

The Energy Problem

By Louis P. Solomon with Dick Van Orden

In our last column, we introduced the subject of alternative power sources. Why is everyone talking these days about a pressing need for such alternatives? If you ask the man on the street, he'll say it's because we have an energy shortage. Do we really? Or is it only that the world is running out of its readily available supply of inexpensive oil? Let's examine the energy problem in a little more detail.



We in this country *do* have an emerging problem; the entire civilized world has a future problem when we consider the rapidly growing requirements for energy. The problem, however, is one of supply and demand, not of the existence of energy products. As the human race grows in numbers and as we expand our uses of energy, we find available energy products becoming more scarce and more expensive. Is the problem that we're running out of energy sources? No, not really, but most people think that's the case because we have become so dependent on petroleum products. People fear that our future will become increasingly bleak if the supply of crude oil fails to keep up with demand. Fortunately, that is not the case.

The real problem is that the supply of readily available energy sources and, more important, the ability to convert those sources into useful products has not kept up with our demands *at reasonable costs*. We have become so dependent on oil and its byproducts (gasoline, fuel oil, diesel oil, and natural gas) that we have lagged in development of other sources of energy. For example, in the U.S. we have coal reserves estimated to be sufficient for several hundred years. In Canada there are large areas of "oil sands" that can be worked to extract the petroleum. They estimate reserve deposits available for hundreds of years. Oil shale deposits in the U.S. are also extensive and capable of providing many years of usable oil. Then there are also the proven capabilities of extracting oil from waste products. No shortages here, it seems. The problem is that *the costs far exceed the traditionally low costs of extracting crude oil from the earth*.

So the does the problem becomes one of cost? Yes, but with the increasing costs of petroleum, some of these sources become attractive; the next problem becomes one of building the infrastructure for extracting and refining the products from these various sources. Then the time and costs of getting products from these sources become part of the problem. Anything else?

Yes, as a matter of fact, we learn that all of these burnable fuels produce gasses that pollute the atmosphere and bring on the dreaded Global Warming. Whether this is true or not remains a question. We do know, however, that almost all burnable fuels (coal, wood, gasoline, diesel oil, etc.) result in undesirable smog. Some, but not all, of the harmful effects of most of the contaminating byproducts can be mitigated by burning alcohol variants, such as ethanol or methanol, and these are readily available from corn and sugar cane, but here again the costs become prohibitive. Even so, we have large subsidies, as does Brazil, to assist in their usage.

So, is there some means of supplying fuels that will not contaminate the atmosphere, have a ready supply for centuries, and provide energy that can be used readily at minimal cost?

No, not yet. The energy problem, then, can be easily defined:

The United States needs an unlimited source of energy that can easily be turned into a variety of energy products that will not pollute the atmosphere or produce greenhouse gasses and can be offered at reasonable prices to consumers.

It's just that simple! Are there such sources now available? Well... No, not at the present. There are, however, four very promising opportunities that can be examined:

- Nuclear Power (Fission)
- Hydrogen Fuels
- Fuel Cells
- Nuclear Power (Fusion)

There are also a number of other alternatives to petroleum products that are being explored at the present time. Most of these are impractical for long-term use, but can be interim solutions for the next few years.

These energy sources, and the reasons for their impracticality, are listed below:

- Solar Power: Limited time available, inability to satisfy large percent of needs.
- Alcohol Compounds: Costly, large quantities needed.
- Wind Power: Limited times and locations availability, environmental problems.
- Biofuels: Costly infrastructure needed, with environmental problems.

All of these will be examined in detail in future columns.