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SWITZERLAND BUILDS HER FIRST LARGE-SCALE THERMAL POWER STATION

Hitherto Switzerland's reserves of water power have provided the "fuel" from which the country's electricity supplies are generated. In view of the expected increase in consumption, however, towards the end of the 1960's the hydro stations alone will not be able to meet demands during the winter months. In any case the harnessing of Swiss hydro-electric power resources will be completed in ten or at the most fifteen years. Thus the thermal generation of electricity will become a necessity within the foreseeable future. At the present time there are two possibilities open: either conventional thermal stations or nuclear power stations.

In the long run it will be the nuclear power plant that will have to supplement the hydro stations in Switzerland. The nuclear fuel needed for operation incurs only low transport overheads, and several years' supply can be stored simply and cheaply. But for the time being the production costs of nuclear energy are too high to be able to compete with power generated in conventional thermal or hydraulic stations. Moreover if the reactor is to operate economically, its unit rating must not be too small, and should amount to a few hundred MW at least. In addition its hours of duty must not fall below a certain annual minimum. Any attempt to meet these demands in Switzerland at present could only be made at the expense of the rational exploitation of the available hydro-electric capacity.

Meanwhile the impending supply deficit must be filled, since the rise in Swiss power demands averaged 5.8% over the last few years, which is equivalent to a doubling of consumption in twelve years or so. The best solution seems to lie in the harnessing of the remaining water resources, supplemented by the construction of a few thermal stations of conventional type. The Centrale Thermique de Vouvry S.A. (CTV) of Lausanne is already building a thermal power station in the region where the River Rhône flows into the Lake of Geneva. Participating in this concern are the Energie de l'Ouest-Suisse S.A., Raffinerie du Rhône S.A., the Swiss Federal Railways, Schweizerische Aluminium AG (Alusuisse), Lonza AG and the Société Romande d'Electricité.

This concern recently placed an order with Sulzer Brothers for a Monotube Steam Generator, which will have a maximum steam output of 460 tonnes/h, a service pressure of 190 atm.g. and a temperature of 540°C, with reheating also to 540°C. The fuel oil will be supplied by the neighbouring Raffinerie du Rhône S.A. at Collombey. The turbo-set will have an installed capacity of 150 MW, and it will generate some 400 GWh during about 3,000 hours of service annually. The price per kilowatt-hour will be around 4 to 4.5 Swiss centimes. In the not-too-distant future a second block of similar capacity will be installed.

The problem of air pollution from the boiler exhaust gases was examined very thoroughly. Because it was imperative that any such pollution be avoided in the Rhône plain, which lies at an altitude of some 1,250 ft. above sea level, an underground chimney in the form of a tunnel 4,750 ft. long was considered first, leading the flue gases out to the surface through the mountain-side. In the end, however, it proved more practical to site the whole station at an altitude of 2,700 ft. above sea level.

(By courtesy of Sulzer Technical Review 3/1963.)