ADDRESS NAVY DEPARTMENT,
BUREAU OF SHIPS
Section 341
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NAVY DEPARTMENT

BUREAU OF SHIPS
WASHINGTON 25, D. C.

FOR VICTORY BUY UNITED STATES WAR BONDS AND STAMPS

14 December 1945

Subj: Microfilm of German Technical Documents - Introductory Statement for.

1. During the course of its field trips to examine German synthetic oil plants and to interrogate German technical personnel, the members of the Oil Team of the U.S. Naval Technical Mission in Europe obtained a number of technical documents for examination. Some of these documents were directly related to certain subjects in which immediate reports were desired and were incorporated in Technical Reports as microfilm appendices. Other documents, while probably of equal technical value were, due to limitations of time and translation facilities, saved for more detail study and examination. These latter documents have been indexed and microfilmed by the Bureau of Ships to preserve the technical information therein for future use and to make possible the dissemination necessary to give each activity an opportunity to study the particular topics of interest to it.

2. The documents in this series cover a variety of subjects. They are not arranged in any particular sequence, but have been separated arbitrarily into sections of a convenient size. An index to each section has been prepared and appears at the beginning of the appropriate section. In addition, the indexes of all sections have been photographed at the beginning of the first reel.

3. The contents of this film are not to be taken as a complete record of the information on any subject obtained by the U.S. Naval Technical Mission in Europe. Rather, reference should be made to the complete set of films which have been prepared by the Bureau of Ships if it is desired to review all the data available.

4. The Bureau of Ships, Research and Standards Branch, would appreciate receiving, for its technical files, a copy of any translations made of these data.

T A Solberg

T. A. Solberg
By direction of
Chief of Bureau

FROM BUREAU OF SHIPS, NAVY DEPARTMENT, WASHINGTON 25, D. C.

06271-0627

DRAWINGS

HIGH PRESSURE EQUIPMENT DETAILS

LEUNA

06271

1. Paste Pump-Flushing Oil Convection KP4W Drawing #M1175-4 Ammoniakwerk 5/22/35 A scale drawing.

2. Top closure for Regenerator Drawing # M3961a-2 Ammoniakwerk 9/10/37. A scale drawing.

3. Cylinder for Expansion Engine - Drawing # M1585-1 Ammoniakwerk 4/12/37. A scale drawing.

4. Stuffing Box 700 Atmos. Expansion Engine Drawing # M1568-1 Ammoniakwerk 8/14/37. A scale drawing.

5. Plunger and Parts for Paste Pump. Drawing # M5041-2 Ammoniakwerk 7-28-38. A scale drawing.

6. Suction and Discharge Valve Assembly and Parts Drawing # M3565-1 Ammoniakwerk 10/14/1940.

7. Hairpin Tube Exchanger. Drawing # M3036-8 7/4/40.

8. Stuffing Box for Paste Pump Drawing # M5892-2. Ammoniakwerk, 2/15/39. A scale drawing.

9. Assembly of high Pressure Packing on Paste Pump. Drawing # M2541-2 Ammoniakwerk 6/11/36. A scale drawing.

10. Lantern Rings for Paste Pump. Drawing # M10234-2 Ammoniakwerk, 7/9/42. A scale drawing.

11. Stuffing Box with X_2 Packing - Drawing # M12806-2 Ammoniakwerk 2/1/45. A scale drawing.

12. Middle Oil - Washing Layout Drawing # M3794-16 Ammoniakwerk A flow diagram.

13. Compressor Room - Gas layout. Drawing # M7098a-2 A Flow Sheet.

14. Butane Separation Layout. Drawing # M6706e-2 Nov. 7, 1942. A flow sheet.

15. Scheme for Middle Oil Refining Drawing # M10318a-2 Ammoniakwerk 8/6/42 - A flow sheet.

16. Scheme for Middle Oil - after carbonization Drawing # M9402a-4 Ammoniakwerk 6/25/43. A flow diagram.

17. Scheme for Working up of Residue - Drawing # M10751a-2. Ammoniakwerk 10/25/42 - A flow sheet.

18. Scheme for Recovery of Phenol - Drawing # M6267a-2 Ammoniakwerk 7/29/39. A Flow Sheet.

19. Me890 - Distillation - Drawing # M9934-2 3/11/42 A Flow Sheet.

20. Light Gasoline Purification - Drawing # M7098a-2 1/26/44 A Flow Sheet.

21. Scheme for Hydrogenation of Phenol Residue - Drawing # M6119-1; 3/1/44. A flow sheet.

22. Regeneration Chamber - Drawing # M3411d-1 Ammoniakwerk 6/6/40. A scale drawing.

23. Gas Converter (Blending Chamber for Me) - Drawing # M3334-1 Ammoniakwerk 5/22/40 - A scale drawing.

24. Iron Regenerator - 151 Tubes (Kogasin Convertor) Drawing # M3332-1 Ammoniakwerk 5/7/40 - A scale drawing (2 copies).

25. Hot Separator Assembly Drawing # M3203-1 Ammoniakwerk 3/2/40 A scale drawing.

26. Hair Pin Heat Exchanger (cooler) for Kogasin Hydrogenation Drawing # M3004-8. A sketch.

27. Plate (made of Mn Cu) for 800 Atmos. Methanol Regenerator. Drawing # M1983-4 Ammoniakwerk 5/13/36. Drawing show pipe arrangement.

28. Stuffing Box. Drawing # M1568-1 Ammoniakwerk 5/14/34 - A scale drawing.

29. Cylinder for Expansion Engine (200 Atmos.) Drawing # M1585-1 Ammoniakwerk 4/12/37.

30 Jet Head for Splitting Chamber Drawing # M1581-1 Ammoniakwerk 4/22/37 A scale drawing.

31. Mixing Head for Splitting Chamber (Ethylene Recovery) Drawing # M1580a-1 Ammoniakwerk 4/17/37 A scale drawing.

32. Autoclave 730 Atmos Capacity 25 liters. Drawing # M1870-1 Ammoniakwerk 11/10/37 A scale drawing (2 copies).

33. Cylinder and Cover for Expansion Engine Drawing # M1567-1 Ammoniakwerk 5/14/36. A scale drawing (a note on drawing says: "void" 5/29/37).

34. Aldehyde Generator (Acetylene-Aldehyde Installation) Drawing # M1431-1 Ammoniakwerk 2/19/37 Scale drawing of various cuts and views (2 copies).

35. Bell Bottom Column for Altacid Wash Installation Drawing # M1378-1 Ammoniakwerk 1/20/37. Scale drawing.

36. 500 Atmos. methanol Chamber with 3 cold gas conduits. Drawing # M1370-1 Ammoniakwerk 1/14/37. Scale drawing.

37. Map Leuna Works Ammoniakwerk, Merseburg. A map in color showing layout of plants.

38. Map Topagraphical map of the country around and including Leuna and Merseburg.

06316-06340 HIGH PRESSURE EQUIPMENT DETAILS- 06316

DRAWINGS

1 "1000 Atmos. Shell." Drawing #N4295c-1 I. G. Farbenindustrie; Ludwigshafen. 7/29/41. Scale drawing of a high pressure converter shell including details of bolt and thread connections.

2. "Heat Exchanger" Drawing # 2287-1. Mineralöl Baugesellschaft 10/5/1937. Details of Insulation Material included.

3. "Arrangement of Gas Towers for Sludge Water" Drawing # 3417-2 Mineralöl-Baugesellschaft 4/8/38. A scale tracing showing detail arrangement.

4. "End Assembly - 600 Atmos. Pressure Vessel" Drawing # N4562-2 I. G. Farben., Ludwigshafen 7/16/37. A scale drawing giving detail assembly of all parts including insulation and gaskets.

5. "Casing for Regeneration Column 600 Atmos" Drawing # N4022I-2 I. G. Farben., Ludwigshafen. 11/20/37 A scale drawing of shell. Details of bolts and threads.

6. "Pivot Enlargement for Angle Valve 90-325 Atmos" Drawing # FA1568-4 Braunkohle - Benzin A. G. 1/29/45 A scale tracing showing details of stem and pivot for angle valve.

7. "Housing for 120 Atmos. Angle Valve" Drawing # FA-1457-4 Braunkahole-Benzin A-G 1/23/45. A scale tracing showing details of casing for angle valve.

8. "Hot Separator for 300 Atmos. working Pressure" Drawing # 56-1 Braunkohlen-Benzin A.G. 6/20/35 A scale drawing of various parts including bolts and threads.

9. Shell (Similar to Item -1-) Drawing # N4297a-1 I. G. Farben. 8/5/41. A scale drawing of parts and connections.

10. "Variation-Refrigeration System under Funnel (Hot Separator). Drawing # A706-1 Braunkohle-Benzin A.G. 5/6/42. Scale drawing of parts.

11. Flange Drawing # 1485-4 Mineralol-Bangesellschaft 9/11/40. Scale drawing of flange for high pressure vessel.

12. Cover for Vessel - Drawing # 14308-2 Mineralol-Bangesellschaft 9/16/40. Scale drawing of cover for high pressure vessel (Top view).

13. "Heat Exchanger 600 Atmos." - Drawing # 2287-1. Same as item # 2, but on tracing paper.

14. An untitled, non-dated drawing in scale with penciled corrections showing a converter.

15. Isobutyl Converter drawing in scale showing front and top views of a contact chamber - Drawing # A.F.T. 2553 6/28/39.

16. Flow Sheet - Hydrogenation of Heavy Tar Oil Drawing # 189-2 Braunkohle-Benzin A.G. 5/3/35.

17. Flow-Sheet - Light Oil Separation. Drawing # ATL1010-8. A flow diagram showing details of control and regulation for Butane and Propane separation.

18. Flow-Sheet - Gasoline Distillation. No drawing number, nor organization. Dated Nov. 20, 1942. A flow sheet of Gasoline distillation including instrumentation.

19. Flow-Sheet - Similar to item -18-.

20. Flow-Sheet - For oil distillation. Drawing # 1712. Contact Hydrogenation Work. Dec. 27, 1939. Flow diagram showing Tar Oil distillation into various fractions with emphasis on temperature control.

21. Flow-Sheet - Ammonia Synthesis III Drawing # M2720d-1 5/9/39.

22. Flow Sheet - Light Oil Distillation Drawing # S-76 1/4/43. Bohlen Saxon Works.

06341 - 06844 1 - Part 24 - 06341

CATALYST PREPARATION AND TESTS
HYDROGENATION

1. Fuel Oil Investigation - Chamber 804 July 15, 1941 - Sept. 21. 1941 72 pg. of text, drawings and tables.

2. Preparation of Tungstun disulfide X-Ray diffraction photographs included.

3. Preparation of catalytically active Tungstun Sulfide 5/22/43 2 pgs.

4. Towards a basic investigation of catalysts - a plan for the studying of catalysts (WS2 included) 6/2/43 2 pgs.

5. Adsporption of Hydrogen on Tungstun Sulfide Meier Oct. 25, 1943.

6. Cost Figures and Raw Material for Various Catalysts 6434 Catalyst the WS2 catalyst given major attention.

7. Tungstun Requirements for Gasoline catalysts July 21, 1943.

8. Gasoline making from Split and Redbrook gasoil with certain catalysts - Rotter - June 3, 1942.

9. Aromatization Catalyst for 600 atmos - Using 6434 catalyst Aug. 14, 1941.

10. Charging of the alumina - W-Ni-Prehydrogenation catalyst 8376 (= 7846 W250) for various Products Sept. 8, 1942.

11. Experiment in a liter chamber towards Splitting of Stripped Heavy oil from Bituminous coal at 250 atmos with solidly arranged regenerated catalysts. Oct. 15, 1943.

12. Charging of the alumina - W-Ni-Prehydrogenation catalyst 8376 (= 8376 W250) for various products. Sept. 5, 1942.

13. Development of Poison Resistant Catalysts and the Gas phase hydrogenation. Oct. 16, 1942. 7 pgs.

14. Further development on 7846-catalyst 5/3/41 5 pgs.

15. Catalyst needs - Sept. 1943 Luena 10/18/43. A chart.

16. A letter with the subject: - Beds of Hydrogenation Catalysts 3/30/43.

17. Residue Gasoline Quality through Aromatization catalyst on Fuller's Earth and Silicate - Reitz April 9, 1941.

18. Catalyst 7846 for Prehydrogenation of "Scholven" middle oil - Gunther April 8, 1941.

19. Influence of Sulphur in the Injection products of the 6434 chamber on the K-worth of the Regenerators - April 17, 1939. 14 pgs.

20. Notice: - Erection of a Filter Station for Middle Oil - 12/12/41

21. Development of the Slurry Phase to 1933 - Oct. 22, 1942, (2 copies).

22. Development of the Slurry Phase since 1933 - Oct. 23, 1942.

23. Flow Sheet of Catalytic Hydrogenation - Drawing #1675-4.

24. Gas Preheater - Drawing #1677a-4.

25. Sketch: - Sulfur in the Hydrogenation Plants - a table.

26. Overall costs for Fuel Oil / 170 er Gasoline from Waternstedter Tar in Plant Lu-Op. 11/9/42.

27. Sources of fuel supply 11 August 1938.

28. Table 1-5: - High Pressure Hydrogenation and Synthesis.

29. Relation between coal analysis and hydrogenation capacity. Jan. 17, 1944.

30. Curves of Kal2 using 6434 Catalyst.

31. Filtration of anhydrated coal - Apr. 16, 1941.

32. Concerning the Hydrogenation capacity of coals - Grassel Oct. 16, 1942.

33. Working up of various coals to Gasoline and Middle Oil; and Gasoline and fuel oil 1/31/44.

34. Preparation Example of Wilheim - Gas phase catalyst 5/23/45.

35. Notice: - Water injection by Nozzle in the Peg. II of the 5058 Prehydrogenation chamber. Sept. 11, 1940.

36. Slurry Phase at Wesseling 2/6/44.

37. Summary of Questions and answers on sulfurization of Middle Oils. Nov. 1, 1943.

38. Notice: - Concerning the transfer of Reaction Heat by external pipe contact oven whose cooling tubes are 10° horizontal and no side arms are necessary.

39. Properties of Intermediate Products of the Hydrogenation Plant and Petroleum Jan. 27, 1944.

40. Heat Produced in coal hydrogenation Oct. 17, 1942.

41. Designs of Dr. Keinghardt and Dr. Schumk retained. April 8, 1938.

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42. Condition of chamber 5 as of 4/17/40.

43. Hydrogenation of Bituminous Coal - Extract - (Heavy Oil - Experiment - Report III F. Winkler 7/29/37.

44. Exchange of Experience - Conference - Sediment in the Slurry phase chamber - Jan. 28, 1943.

45. Weight Balance of the coal hydrogenation - 4/20/42.

46. Centrifugal machine - Köhler.

47. Form change of the Packing NW120 from N5-Material by inner pressure and by pronounced screws - 7/12/36.

48. 6434 Catalyst in circulating Gases - Schwab (2 copies).

49. 6434 and Sulfur containing b-middle oil

50. New Gasoline making catalyst - Mar. 11, 1943.

51. Dehydrogenation of 5058/7846 Gasoline and 6434 Gasoline from Upper silesian coal K1197 May 6, 1941.

52. Experiment 30.

53. Miscellaneous Data sheets and drawings. (5).

DRAWINGS FOR OXYGEN PLANT - EQUIPMENT

(SCALE DRAWINGS) AND GRAPHS

1. Document on the acceptance for setting up 2 stationary Waile heat steam boilers with manufacturing No. 3528/3529.
   Details on 2 boilers. 5 drawings, of Böhlen installation.
   Installation made 1935.

2. 2 Prospectors drawings for Winterhall A. G. Liitzkendorr. Fischer Tropsch installation. 19 Dec. 1938.

3. Map showing gas distribution in middle Germany. 6 May, 1942.
   Drawing #So56A.

4. 2 scale drawings giving plant layout for Ruhrchemie AG at Oberhausen-Holten. 29 Dec. 1939 (#ZA1.76) and 1 June, 1943. (enlarged office).

5. Graph # EW VIII 287 - Compressed air graph Böhlen 19 July, 1940.

6. Graph # EW VIII 290 - Nigrogen graph Böhlen 19 July, 1940.

7. Graph # EW VIII 288 - Low pressure Air graph - Böhlen 19 July 1940.

8. Graph # EW VIII 289 - Acid graph - Böhlen 19 July 1940.

9. Scale Drawing #201011 - Pump Assembly. LURGI. 10 April 1942.

10. 18 blank production log sheets.

11. Scale drawing - tube diagram for stationary 2 stage 4 crankshaft oxygen compressor Part 2 28 Jan. 1942.

12. Scale drawing - tube diagram for stationary 2 stage. 4 crankshaft. Oxygen compressor Part 1. 28 Jan. 1942.

13. Scale drawing - Basic diagram for stationary 2 stage Oxygen compressor 31 July 1941.

14. Scale drawing - lubrication arrangement 24 May 1941.

15. Scale drawing - arrangement of flow off control 5 Mar. 1941.

16. Scale drawing - Water cut-off, 21 Aug. 1942.

17. Scale drawing - acetylene cut-off, 30 Dec. 1938.

18. Scale drawing - lubricant cut-off, 2nd part. 8 June 1941.

19. Scale drawing High Pressure pre cooler. 14 Nov. 1942.

20. Scale drawing - lubricant cut-off. 3 June 1941.

21. Scale drawing of stuffing box on Ammonia Compressor. 19 May 1938.

22. Graph - pressure drop in fresh air circuit. Nov. 1938.

23. Graph - resistance curve of Notrogen regeneration at various performance leveles. 19 Nov. 1941.

24. Graph for measuring oxygen quantites. 21 Dec. 1940.

1 "Butane Separation, Scholven, Isomerism scheme," Friedrich Uhde, No. BUS-800Z, Sept. 30, 1940. Flow sheet.

2. "Heat exchanger, C-104," Friedrich Uhde, No. Ze6104, Oct. 17, 1938, scale drawing.

3. "Heat exchanger, C-03, C-103," Friedrich Uhde, No. Ze603, Oct. 11, 1935, scale drawing.

4. "Pre-heater", Friedrich Uhde, No. ATL 6020-2, Sept. 3, 1941, scale drawing.

5. "Pre-heater," Friedrich Uhde, No. ATL 6018-1, Nov. 6, 1941, scale drawing.

6. "Pre-heater," Friedrich Uhde, No. ATL 6015-2, Aug. 5, 1941, scale drawing.

7. "Steam Circulator for Column V", Friedrich Uhde, No. ATL 6511-9, July 14, 1941, scale drawing.

8. "Steam Circulator for Column III A," Friedrich Uhde, No. ATL 6021-5, Sept. 22, 1941, Scale drawing.

9. "Heat Exchanger," Friedrich Uhde, No. ATL 6013-2, Aug. 5, 1941, scale drawing.

10. "Pre-heater," Friedrich Uhde, No. ATL 6010-2 Oct. 25, 1941, scale drawing.

11. "Steam Circulator for Column IV", Friedrich Uhde, No. ATL 6515-4, Sept. 22, 1941, scale drawing.

12. "Conduit and armature list, Page I", Friedrich Uhde, No. ATL-9524-5, Feb. 25. 1942.

13. "Steam Circulator for Column II", Friedrich Uhde, No. ATL-9524-5, Feb. 25, 1942.

14. "Conduit and armature list, Page III," Friedrich Uhde, No. ATL 9526-5, April 27, 1942.

15. "Column IV", Friedrich Uhde, No. K12804a, July 18, 1941, scale drawing.

16. "Column II", Friedrich Uhde, No. K12791b, July 26, 1941, scale drawing.

17. "Heat exchanger, C-03, C-103", Friedrich Uhde, No. 2e, 603, Oct. 11, 1938, scale drawing.

18. "Column I, ATL 5004-E", Friedrich Uhde, No. K12790d, July 23, 1941, scale drawing.

19. "Column IIIa", Friedrich Uhde, No. K12803b, Aug. 14, 1941, scale drawing.

20. "Column V", Friedrich Uhde, No. K12805a, July 7, 1941, scale drawing.

21. "Steam Circulator for Column I", Friedrich Uhde, No. ATL 6506-9, July 2, 1941, scale drawing.

"Report concerning the manner of operation of the Bitterfeld protection columns in comparison with other structural types", Eberhardt, Report Collection of Research Laboratories, No. 480, Feb. 1944, Sixteen pages with charts.

"Development of a base for great liquid refraction," Dr. Wirth, Jan. 19, 1942, development of tunnel and rod bases at the Leuna works.