PLENARY SESSION
The Sugar Industry in a Changing Economic Climate

Helmut Ahlfeld
Managing Director, F.O. Licht
Ratzeburg, West Germany

Since 1951, world consumption of centrifugal sugar has increased on average by just over two million tonnes, raw value, per year. The relative rate of growth has successively dropped from 4.9 percent a year, in the period 1952-1960, to 3.9 percent, in 1961-1970 and then 2.5 percent, in the 1971-1978. If sugar continues to be used almost exclusively as a food, past performance points to a demand for centrifugal sugar of the order of 103 million tonnes, raw value, in 1985 — 11 million tonnes above the 1978 production level — and of 113 million tonnes in 1990. The implication is that the average annual rate of growth will be 2.1 percent in this decade.

Moreover, due to the development of high-fructose corn syrups (HFCS or isoglucose), the market for sugar in developed countries is now vulnerable to attack by substitutes as it has never before been. In 1979, less than a decade after their commercial introduction, world sales of HFCS reached an estimated two million tonnes, dry basis. In the United States, the leading producer, HFCS has mainly affected sucrose consumption, although it also appears to have slowed down the growth rate of conventional starch sweetener usage. Relative to total U.S. per-capita caloric sweetener consumption, per-capita sugar consumption declined from 86.8 percent in 1962 to 83.0 percent in 1970 and 69.9 percent in 1979. While the economics of isoglucose manufacture and its market potential vary considerably in different countries, it generally offers a cost advantage to industrial users. Competition from cheaper substitutes is bound to restrain the upward movement of the sugar price and limit the ability of the sugar industry to pass increases in production costs on to the consumer.

Probably no other factor will determine the development of the sugar industry in the 1980’s as much as the changed energy situation. The price of a barrel of Saudi Arabian light crude oil, traditionally the reference point for oil prices, rose from US$1.90 in 1972 to $24 at the end of 1979. At the 1972 oil price and that year’s average International Sugar Agreement Daily Price of $0.0727 per pound, a barrel of oil cost about 26 pounds of sugar. At their respective prices toward the end of 1979, a barrel of oil was worth about 160 pounds of sugar.

A change of such magnitude calls for a reassessment of production methods in field, factory and refinery, as well as for a review of research and development objectives. Energy management is likely to become the principal concern of sugar technologists in the 1980’s, replacing the reduction of manpower requirements and the increase of sugar yields as the main goal.
of technical innovation.

In the field, both the consumption of such items as fertilizers, fuel and electricity, and the methods of production will be scrutinized to effect savings in on-farm energy use. In the factories, and above all in cane sugar mills, the main objective henceforth will almost certainly be to improve thermal efficiency. Whereas efficient bagasse combustion and economic steam utilization would make enough energy available in an integrated plant to produce white sugar without additional fuel, the refining of raw cane sugar entails relatively large support energy costs. The escalation of fuel prices can be expected to revive the debate over the respective economic advantages of manufacturing plantation white sugar directly from cane versus refining from raw sugar.

Other things being equal, the competitive position of those sugar producers relatively less dependent on purchased fuel obviously improves in the new energy situation. Available studies indicate that, as a rule, sugar cane has a marked advantage over sugar beet, both in terms of gross biomass energy yield and the ratio of energy output to support energy input. Whereas cane bagasse provides most of the energy for the production of raw and plantation white sugars, sugar beet supplies no energy for processing. Modern beet sugar factories consume about a tonne of fuel oil for each three tonnes of white sugar, including the energy required for pulp drying.

In a world of runaway fossil fuel prices, energy output:input ratios take their place alongside the more familiar yardsticks of labor and capital costs as standards of economic comparison in the sugar industry. Both beet and cane sugar producers face the prospect of an acceleration in the rising trend of production costs. To cope with the continuous cost squeeze to be expected in the changed economic environment, the sugar industry will have to seek the efficient exploitation of all parts of the beet and cane crops.

The kind of systems approach required to save energy and to optimize the utilization of the produced biomass will also help the sugar industry to take advantage of the new opportunities presented by the oil crisis. Sugar cane, in particular, has excited attention as a renewable source of energy. Brazil has been the first country to initiate a large-scale program to produce fermentation alcohol for motor fuel, not only from the molasses, but, to an increasing extent, directly from cane juice, which implies a great expansion of the area under cane.

The declining growth rate of the food demand for sugar, increased competition from starch sweeteners and the rise of fossil fuel prices will exact their toll of adjustments in the sugar industry. Rooted in biomass systems capable of yielding a variable product mix of food, materials and energy, the industry has the ability to adapt to the new situation. The challenge of the 1980's is to use that ability.