9000 Quality Management Standards. Developed by the International Organization for Standardization (ISO), these are management not performance standards. ISO 14000 does not set requirements for environmental compliance, pollution prevention or performance levels; rather, it establishes that an organization has a management

system in place to address, and solve, its environmental responsibilities.

ISO, a private organization founded in 1947, has 120 full voting member countries. Adoption of its standards is voluntary, but don't be misled. Increasingly, ISO standards have become prerequisites for conducting international business.

The U.S. House Committee on Science expects ISO 14000 to create numerous benefits for both the public and private sectors, and provide a means for companies, and governments, to demonstrate their concerns for the environment to the international community. •



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His technical expertise includes large scale to small scale power generation, combined heat and power (CHP), marine and surface transportation, and alternative fuel applications.

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