

(Schätzzahlen)

Hydrierung	1 9 3 8						1 9 3 9					
	I		II		III		I		II		III	
	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt	davon Flubi
Leuna	32,5	5,3	32,5	5,3	32,5	5,3	33,4	12,9	33,4	12,9	42,8	12,9
Böhlen	12,0	-	12,0	-	12,0	-	13,0	-	13,0	-	13,0	-
Magdeburg	11,0	-	11,0	-	11,0	-	12,0	-	12,0	-	12,0	-
Zeitz	-	-	-	-	-	-	7,0	-	10,0	-	14,0	-
Scholven	10,0	-	10,0	-	10,0	-	12,0	-	12,0	6,0	12,0	10,0
Gelsenberg	-	-	-	-	-	-	-	-	-	-	2,5	-
Wilhelm	-	-	-	-	2,0	-	6,0	-	6,0	-	6,0	-
Pölitze	-	-	-	-	-	-	-	-	-	-	-	-
Lützkendorf	-	-	-	-	-	-	-	-	-	-	-	-
Wesseling	-	-	-	-	-	-	-	-	-	-	-	-
Lu/Oppau	-	-	-	-	-	-	-	-	-	-	-	-
Moosbierbaum	-	-	-	-	-	-	-	-	-	-	-	-
Brück	-	-	-	-	-	-	-	-	-	-	-	-
Blechhammer	-	-	-	-	-	-	-	-	-	-	-	-
Heydebreck	-	-	-	-	-	-	-	-	-	-	-	-
Auschwitz	-	-	-	-	-	-	-	-	-	-	-	-
Höls	-	-	-	-	-	-	-	-	-	-	-	-
Schkopau	-	-	-	-	-	-	-	-	-	-	-	-
Sa. Hydrierung	65,5	5,3	65,5	5,3	67,5	5,3	83,4	12,9	86,4	18,9	102,3	22,
Synthese												
Schaffgotsch	-	-	-	-	-	-	-	-	-	-	-	-
Lützkendorf	-	-	-	-	-	-	-	-	-	-	-	-
Schwarzheide	-	-	-	-	-	-	4,0	-	6,0	-	8,0	-
Hoesch	-	-	-	-	-	-	-	-	1,0	-	1,0	-
Essener Benzin	-	-	-	-	-	-	-	-	-	-	1,0	-
Krupp	-	-	-	-	-	-	-	-	-	-	1,0	-
Rheinpreußen	-	-	-	-	-	-	2,0	-	3,0	-	4,0	-
Vikt. Rauxel	-	-	-	-	-	-	-	-	1,0	-	1,0	-
Ruhrchemie	3,0	-	3,0	-	3,0	-	4,0	-	4,0	-	4,0	-
Sa. Synthese:	3,0	-	3,0	-	3,0	-	10,0	-	15,0	-	20,0	-

Summe

Hydr., u. Synthese 68,5 5,3 68,5 5,3 70,5 5,3 95,4 12,9 101,4 18,9 122,3 22

1 9 3 8				1 9 3 9						1 9 4 0					
II		III		I		II		III		I		II		III	
Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt	davon Flubi
32,5	5,3	32,5	5,3	33,4	12,9	33,4	12,9	42,8	12,9	39,8	19,8	39,8	19,8	39,8	19,8
12,0	-	12,0	-	13,0	-	13,0	-	13,0	-	16,0	-	16,0	-	18,0	14,8
11,0	-	11,0	-	12,0	-	12,0	-	12,0	-	14,0	-	14,0	-	14,0	-
-	-	-	-	7,0	-	10,0	-	14,0	-	15,0	-	14,0	-	14,0	-
10,0	-	10,0	-	12,0	-	12,0	6,0	12,0	10,0	14,0	12,0	14,0	12,0	15,0	13,0
-	-	-	-	-	-	-	-	2,5	-	5,0	-	10,0	7,0	16,0	12,0
-	-	2,0	-	6,0	-	6,0	-	6,0	-	8,0	2,0	8,0	2,5	8,0	2,5
-	-	-	-	-	-	-	-	-	-	-	-	3,0	2,0	10,0	8,0
-	-	-	-	-	-	-	-	-	-	1,0	-	1,0	-	1,0	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	0,2	0,2	0,2	0,2	0,2	0,2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
65,5	5,3	67,5	5,3	83,4	12,9	86,4	18,9	102,3	22,9	114,0	34,0	120,0	43,5	136,0	70,3
-	-	-	-	-	-	-	-	-	-	-	-	0,5	-	0,5	-
-	-	-	-	-	-	-	-	-	-	0,5	-	1,0	-	1,0	-
-	-	-	-	4,0	-	6,0	-	8,0	-	9,5	-	10,5	-	11,5	-
-	-	-	-	-	-	1,0	-	1,0	-	2,5	-	2,7	-	2,7	-
-	-	-	-	-	-	-	-	1,0	-	2,5	-	3,0	-	3,0	-
-	-	-	-	-	-	-	-	1,0	-	2,5	-	3,0	-	3,0	-
-	-	-	-	2,0	-	3,0	-	4,0	-	4,5	-	5,0	-	5,0	-
-	-	-	-	-	-	1,0	-	1,0	-	3,0	-	3,3	-	3,3	-
3,0	-	3,0	-	4,0	-	4,0	-	4,0	-	5,0	-	5,5	-	5,5	-
3,0	-	3,0	-	10,0	-	15,0	-	20,0	-	30,0	-	34,5	-	35,5	-

68,5 5,3 70,5 5,3 93,4 12,9 101,4 18,9 122,3 22,9 144,0 34,0 154,5 43,5 171,5 70,3 1

1 9 4 0							1 9 4 1				1 9 4 2				
davon Flubi	II		III		I		II		III		I		II		I
	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt
19,8	39,8	19,8	39,8	19,8	48,5	20,3	48,5	20,3	48,5	20,3	53,8	24,0	53,8	24,0	53,8
-	16,0	-	18,0	14,8	18,0	15,0	18,0	7,5	18,0	-	20,0	18,0	20,0	16,5	20,0
-	14,0	-	14,0	-	15,0	-	15,0	-	15,0	-	15,0	-	16,0	-	16,0
-	14,0	-	14,0	-	18,0	-	18,0	-	18,0	-	20,0	-	20,0	-	20,0
12,0	14,0	12,0	15,0	13,0	16,0	14,0	17,0	15,0	17,0	15,0	18,0	15,5	18,0	16,0	18,0
-	10,0	7,0	16,0	12,0	20,0	15,5	20,0	15,5	25,0	20,0	25,0	20,0	36,0	29,0	36,0
2,0	8,0	2,5	8,0	2,5	8,0	2,5	8,0	2,5	8,0	2,5	9,0	3,0	9,0	3,0	9,0
-	3,0	2,0	10,0	8,0	20,0	16,0	25,0	20,0	25,0	20,0	30,0	23,0	30,0	23,0	30,0
-	1,0	-	1,0	-	1,0	-	1,0	-	1,0	-	1,0	-	1,0	-	1,0
-	-	-	-	-	-	-	-	-	4,0	-	6,0	-	7,0	-	9,0
0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	3,0	3,0	3,0	3,0	3,0
-	-	-	-	-	-	-	-	-	-	-	-	-	2,5	2,5	4,0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	0,1	0,1	0,1	0,1	0,1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34,0	120,0	43,5	136,0	70,3	164,7	83,5	170,7	81,0	179,7	78,0	201,9	104,6	216,4	117,1	224,9
-	0,5	-	0,5	-	0,5	-	0,7	-	0,7	-	0,7	-	0,7	-	1,0
-	1,0	-	1,0	-	0,5	-	0,5	-	0,5	-	0,3	-	0,3	-	0,5
-	10,5	-	11,5	-	11,0	-	11,0	-	11,0	-	10,5	-	9,0	-	9,0
-	2,7	-	2,7	-	2,5	-	2,5	-	2,5	-	2,0	-	1,5	-	2,5
-	3,0	-	3,0	-	2,0	-	3,0	-	3,0	-	2,5	-	2,5	-	5,0
-	3,0	-	3,0	-	3,0	-	4,0	-	4,0	-	3,5	-	3,0	-	5,0
-	5,0	-	5,0	-	4,5	-	4,5	-	4,5	-	4,0	-	3,5	-	5,5
-	3,3	-	3,3	-	3,0	-	3,3	-	3,3	-	3,0	-	2,5	-	3,3
-	5,5	-	5,5	-	5,0	-	5,0	-	5,0	-	4,0	-	4,0	-	5,0
-	34,5	-	35,5	-	32,0	-	34,5	-	34,5	-	30,5	-	27,0	-	36,8

34,0 154,5 43,5 171,5 70,3 196,7 83,5 205,2 81,0 214,2 78,0 232,4 104,6 243,4 117,1 261,7

TABLE IV

Produktion der Hydrier - u. Synthesewerke 1938 - 1945
in 1000 moto

1 9 4 2			1 9 4 3						Jan.		Febr.		Marz			
Monat	II		III		I		II		III		Ge-samt	davon Flubi	Ge-samt	davon Flubi	Ge-samt	davon Flubi
	Ge-samt	davon Flubi	Ge-samt	davon Flubi	Ge-samt	davon Flubi	Ge-samt	davon Flubi	Ge-samt	davon Flubi						
Jan.	53,8	24,0	53,8	24,0	52,0	21,0	52,0	21,0	52,0	21,0	53,7	9,5	46,5	8,4	51,5	9
Feb.	20,0	16,5	20,0	16,5	19,5	-	19,5	16,0	22,0	-	19,5	16,0	18,0	15,0	23,0	
März	16,0	-	16,0	-	18,0	-	18,0	-	15,5	10,0	18,0	-	16,0	-	19,0	
April	20,0	-	20,0	-	21,0	-	21,0	-	21,0	-	20,0	-	18,0	-	20,0	
Mai	18,0	16,0	18,0	17,0	19,0	17,0	19,0	17,0	19,0	17,0	19,0	17,0	16,0	14,0	19,0	17
Juni	36,0	29,0	36,0	29,0	36,0	30,0	36,0	30,0	38,0	30,0	35,0	29,0	30,0	26,0	36,0	31
Juli	9,0	3,0	9,0	3,0	12,5	4,0	12,5	4,0	12,5	4,0	12,5	4,0	12,0	3,0	10,0	4
Aug.	30,0	23,0	30,0	23,0	40,0	32,0	50,0	41,0	60,0	50,0	60,0	50,0	55,0	46,5	58,0	49
Sept.	1,0	-	1,0	-	1,0	-	1,0	-	1,0	-	1,5	-	1,0	-	-	
Oktober	7,0	-	9,0	-	12,0	-	14,0	7,0	16,0	11,0	18,0	13,0	19,0	14,0	19,0	14
November	3,0	3,0	3,0	3,0	4,0	4,0	5,0	5,0	5,0	5,0	5,0	5,0	4,0	4,0	4,7	4
Dezember	2,5	2,5	4,0	4,0	4,0	4,0	5,0	5,0	6,0	6,0	6,0	6,0	5,0	5,0	6,5	6
Jan.	-	-	5,0	-	23,0	15,0	25,0	17,0	30,0	22,0	32,0	22,0	28,0	20,0	33,0	24
Feb.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,0	
März	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
April	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mai	0,1	0,1	0,1	0,1	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,2	0,2	0,3	0
Juni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Juli	216,4	117,1	224,9	119,6	262,3	127,3	278,3	163,3	296,3	176,3	300,5	171,8	268,7	156,1	302,0	159
Aug.	0,7	-	1,0	-	1,2	-	1,7	-	2,2	-	2,0	-	2,5	-	3,0	
Sept.	0,3	-	0,5	-	0,3	-	0,3	-	-	-	-	-	0,2	-	0,2	
Oktober	9,0	-	9,0	-	9,7	-	9,7	-	10,0	-	10,7	-	11,0	-	11,0	
November	1,5	-	2,5	-	2,5	-	2,0	-	2,0	-	2,0	-	2,0	-	2,0	
Dezember	2,5	-	5,0	-	6,0	-	6,0	-	7,0	-	6,0	-	6,0	-	6,0	
Jan.	3,0	-	5,0	-	5,5	-	4,5	-	5,0	-	4,5	-	4,5	-	4,5	
Feb.	3,5	-	5,5	-	5,5	-	4,5	-	4,5	-	4,5	-	4,5	-	5,0	
März	2,5	-	3,3	-	3,3	-	2,3	-	2,3	-	2,3	-	2,3	-	2,3	
April	4,0	-	5,0	-	5,0	-	4,0	-	4,0	-	4,0	-	4,0	-	5,0	
Mai	27,0	-	36,8	-	39,0	-	35,0	-	37,0	-	36,0	-	37,0	-	39,0	
Juni	243,4	117,1	261,7	119,6	301,3	127,3	313,3	163,3	333,3	176,3	306,5	171,8	305,7	156,1	341,0	159

1 9 4 4

.	Marz		Apr il		Mai		Juni		Juli		August		Sept.		Ok
	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt	davon Flubi	Ge- samt
8,4	51,5	9,0	50,5	8,8	21,6	3,6	14,9	-	21,1	7,6	0,2	-	0,9	-	4,0
5,0	23,0	-	23,0	-	9,1	-	17,5	-	-	-	5,2	-	11,4	-	3,4
-	19,0	-	18,1	-	16,5	-	5,4	-	-	-	-	-	-	-	-
-	20,0	-	22,0	-	4,3	-	-	-	-	-	0,8	-	0,8	-	12,4
7,0	19,0	17,0	20,0	18,0	20,3	18,0	14,6	12,0	7,4	6,0	-	-	-	-	-
6,0	36,0	31,0	36,0	31,0	37,0	32,0	14,0	12,0	-	-	-	-	0,3	-	-
3,0	10,0	4,0	12,0	4,5	12,1	4,5	11,9	4,0	5,8	2,0	-	-	0,6	-	-
6,5	58,0	49,0	62,0	52,0	63,8	54,0	-	-	2,8	2,5	5,4	5,0	2,3	2,0	6,7
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4,0	19,0	14,0	20,0	15,0	20,7	15,0	15,6	11,0	11,6	5,0	0,6	-	-	-	-
4,0	4,7	4,7	4,5	4,5	4,7	4,7	4,6	4,4	4,8	4,8	2,2	2,2	-	-	-
5,0	6,5	6,5	7,0	7,0	7,5	7,5	3,9	3,9	-	-	3,8	3,8	-	-	4,9
0,0	33,0	24,0	30,0	21,0	14,7	11,0	-	-	-	-	-	-	0,7	0,5	-
-	2,0	-	2,0	1,0	-	-	5,4	2,2	5,2	2,1	2,6	1,3	-	-	1,2
-	-	-	1,0	0,8	3,3	2,2	2,5	1,6	1,1	0,7	0,8	0,5	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0,2	0,3	0,3	0,4	0,4	0,3	0,3	0,2	0,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1
-	-	-	-	-	-	-	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2
5,1	302,0	159,5	308,5	164,0	235,9	152,8	111,5	51,5	60,1	31,0	21,9	13,1	17,3	2,8	32,9

-	3,0	-	3,0	-	3,3	-	3,3	-	0,6	-	0,4	-	0,1	-	0,2
-	0,2	-	0,2	-	0,5	-	-	-	-	-	-	-	-	-	-
-	11,0	-	12,0	-	14,2	-	2,1	-	1,7	-	5,0	-	2,2	-	4,2
-	2,0	-	2,0	-	2,9	-	3,9	-	3,8	-	3,1	-	1,1	-	-
-	6,0	-	6,0	-	6,9	-	6,8	-	7,2	-	7,0	-	1,8	-	-
-	4,5	-	4,5	-	5,5	-	4,6	-	3,7	-	3,0	-	1,7	-	0,4
-	5,0	-	5,0	-	6,1	-	5,4	-	1,6	-	0,3	-	0,3	-	-
-	2,3	-	2,3	-	3,7	-	3,5	-	3,3	-	3,2	-	1,0	-	-
-	5,0	-	5,0	-	5,2	-	3,6	-	4,1	-	2,7	-	0,7	-	0,2
-	39,0	-	40,0	-	49,3	-	33,2	-	26,0	-	24,7	-	8,9	-	5,0

5,1 341,0 159,5 348,5 164,0 285,2 152,8 144,7 51,5 86,1 31,0 46,6 13,1 26,2 2,8 37,9

		1 9 4 5													
		Okt.		Nov.		Dez.		Jan.		Febr.		Marz		April	
avon	Flubi	Ge-samt	davon Flubi	Ge-samt	davon Flubi	Ge-samt	davon Flubi	Ge-samt	davon Flubi	Ge-samt	davon Flubi	Ge-samt	davon Flubi	Ge-samt	davon Flubi
-	-	4,0	2,1	14,0	9,4	-	-	-	-	-	-	3,1	-	1,3	-
-	-	3,4	-	13,0	-	16,7	-	12,1	-	7,9	-	5,0	-	-	-
-	-	-	-	-	-	7,6	-	7,3	-	0,4	-	-	-	-	-
-	-	12,4	-	14,0	-	6,3	-	9,0	-	-	-	-	-	2,0	-
-	-	-	-	-	-	-	-	1,0	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,0	-	6,7	6,2	11,0	10,0	6,5	5,5	-	-	-	-	2,0	-	1,0	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	4,9	4,9	1,0	1,0	-	-	-	-	-	-	-	-	-	-
0,5	-	-	-	8,0	7,0	11,0	9,0	-	-	-	-	-	-	-	-
-	-	1,2	0,6	11,0	5,5	2,0	1,0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,2	0,2	0,1	0,1	-	-
0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	-	-	-	-	-	-
2,8	32,9	14,1	72,3	33,2	49,9	15,8	29,7	0,3	8,5	0,2	10,2	0,1	4,3	-	-
-	0,2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	4,2	-	5,5	-	8,1	-	9,4	-	6,2	-	1,7	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	0,4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	0,2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	5,0	-	5,5	-	8,1	-	9,4	-	6,2	-	1,7	-	-	-	-

2,8 37,9 14,1 77,8 33,2 58,0 15,8 39,1 0,3 14,7 0,2 11,9 0,1 4,3 -

Question E

(i) The researches of the I.G. on hydrocarbon synthesis were concerned with:

1. Finding a cheaper substitute for cobalt catalysts because of the expense of regenerating them and the shortage of cobalt. Work was done with iron, manganese and various mixed catalysts under normal Fischer conditions.
2. Examining the yields obtainable at medium pressure for different catalysts.
3. Working in a liquid medium with the catalyst suspended in the liquid.
4. Working in a liquid medium with the catalyst arranged in a fixed bed and using a high rate of recirculation.

All these researches were done with a series of very different catalysts, in particular with iron and mixed catalysts. The composition of the synthesis-gas was varied and water-gas was also tried. The effect of temperature and pressure was studied. The aim was:

1. To increase the catalyst life. In this connexion researches on Regeneration were also carried out.
2. To improve the yield.
3. To prepared unsaturated hydrocarbons which could be worked up in other chemical processes.
4. To increase the yield of higher paraffins.

(ii) All these researches had not yet reached the technical-research stage. Success was met with for iron and a series of mixed catalysts in obtaining rather higher yields, calculated on $(CO + H_2)$ and also higher yields of wax, up to about 65%. With iron, and above all, with manganese catalysts, a large proportion of unsaturated hydrocarbons is also obtained, but they are always accompanied by products containing oxygen, such as aldehydes, ketones etc. Attempts to alter the position of the double bond in the unsaturated hydrocarbons by making alterations in the process were not successful. And in these processes there is great difficulty in separating the products. The liquid phase process with water-gas has not yet been developed to the full technical-research scale

on account of the large amount of oxygen products produced. The same is true for the process in which the liquid medium is circulated over a fixed bed of catalyst. In this case various isomerisation catalysts were introduced and an increase of iso-compounds was observed (but I cannot remember the results in greater detail).

(iii) The I.G. had no intention of creating a large plant based on any of these researches because examination of the plant and production costs according to the results obtained up to now show that this would be uneconomic. These researches however, especially those concerned with the production of olefines, ought to be continued to obtain a comparison with other possible methods of working. Such researches are also necessary in order to obtain suitable starting material for the Oxo-synthesis, such materials being otherwise not obtainable.

(iv) To the best of my memory, cost estimates have not yet been made for the fixed-bed liquid phase process as no firm figure for the yield can yet be given as the experimental results are not sufficiently well repeatable.

(v) Yields in these researches were very variable but the highest octane number was about 80.

(vi) For Leuna: Dr. Herold (now in Leuna)
For Ludwigshafen: Dr. Weitsel (to the best of my knowledge now in Ludwigshafen)

