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RECONSTRUCTION AND EXPANSION OF THE EBANO REFINERY IN HAMBURG

Dr Frithjof Schmelting

[Information on graphics material is appended.]

The Ebano Raffinerie AG, formerly Ebano Asphalt-Werke AG, was founded in 1928. It is located at Basin 4 at Hamburg-Harburg, which can handle ships with a draft, up to 9 meters, and is close to the Hamburg-Untere Elbe freight station.

After its first expansion, the refinery in 1938 had a throughput of 390,000 tons in two two-stage pipe stills. A third pipe of approximately the same capacity was added during the war and the tank-farm capacity was increased to 128,000 cubic meters. Because of the war, however, these additional facilities could no longer be utilized, and by the end of the war 80 percent of the installations had been destroyed by bombings.

The stills and the boilerhouse were badly damaged, but were not a total loss. As early as 1945, the military government gave permission for reconstruction. However, because of the general economic depression and the steel shortage, the first still did not go into operation until 1947. Since then, expansion has been going on steadily. The plant has been converted to produce not only bitumen but all mineral oil products. By now reconstruction has passed the old level of three pipe stills and three asphalt oxidation stills. The plant has expanded into the adjacent plot belonging to the Esso AG. Throughput capacity has remained unchanged so far. By using the crudes now being treated, the maximum throughput was 620,000 tons in 1951.

The new installations consist of a redistillation plant for lubricating oils, made by partial rebuilding of one of the old stills; one refining installation each for carburetor fuel, technical gasolines, and lubricating oils, an installation for leading; and an alkaline washing installation for

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diesel fuel. In addition, the tank-farm capacity has been increased to 134,000 cubic meters; 45 kilometers of pipelines and 7 kilometers of railroad sidings have been laid, and a wide road running through the entire plant, installations for filling tank cars and tank trucks, a workshop, and a storage depot have been built. One large building now contains all the Esso laboratories, preciously located in various places in Hamburg, the engine test stands, and the scientific library. A number of machines are available for the testing of road-building materials, and the engine test stands are extremely well equipped and permit the extensive testing of fuels and lubricants under operating conditions. A technical department for large-scale tests is under construction. Expansion of the lubricant distillation plant and enlargement of the administration building are planned.

By an ingenious method of combining the processing of two different crudes, the Ebano refinery has succeeded in continuing to supply its old customers with bitumen made from asphalt-base crude, while at the same time it is able to fill a large portion of the demand of the Esso AG for fuels and lubricants. Parallel refining of naphthene-base Tia Juana crude and of paraffin-base Aramco crude is carried out. While both carburetor and diesel fuel are obtained from both crudes, the Tia Juana crude is used (1) for making lubricants which have a low pour point and which need no deparaffinization and (2) for production of various types of bitumen. The Aramco crude is used for production of technical gasolines fuel oils.

The carburetor fuel is refined by the hypochlorite method developed by the Humble Oil Company, a US concern. The refining plant has been operating for 2 years and still shows no signs of corrosion. Technical gasolines are produced in a continuous redistillation plant, the first in Europe. It consists of an atmospheric and a vacuum tower for primary distillation of Aramco crude. The fractions are then treated with acid and then redistilled. The production of lubricants also employs a method not previously used in Germany. The Tia Juana crudes give lubricant distillates which contain naphthenic acids. In the old method, these acids were removed by washing with alcohol, with subsequent recovery of the alcohol. The method used now supplies one wide lubricant fraction which is then redistilled into its components. The naphthenic acids are removed by injection of alkali behind the pipe furnace.

It is planned to expand the Ebano refinery to a throughput capacity of 1.5 million tons of crude oil per year. On the filled-in swampland adjoining the refinery, a large catalytic cracking installation with three fractionation towers up to 60 meters high and the other necessary refining installations is to be built. This will include an additional 110,000 cubic meters of tank space, 55 kilometers of pipelines, 3 kilometers of railroad sidings, loading equipment, a new pier for tankers, a new transformer station, and a new fire station. To accommodate these installations, the refinery area had to be nearly doubled to 500,000 square meters. A total of 1,000 reinforced-concrete pillars, 12 meters long, are used as foundations. The steam consumption of the plant will increase five times, the consumption of electric power six times, and the volume of cooling water required nearly four times. While the old section of the refinery will continue operating on the same basis as before, the new installation is to refine Aramco crude exclusively to produce all kinds of motor and heating fuels. The installation is now under construction. The catalytic cracking plant will use the system of the Standard Oil Development Co.

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GRAPHICS MATERIAL AVAILABLE

Requests for copies of, or further information on, the photographs described herein should be addressed to Graphics Register, CIA, by referring to report number and item number.

1. Location: German Federal Republic, Hamburg-Harburg, Ebano Refinery

Caption and Description: "Present-Day View of the Ebano Refinery." Newly filled-in land in background. The photograph is an aerial oblique from low altitude showing a tanker in the harbor, some of the storage facilities, the railroad trackage in the refinery yard, and the refinery itself

Photograph Description: 3 7/8 x 5 inches, good, slick

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