

1075 KCBraun
7/18/47

Processing DED Residues

By Pier and Simon, Ludwigshafen, 21 Dec. 1943.
(Letter to Dr. Eranepuhl of the Reichsamt
for Industrial Expansion)

As you know, a purely aromatic redistillation residue boiling above the DED gasoline is obtained in the DED process. Up to the present time, this residue was processed by way of prehydrogenation, benzination and additional DED treatment, in which the purely aromatic DED residue is largely hydrogenated and H_2 is again split out of the resultant gasoline in the DED process.

We have now succeeded in by-passing this detour and in converting the DED residue directly into a gasoline with abt. 60% aromatics by means of a new catalyst, which functions at abt. 400°C and 300 atm. This gasoline is more valuable than DED gasoline, due to its higher aromatics content, and by blending it with H_2 or DED with low aromatics content (higher yield) a high test gasoline equal to DED gasoline may be obtained.

The following table shows a comparison of this process with that used at present:

DED Residue Process:	Prehydrogenation, Benzination & DED	In one stage with new catalyst
Gasoline yield of DED residue	78%	83%
%wt. aromatics in gasol.	55%	60%
H_2 consumption/t DED resid.	746 m ³	560 m ³

If we assume that with full production of all DED plants about 80000 t/ann DED residue are obtained, the introduction of the new catalyst would enable a direct additional production of approximately 4000 t/ann high test gasoline. To be sure, the L.F.G. production (Freibgasproduktion) would suffer correspondingly. The 1800 m³/h of H_2 saved would correspond to a further additional production of about 5000 t/ann high test gasoline from coal.

This catalyst may be introduced in various ways. The fact that the DED residue is obtained in relatively small quantities in some plants will offer some difficulty. Only comparatively small stalls would be required for processing at the several plants, released F-52 hydrogenation plants could possibly be used. A central or perhaps regional processing might also be considered, if this would offer no serious transportation problem.

We consider it necessary to call the Reichsamt's attention to these possibilities, although we have worked out no concrete plan and the processing of the DED residues of the plants in operation at this time is still in the experimental stage. Such a plan could only be worked out in closest cooperation with the hydrogenation works.

We should like to mention one possibility offered by this new catalyst, which splits aromatics directly. In combination with a weak prehydrogenation and H_2SO_4 wash of the middle oils a gasoline rich in aromatics could be obtained by direct benzination, particularly in the bituminous coal plants, without causing an equally great decrease in gasoline yield and the butane constituent of gasification as in the old aromatization. Further experiments, however, are necessary before its application on an industrial scale.

1/18/47