TABLE III

PERFORMANCE OF WINKLER GENERATORS MAKING WATER GAS FROM CRUDE

Plant	Leuna		Böhlen		Zeitz		?	
References	1		2	11	3 & 14 (Mostly 12 months 1944; some 2 months)		9	
	Small	Large						
Units	1	3(+1)	3		3			
Actual output N M³/hr. W.G./unit	-	50,000-60,000	20,000-25,000		16,600			
Fuel (Grade)								
: Analysis C	68.0		-	71	63.7		70.7	
% on H	2.0		-	2.6	2.2		2.7	
dry O	2.2		-	)	)		4.0	
basis N	-		-	)1.1 ?	)5.5		0.0	
Vol. S	1.3		-	)	)		0.6	
Ash	26.5		-	25.1	28.5		22	
H_2O	(2.0)		-	(2.1)	(2.6)		(6.4)	
Cal.value, T.cals/T.net as received	5780		5200-5400	-	5,650 to 5,850		5700	
Final grading	Av. 3 mms. with <10%> 5 mms.		0.06-5 mm.	-	2-10 mms		mm.	%
							0-0.2	20
							0.2-0.5	16
							0.5-1.0	20
							1-2	26
							2-3	8
							3-6	10
Gas Analysis CO_2	20		24.4	24.4	23.1		16.5	
CO	37.5		27.6	28.8	29.6		42.6	
H_2	39.5		45.3	44.4	43.8		39.0	
CH_4	1.5		1.5	1.25	0.75		0.7	
N_2	0.5		0.7	0.5	1.5		0.7	
H_2S	1.0		0.5	0.6	1.25		0.5	
Cal.value, k.cals/N M³ net	2150		1990	1982	1985		2195	
O_2 in total blast	40-50%		21%	22%	21.5%		37.5%	
Blast temp. °C	-		150°	-	160-180°		-	
% O_2 as secondary O_2	33%		12-20%	-	10%			
						Ref.13		
Fuel bed temp. °C	850-900°		900°	800°	900-950°	960°	800-950°	
Gas exit temp. °C	900-950°		900°	900°	900-1000°	980°	950-1,000°	
Gas temp. after W.H. recovery	200°C		200-300°	300°	200-250°		250°	
Dust content of gas, in g/N M³ dry gas								
(a) before dust removal	100-200		200-250	225-250	300-360		-	
(b) after primary dust removal			-	40-60	60		-	
(c) after final dust removal			-	0.002-0.005	0.003-0.004		-	

TABLE III (Cont'd)

		Leuna	Böhlen			Zeitz	-
References		1	2		11	3	9
% C in dust		50 to 55	40		43.1	54 -56	-
% C in ashes		-	40		54.1	30	-
Efficiencies							
per 1000 N m³ H_2+CO			(1)	(2)			
grude	kgs	640	757	782	765	1023	630
carbon	kgs	427	-	-	534	635	417
oxygen	m³	320 to 335	305	335	324	320	331
steam used	kgs	350	825	960	830	860*	405
steam raised	kgs	580	750	-	850	925	-
steam decomposition	%	-	-	-	-	35	-
carbon utilisation	%	88	-	-	68.6	57	86
dust blown over	kgs	130 to 260	-	-	-	500-550	-
dust recovered	kgs	-	-	-	245-270	458	-
grate ash	kgs	-	21	-	16.5	60	-
power (excl. oxygen production)	KWH	-	-	-	39	70	-
Cooling water	m³	-	21	-	23	34	-

(1) Average of two days, 11th and 12th August 1938
(2) Average of 31 days, January 1940.

* In addition Ref.14 quotes about 230 kg/1,000 m³ H_2 + CO as being used for "Apparateheizung", i.e. heating of items of plant, at least for the winter months, January to March; this use of steam is obscure.

TABLE IV

PERFORMANCE OF WINKLER GENERATORS MAKING WATER GAS FROM DRY BROWN COAL

Plant		Leuna				-
Reference		1	6	10 (12 months average)	10* (one day)	9
Actual output N m³/hr W.G.		-	-	27,000	42,000	
Fuel (Dry Brown Coal)						
Analysis %	C	61.1	-	59.3	57.3	61.1
On dry basis	H	4.7	-	4.5	4.4	4.7
	O	17.0	-	15.2	14.0	16.3
	N	0.1	-	0.7	0.6	0.8
	S	3.3	-	3.6	3.1	3.3
	ash	13.8	-	16.7	20.6	13.8
	H_2O	(6.0)	-	(8.7)	(8.1)	(8.7)
Cal.val., T.cals/T net as received		-	-	5170	5150	5270

TABLE IV (Cont'd)

References	Leuna 1	Leuna 6	Leuna 10	- 9
Final grading	mm %	%		mm %
	0-0.6 9.6			0-0.2 20
	0.6-0.88 1.5			0.2-0.5 18
	0.88-1.0 9.0			0.5-1.0 17
	1-2 23.3			1-2 16
	2-5 16.5			2-3 12
	>5 0.1			3-6 17
Gas Analysis CO_2	19	19	21.8	15.7	17.5
CO	38	38	35.3	44.4	41.8
H_2	40	40	38.5	36.0	37.2
CH_4	2	2	1.8	1.6	0.9
N_2	1	1	1.1	0.8	1.0
H_2S	?	?	1.5	1.5	1.6
Cal.val., k.cals/N M³ net	2162	2162	2117	2295	2195
O_2 in blast	40%	-	40%	48%	40%
Blast above fuel bed	33%	-	-	-	-
Fuel bed temp. °C	-	-	-	-	800-950°
Gas exit temp. °C	-	-	-	-	950-1,000°
Dust content of gases in g/N M³ dry gas					
(a) before dust removal	-	-	110	170	-
(b) after primary dust rem.	-	-	-	-	-
(c) after final dust rem.	-	-	-	-	-
% C in dust	-	-	29	35	-
% C in ash	-	-	42	40	-
Efficiencies per 1000 M³ H_2+CO					
coal kgs	800	800	830	855	790
carbon kgs	461	-	452	455	444
oxygen M³	320-335	330	366	316	342
steam used kgs	370	-	407	250	384
steam raised kgs	-	-	600	-	-
steam decomposition %	-	-	33	27	-
carbon utilisation %	80.5	-	86.5*	80*	84
dust blown over kgs	-	-	148	211	-
grate ashes kgs	-	-	41	44	-
power KWH	-	-	48	-	-

* See also page 20