

SECTION IV

Energy management

Energy management has always been one of the areas of responsibility of the manager of any enterprise or community in modern society. It has seldom, however, been identified as a subdiscipline of itself, but has rather been one small and complex component of the larger discipline of financial management. It is important to emphasize that in the vast majority of cases, it was both a small component and a complex component. It is for this fundamental reason that little or no attention has been given heretofore to energy management.

Consider first the relative magnitude of energy as a component of the total financial framework into which it fits, and how the relative size of that component is changing. The most fundamental example is the family unit. The major energy expenses for the family unit are household energy (heating, cooking, appliances) and fuel for the family car. The ratio between the average household mortgage and the energy cost in the early 1960s for the average middle class homeowners was approximately five to one. In the late 1970s this ratio had dropped significantly and, in some instances, energy costs actually approached or exceeded mortgage payments. On the commercial and industrial scene the problem is quite different. Energy to the businessman has historically been a pass-through cost. The most direct example of this is the electric utility bill which contains a "fuel adjustment" which automatically floats through to the consumer, or the gas utility bill which similarly passes fuel costs through as "purchased" gas adjustments. Less directly, sophisticated commercial building owners have energy pass-through clauses in their leases and manufacturers in all industries including those which are "energy intensive" have historically taken the position that energy was a cost which their competitors bore as well as they, so a rising cost of energy simply raised the price of the "widget." In the case of the utility, the rapidly rising "purchased" energy pass-throughs have brought public outcries from the homeowner, and in the case of the commercial and industrial firms, the relative cost of the energy consumed by their building or their process as a part of the total space or product cost has risen to a point where management of energy consumption (or mismanagement) can seriously affect their position in the competitive marketplace.

It is thus that we find all levels of management from the largest industrialist to the homemaker starting to realize that an energy cost is not simply an overhead cost beyond their control. In working with otherwise skilled business entrepreneurs and management-level executives, it has been most surprising to find how many of them did not know how to interpret their utility bills. Yet this may have represented 20 to 25 percent of their total annual expenditures!

Unfortunately, because of the vastness of some of the topics in this section, only the surface of the all-important topic of energy management has been dealt with.

The first chapter in this section explores the broad scope of the need for energy management and the wide gap between present management skills in this area and the skills required. An invaluable management tool, the building automation system, is discussed in the second chapter. The building automation system is probably the least understood and misused device to have entered the so-called energy conservation market. The fact is that there is not a more powerful management aid that could have arrived on the scene more timely than the digital programmable computer which *arrived* during the past five years, just at the birth of our awareness of the energy revolution. Unfortunately, we have not yet taken the time to train our management people and technicians in the use of these devices. The top-level managers are expending funds well into six figures for an installation of highly sophisticated hardware with the misguided understanding that its presence on the premises will "save energy." Even more unfortunately, the manufacturers of this hardware are actively promoting this misunderstanding to strengthen the market. But just as most timely and new concepts in our marketing-oriented society tend to be oversold before they find their proper place in the scheme of things, building automation systems are ultimately here to stay. The key to their survival will be the teams of professionals and technicians with the systems knowledge to program the systems and the attuned management professionals educated to utilize this powerful tool.

The "Laundry List" is a timely chapter intended to inform the reader of some of the quantitative aspects of energy use which may be a good bit different than he may have thought.

The chapter on "Energy Audits" is probably the most directly useful data in this section insofar as benefit to the engineering analyst or business manager is concerned. The misuse of the concept of energy audits has found its way through United States federal legislation and the executive bureaucracy almost to the point where the concept has been destroyed. Hopefully, this is a temporary state of confusion. The energy audit, properly conducted and utilized, is as fundamental a tool to energy management as is a financial audit to financial management.