

ITEM NO. 30
FILE NO. XXXII-3

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by Col. E. W. Grubb.

RESTRICTED

DEUTSCHE ERDOL A.G.

MINERALOLWERKE

ROSITZ

Honne W-a

RESTRICTED

COMBINED INTELLIGENCE OBJECTIVES

SUB-COMMITTEE

RESTRICTED

REPORT ON
DEUTSCHE ERDOL A.G. MINERALOLWERKE, ROSITZ.

Reported by:

W. A. HORNE

On behalf of

U.S. TECHNICAL INDUSTRIAL INTELLIGENCE COMMITTEE

CIOS Target No. 30/9.04

FUELS and LUBRICANTS

9 May 1945

COMBINED INTELLIGENCE OBJECTIVES SUB-COMMITTEE
G-2 Division SHAFT (Rear) APO 413

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DEUTSCHE ERDÖL, A.G.
MINERALÖLWERKE, ROSITZ.

Introduction.

The following report is rather brief, due to the loss of collected documents. As these were reports, which were quite complete, extensive notes were not taken.

This plant has a complete tar refinery for processing 275,000 tons/year of light and heavy brown coal tar oil which was made by Lurgi low temperature carbonization at Regis. The plant was badly damaged (50% destroyed) by raids of August 16, 1944, October 7, 1944, February 14, 1945 and March 2, 1945. At the time of the investigation of the plant, the pipe still and power plant were being repaired by order of the Military Government in order to be able to process 500 tons of light tar oil to make motor gasoline and Diesel oil. The operating personnel normally numbered 500, of which about one-third were skilled production men and the remaining two-thirds were helpers and maintenance personnel.

Plant Operation.

The light tar oil was processed as shown schematically in Figure I. The raw tar was first acid-washed for tar acid recovery and then charged to a pipe-still taking approximately 25% overhead of naphtha, heating oil and Diesel oil. The bottoms were charged to a thermal cracking unit of Rositz design (very similar to Cross) which operated at 40-60 atm. and had a capacity of 60,000 tons/year. The light products of the cracking were blended with those from the topping operation. Some of the cracked tar was sold as asphalt and the remainder was coked in shell stills. The shell stills consisted of approximately 36 iron kettles which held 4 tons of pitch each. These were operated at about $\frac{1}{2}$ atmosphere. A complete cycle of filling, coking and discharge required 36 hours. The coke resulting from the pitch was sold as fuel coke. The wax distillate (without solvent or oil dilution) was cooled slowly (36-48 hours) with calcium and magnesium chloride brine to first 10°C. and then 0°C. in 12 horizontal tanks (8' diameter and 20' long) with internally-cooled scraper blades. This method produced an easily filtered granular wax. The wax

slurry was then filtered in 12 plate filter presses (4 ft. x 4 ft. x 20 ft.). The expressed oil was sold as heating oil. The wax was melted and sweated (about 20 chambers) in the normal manner to produce waxes of varying melting points. These waxes were then clay filtered for decolorizing to the finished product and the slack oil was sold as heating oil. The used clay was benzene extracted to recover adhering wax and reactivated by steaming.

The heavy tar oil was processed as shown schematically in Figure 2. The raw tar was acid-treated in four lead-lined tanks with 30% acid from the light oil wash. The purpose of this treatment was to lower the ash content of the tar (0.3-1%) to such an extent that the coke resulting from coking has a maximum ash content of 0.3%. The tar was then washed twice with water and once with dilute caustic before charging to the shell stills. The tar was coked as described previously to yield electrode coke (about 50% of total German production) and a wax distillate which was processed in the same manner as the distillate from the cracking residue of the light tar oil.

Production.

The product quantities were as follows:

Gasoline	20,000 tons/year.
Diesel Oil	30,000
Heating Oil (Marine)	160,000
Paraffin	18,000
Electrode Coke	18,000
Fuel Coke	7,000
Asphalt	10,000
Raw Phenolic oil	1,000
	<u>264,000 tons/year</u>

The quantities of the various wax grades were as follows:-

<u>Melting Range °C.</u>	<u>Tons/Year.</u>
50-52	9,000
52-54	4,500
54-56	2,350
56-58	2,150

These various waxes were compounded into some 20 grades used for waxed paper, electrode carbon wax, floor wax, shoe wax, etc. also mixed with I.G.Farben-industrie wax for other purposes.

Experimental Plants.

There was an experimental plant (completely destroyed) for treating tars with phenol for the recovery of acids. The tar-phenol mixture was contacted with gasoline to separate the paraffinic raffinate, leaving a tar acid extract. This was supposed to operate according to a patent of Dr. Schicht, and none of the present personnel were familiar with the plant details.

An Edeleanu experimental plant had been located at Rositz for development of their tar distillate wax extraction and dewaxing. The data obtained in this pilot plant served for design of the commercial unit installed at Espenhain. See report on this target.

A plant had also been constructed for the separation of phenols and cresols from tar acids by fractionation. The plant had never operated satisfactorily due to excess corrosion in the reboilers either with ordinary steel or V2A. This difficulty was probably due to combined corrosion and erosion caused by the high velocity in small tubes.

FIGURE I.

LIGHT OIL PROCESSING

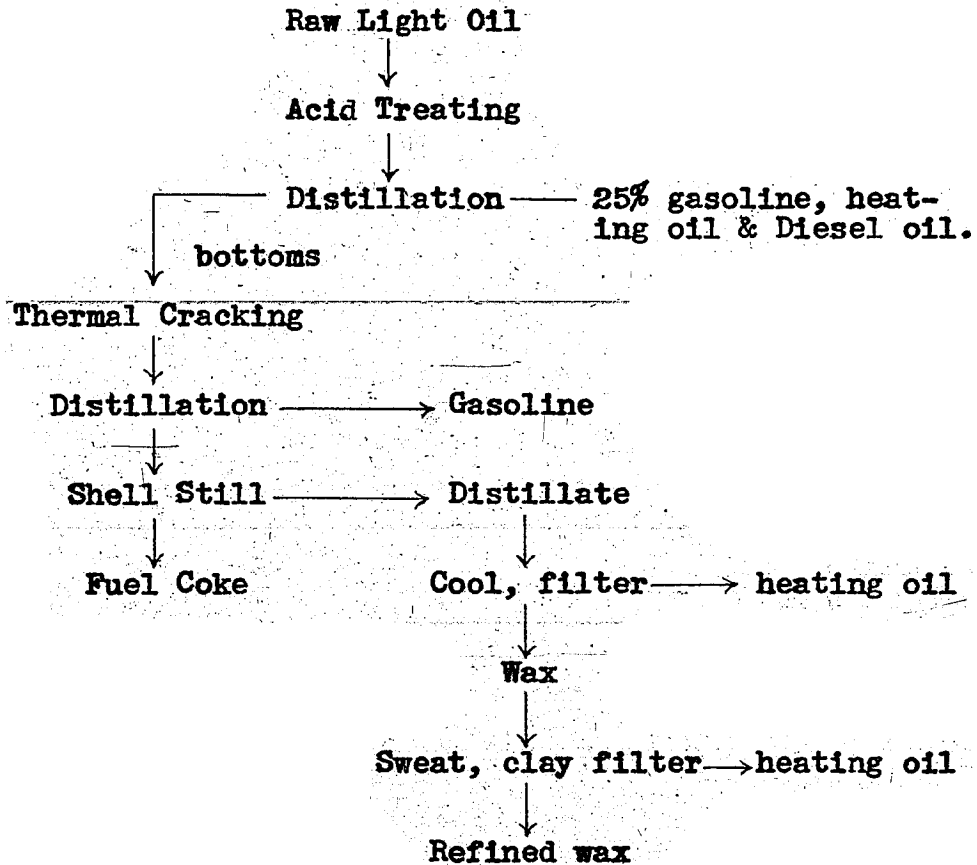
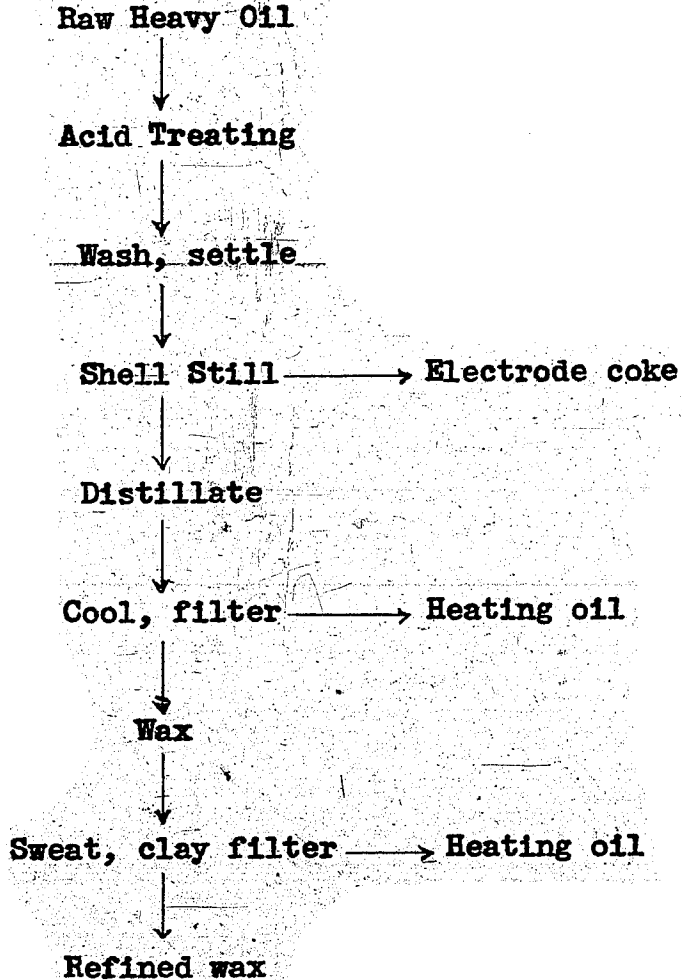


FIGURE II.

HEAVY OIL PROCESSING.



Documents.

The summary reports and documents listed below were prepared by the personnel of the Rositz plant at the request of the investigators. These documents were turned in to the G-2 Document Section of the 12th Army Group at Wiesbaden, Germany, on 19 May 1945 for forwarding to London through CIOS channels. The list is a copy of the inventory sheets accompanying these documents, which were addressed to W.C. Schroeder. Although a copy of the inventory was promptly received by CIOS in London (23 May 1945), the documents themselves had not been received by 20 September 1945, and CIOS has been unable to trace their location:-

1. Betriebsdaten der Spaltanlage II.
2. Betriebsdaten der Spaltanlage III.
3. Teerverarbeitungsschema der Deutschen Erdöl A.G.
4. Phenol-Fabrik, DPAG Rositz.
5. Schema der Filtration, Phenol Fabrik
P + F 15.