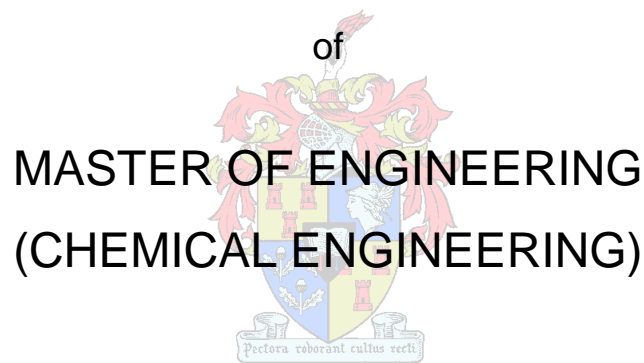

Techno-Economic Assessment of Processes that Produce Jet Fuel from Plant-Derived Sources

by

Gabriel Wilhelm Diederichs

Thesis presented in partial fulfilment
of the requirements for the Degree



in the Faculty of Engineering
at Stellenbosch University

Supervisor
Professor JF Görgens

December 2015

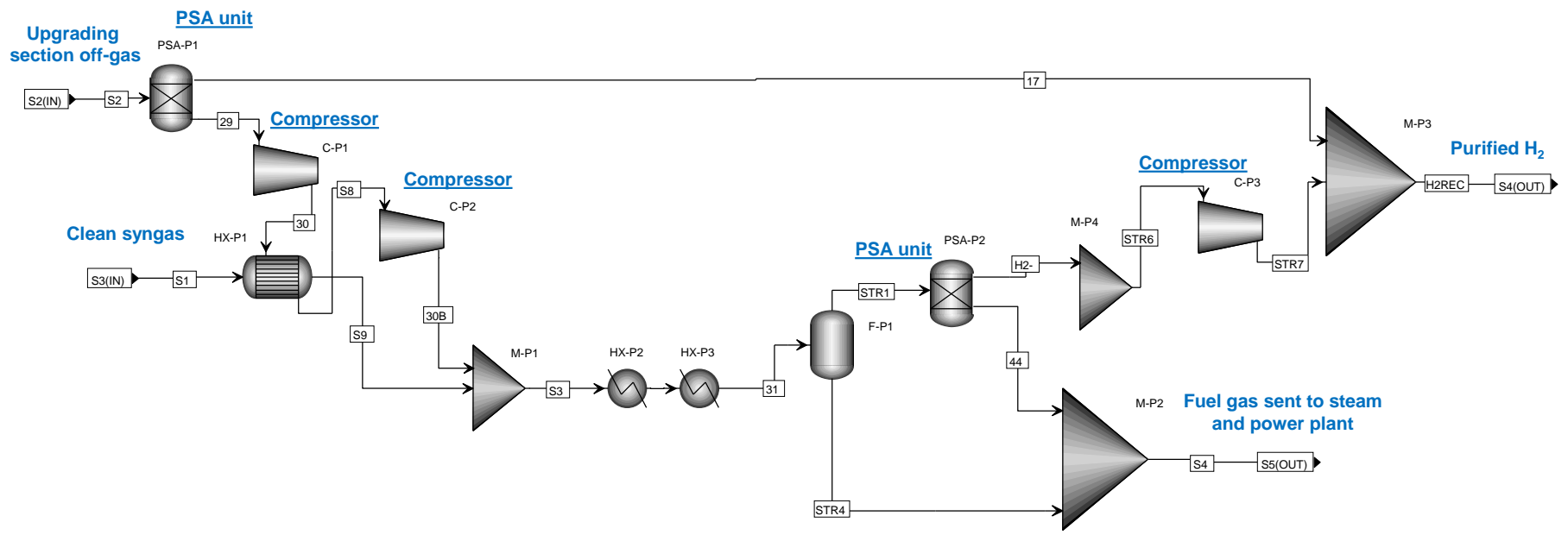


Figure 76: Hydrogen recovery plant (PSA section)

Table 180: Stream table for hydrogen recovery plant (PSA section)

Stream	PSA.17	PSA.30	PSA.30B	PSA.31	PSA.H2-	PSA.H2REC	PSA.S1	PSA.S2	PSA.S3	PSA.S4	PSA.STR4	PSA.STR7
Total Mass Flow (kg/hr)	1970.511	1208.988	1208.988	4704.927	592.553	2563.064	3495.938	3179.499	4704.927	4112.373	0.216	592.553
Temperature (C)	36.15	223.65	214.75	44.95	44.95	40.75	-38.85	34.95	147.75	44.95	44.95	56.15
Pressure (atm)	34.542	8.685	31.582	31.582	31.582	34.542	31.582	34.542	31.582	1.974	31.582	34.542
Vapour fraction	1	1	1	1	1	1	1	1	1	1	0	1
Enthalpy (Gcal/hr)	0.075	-0.324	-0.339	-3.587	0.04	0.138	-3.147	-0.557	-3.199	-3.628	0	0.063
Mass Flow (kg/hr)												
H2O	0	1.451	1.451	1.451	0	0	0	1.451	1.451	1.451	0.002	0
N2	0	0.224	0.224	18.068	0	0	17.844	0.224	18.068	18.068	0	0
CO2	0	38.198	38.198	111.615	0	0	73.417	38.198	111.615	111.615	0	0
CO	0	26.818	26.818	2943.041	0	0	2916.223	26.818	2943.041	2943.041	0	0
H2	1970.511	347.737	347.737	740.692	592.553	2563.064	392.954	2318.248	740.692	148.138	0	592.553
CH4	0	196.118	196.118	291.618	0	0	95.5	196.118	291.618	291.618	0	0
C2H6	0	91.88	91.88	91.88	0	0	0	91.88	91.88	91.88	0	0
C3H8	0	145.347	145.347	145.347	0	0	0	145.347	145.347	145.347	0.001	0
C4H10	0	155.235	155.235	155.235	0	0	0	155.235	155.235	155.235	0.004	0
C5H12-1	0	107.613	107.613	107.613	0	0	0	107.613	107.613	107.613	0.009	0
C6H14-1	0	56.513	56.513	56.513	0	0	0	56.513	56.513	56.513	0.014	0
C7H16-1	0	25.464	25.464	25.464	0	0	0	25.464	25.464	25.464	0.019	0
C8H18-1	0	10.014	10.014	10.014	0	0	0	10.014	10.014	10.014	0.021	0
C9H20-1	0	3.945	3.945	3.945	0	0	0	3.945	3.945	3.945	0.024	0
C10H22-1	0	1.49	1.49	1.49	0	0	0	1.49	1.49	1.49	0.026	0
C11H24	0	0.619	0.619	0.619	0	0	0	0.619	0.619	0.619	0.029	0
C12H26	0	0.218	0.218	0.218	0	0	0	0.218	0.218	0.218	0.026	0
C13H28	0	0.067	0.067	0.067	0	0	0	0.067	0.067	0.067	0.018	0
C14H30	0	0.025	0.025	0.025	0	0	0	0.025	0.025	0.025	0.013	0
C15H32	0	0.008	0.008	0.008	0	0	0	0.008	0.008	0.008	0.006	0
C16H34	0	0.003	0.003	0.003	0	0	0	0.003	0.003	0.003	0.003	0
C17H36	0	0.001	0.001	0.001	0	0	0	0.001	0.001	0.001	0.001	0