

Gasification Data For Gladbeck Works

T-13

Calculated from:

- a) Values obtained from Upper Silesia
- b) Nordstern gasification for liquid phase, Scholven for vapor phase

a) Coal throughput and gas formation:

	Lean Gases m ³ /hr. (15°, 735 mm)			
	Pure Coal te/hr	Coal Stall 50 atm.	Washer 50 atm.	Vapor Phase 26 atm.
Upper Silesia	48.1	3,620	13,800	2,160
Gladbeck	89.6	6,750	25,600	4,040

	Rich Gases m ³ /hr. (15°, 735 mm)			
	Coal Stall 1 atm.	Washer Off Gas 1 atm, plus Vacuum	Vapor Stall 1 atm.	Catch Pot Off Gas
Upper Silesia	1,350	5,320	3,880	2,450
Gladbeck	2,520	9,950	7,210	4,560

We get the following amounts of hydrocarbons (in te/hr.) from these gas amounts and the analyses of gases in Upper Silesia

	C ₁	C ₂	C ₃	C ₄	Total	Carbon Content
Coal Phase	6.25	4.95	7.18	3.1	21.48	17.8 te/hr.
Vapor Phase	0.73	0.29	2.02	8.85	11.89	9.9 te/hr.
Total	6.98	5.24	9.20	11.95	33.37	27.7 te/hr.

atm. operation
 With 300 (tons) production per day, we get a total gasification of around
 240,000 year/ton of hydrocarbons.

The Available Gasified Hydrocarbons	139,300	165,300
To be supplemented by Lean Gas Production, year-ton Hydrocarbons	16,100	16,100

If we assume that the lean gas (3 / 1 generator, with 38,000 year-ton coke consumption) is added to the total gas, the heating value of the fuel gas will amount to

3,400 or 3,540 W.E. Ho (Heat units, upperheating value?) m³/hr.

The heating value of the fuel gas coming to the coking plant for computation will amount to

2,800 to 2,850 W.E. Ho m³/hr.

if the lean gas battery be erected upon the coking plant grounds and the gas be returned to Hibernia.

With reference to the gasification of the hydrocarbons from the amounts of gas given, we get the following:

a) During the production of 22.5 te/hr. VT 705:

Lean Gas	C ₁	C ₂	C ₃	C ₄	
Buna Deliveries, in yr/te Hydrocarbons	-	18,000	15,000	20,000	15,000
C ₄ Deliveries, in yr/te Hydrocarbons	-	-	-	-	16,000
Fuel Gas Deliveries, in yr/te Hydrocarbons	-	-	1,000	10,000	15,000
Used up in Heating, in yr/te Hydrocarbons	16,100	4,700	12,500	6,600	5,500
Total Consumption	16,100	22,700	28,500	36,600	51,500

b) In the production of 27.0 tons per hour of VT 705:

Lean Gas	C ₁	C ₂	C ₃	C ₄	
Buna Deliveries in yr/te Hydrocarbons	-	18,000	15,000	20,000	15,000
C ₄ Deliveries in yr/te Hydrocarbons	-	-	-	-	16,000

	Lean Gas	C ₁	C ₂	C ₃	C ₄
Fuel Gas Deliveries in yr/te Hydrocarbons	—	—	1,700	17,000	25,300
Consumption for Heating in yr/te Hydrocarbons	16,100	3,950	17,150	6,400	4,800
<u>Total Consumption</u>	16,100	26,950	33,850	43,400	61,100

SUMMARY:

About 80% of the C₁ and C₂ hydrocarbons were consumed in operational heating, i.e. the erection of a 6th coal stall will not permit replacing the C₃ and C₄ hydrocarbons in the Buna case by the C₁-C₂ hydrocarbons from the additional gasification. We had in this case, i.e. by substituting about 9,600 yr/te of C₁-C₂ hydrocarbons in the heating gas by the lean, reduced the heating value of the gas from

3,400 to 3,050 H.E. Ho m³/hr.

/s/ SCHIMY