

**3 General information****3.1 Compressor data**

Type:	Burckhardt Compression
Compressor:	2B2Y-1.34_1
No of stages:	2
No of cylinders:	2
Nominal speed:	744 RPM (Min RPM: 500 RPM using VFD)
Nominal motor power:	90 kW
Stroke:	160 mm
Crank angle:	2 x 180°

### 3.2 Gas data

Operating conditions	Chem.	1		2		2 min speed	
	formula	1		2		2	
Stage		1	2	1	2	1	2
Gas comp. at cyl. inlet flange [mole %]:							
Hydrogen (normal)	H2	31.41	31.41	2.40	2.40	2.40	2.40
Oxygen	O2	0.10	0.10	0.10	0.10	0.10	0.10
Nitrogen	N2	5.60	5.60	1.70	1.70	1.70	1.70
Carbon monoxide	C1O1	1.25	1.25	4.40	4.40	4.40	4.40
Carbon dioxide	C1O2	0.10	0.10	0.40	0.40	0.40	0.40
Methane	C1H4	19.71	19.71	19.00	19.00	19.00	19.00
Ethane	C2H6	12.01	12.01	8.60	8.60	8.60	8.60
Ethylene	C2H4	5.12	5.12	2.10	2.10	2.10	2.10
Propane	C3H8	4.46	4.46	6.90	6.90	6.90	6.90
Propene	C3H6	1.97	1.97	3.40	3.40	3.40	3.40
Isobutane	C4H10	1.64	1.64	0.60	0.60	0.60	0.60
Butane	C4H10	1.95	1.95	3.60	3.60	3.60	3.60
2-methylpropene	C4H8	2.55	2.55	3.20	3.20	3.20	3.20
Isopentane	C5H12	0.56	0.56	0.80	0.80	0.80	0.80
Pentane	C5H12	0.46	0.46	1.40	1.40	1.40	1.40
Pent-1-ene	C5H10	1.00	1.00	2.20	2.20	2.20	2.20
Hexane	C6H14	0.43	0.43	1.10	1.10	1.10	1.10
Heptane	C7H16	0.43	0.43	1.10	1.10	1.10	1.10
Hydrogen sulphide	H2S1	9.25	9.25	37.00	37.00	37.00	37.00

Operating conditions	Chem. formula	2 max Ps	2 50%
		2 max Ps	2
Stage		1	2
Gas comp. at cyl. inlet flange [mole %]:			
Hydrogen (normal)	H2	2.40	2.40
Oxygen	O2	0.10	0.10
Nitrogen	N2	1.70	1.70
Carbon monoxide	C1O1	4.40	4.40
Carbon dioxide	C1O2	0.40	0.40
Methane	C1H4	19.00	19.00
Ethane	C2H6	8.60	8.60
Ethylene	C2H4	2.10	2.10
Propane	C3H8	6.90	6.90
Propene	C3H6	3.40	3.40
Isobutane	C4H10	0.60	0.60
Butane	C4H10	3.60	3.60
2-methylpropene	C4H8	3.20	3.20
Isopentane	C5H12	0.80	0.80
Pentane	C5H12	1.40	1.40
Pent-1-ene	C5H10	2.20	2.20
Hexane	C6H14	1.10	1.10
Heptane	C7H16	1.10	1.10
Hydrogen sulphide	H2S1	37.00	37.00

Table 2: Gas data for pulsation simulation

				1	2	3	4	5
		<b>Load case:</b>		1	2	2_min speed	2_max Ps	2_50 %
Index	Name							
1	<b>Battery limit suction</b>	VOS	[m/s]	381.9	303.1	303.1	303.1	303.1
		density $\rho$	[kg/m <sup>3</sup> ]	0.855	1.355	1.355	1.381	1.355
		pressure	[bar]	1.017	1.043	1.043	1.063	1.043
		temperature	[°C]	50	50	50	50	50
		flow	[kg/h]	267.5	1127.1	775.8	1151.9	606.5
2	<b>1st stage suction</b>	VOS	[m/s]	381.8	303.1	303.1	303.1	304.2
		density $\rho$	[kg/m <sup>3</sup> ]	0.847	1.341	1.341	1.367	1.330
		pressure	[bar]	1.007	1.033	1.033	1.053	1.033
		temperature	[°C]	49.9	50	50	50	52.7
		flow	[kg/h]	269.2	1127.3	776	1152.1	608.5
3	<b>1st stage discharge</b>	VOS	[m/s]	413.3	326.9	324.5	326.8	328.2
		density $\rho$	[kg/m <sup>3</sup> ]	2.205	3.348	3.480	3.394	3.401
		pressure	[bar]	3.129	3.042	3.11	3.082	3.118
		temperature	[°C]	112.5	109.6	103.6	109.4	113.1
		flow	[kg/h]	269.2	1127.3	776	1152.1	608.5
4	<b>Cooler 1-2</b>	VOS	[m/s]	395.1	312.6	312.4	312.5	314.1
		density $\rho$	[kg/m <sup>3</sup> ]	2.4	3.6	3.7	3.7	3.7
		pressure	[bar]	3.1	3.0	3.0	3.0	3.0
		temperature	[°C]	76.7	74.8	74.3	74.7	78.7
		flow	[kg/h]	269.2	1127.3	776	1152.1	608.5
5	<b>2nd stage suction</b>	VOS	[m/s]	376.9	298.2	300.3	298.2	300
		density $\rho$	[kg/m <sup>3</sup> ]	2.601	3.942	3.966	3.996	3.986
		pressure	[bar]	2.997	2.906	2.972	2.945	2.979
		temperature	[°C]	40.9	40	45	40	44.2
		flow	[kg/h]	268.8	1130	777	1155	610.7
6	<b>2nd stage discharge</b>	VOS	[m/s]	408.9	323.3	322.3	323	324
		density $\rho$	[kg/m <sup>3</sup> ]	6.144	9.679	9.752	9.697	9.627
		pressure	[bar]	8.466	8.482	8.482	8.482	8.482
		temperature	[°C]	103.1	103.2	100.6	102.5	105
		flow	[kg/h]	268.8	1130	777	1155	610.7
7	<b>Aftercooler (if yes)</b>	VOS	[m/s]	395.3	312.2	311.7	312.0	312.5
		density $\rho$	[kg/m <sup>3</sup> ]	6.6	10.4	10.4	10.4	10.4
		pressure	[bar]	8.3	8.3	8.3	8.3	8.3
		temperature	[°C]	76.6	76.6	75.3	76.3	77.5
		flow	[kg/h]	267.75	1130	777	1155	609.4 5

8	<b>Battery limit discharge</b>	VOS	[m/s]	381.7	301.0	301.0	301.0	301.0
		density $\rho$	[kg/m <sup>3</sup> ]	6.983	11.119	11.119	11.119	11.119
		pressure	[bar]	8.21	8.21	8.21	8.21	8.21
		temperature	[°C]	50.00	50.00	50.00	50.00	50.00
		flow	[kg/h]	266.7	1130	777	1155	608.2

Table 3: Gas properties / Input data for pulsation simulation