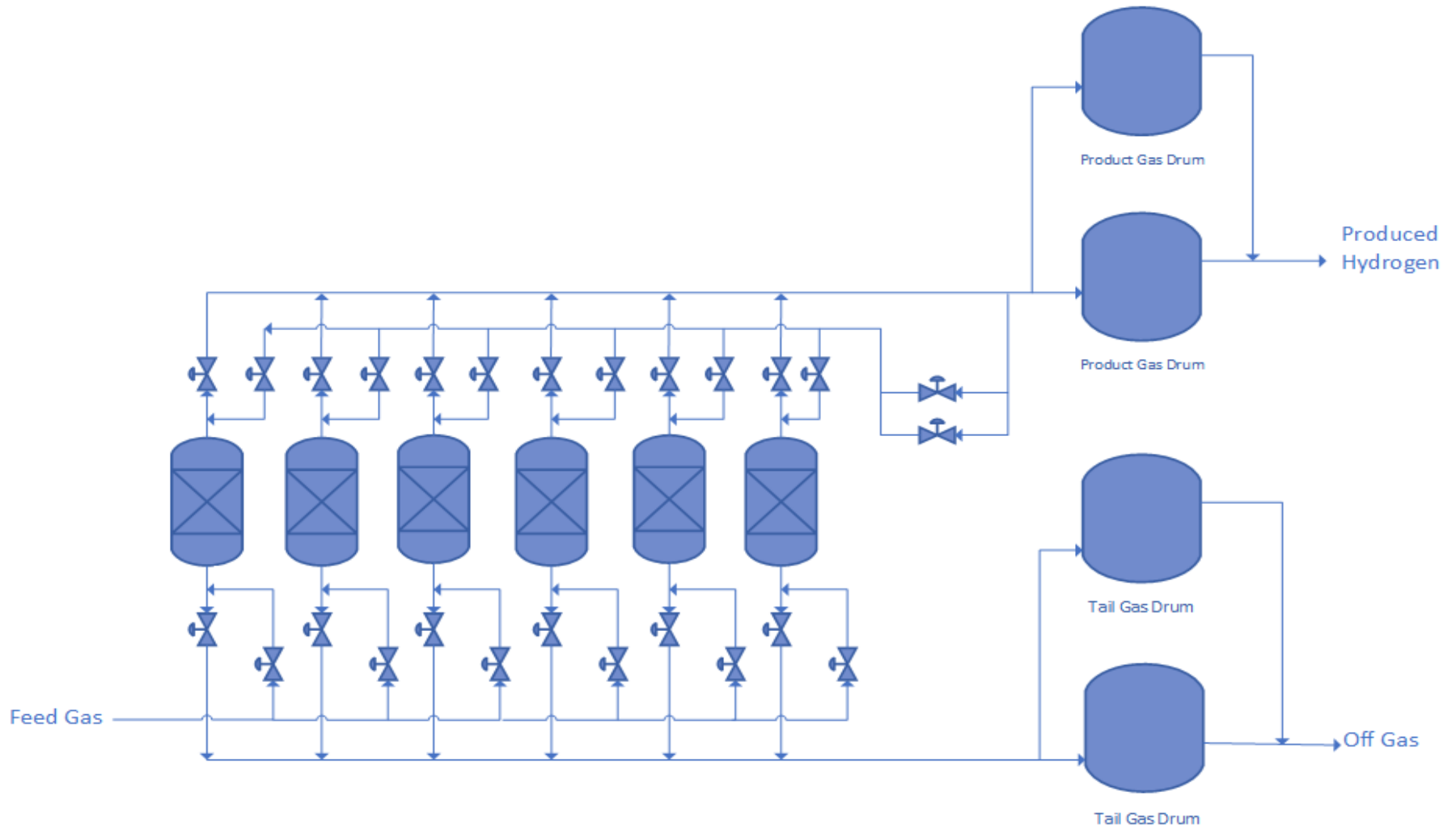


PSA Hydrogen Simulation

BFD:



Adsorber Properties:

DESIGN DATA	CODE:	ASME VIII/1 AND VERIFICATION, FATIGUE ANALYSIS ACC. TO ASME VIII/2, PART 5				
	DESIGN TEMPERATURE:	-18 / 120	°C			
	OPERATING TEMPERATURE:	33	°C			
	DESIGN PRESSURE:	19	Barg			
	OPERATING PRESSURE:	15.8	Barg			
	QUANTITY:	6	No.			
ADSORBENT DATA	ADSORBER VOLUME:	45	m ³			
	ADSORBER FILLING VOLUME:	43	m ³			
	ADSORBER FILLING MASS:	31200	kg			
	NAME OF ADSORBENT:	TOTAL FILLING MASS(Kg)	VOLUME (m³)	PACKED DENSITY Kg/m³	HEIGHT OF BED (mm)	MATERIAL
	TOP LAYER:	14000	17.2	814	3802	5A SILIPORITE PHYG3/ 1,6-2,5 MM
	MIDDLE LAYER:	15700	23.6	665	5217	CMS H2 55/2 / 2MM
	BOTTOM LAYER:	1500	2.1	714	465	SORBEAD AIR WS2050 /2-5 MM

H&M:

Stream Number		1	2	3	4	5
Stream Name		Feed Gas*	H2	H2 Product	Tail Gas	Tail Gas
Temperature	°C	33	38	38	26	<38
Pressure	barg	15.8	15.3	15	0.1	7.6
Vapor Density	kg/Nm ³	0.26469	0.09004	0.09004	0.78829	0.7856
Density	kg/m³	4.532	1.264	1.241	0.7486	5.638
Vapor Flowrate (Min/Design/Max)	Nm ³ /h	15569/ - /31139	11660/ - /23320	11660/ - /23320	3909/ - /7819	3909/ - /7819

Mass Flowrate (Min/Design/Max)	kg/h	4121/ - /8242	1050/ - /2100	1050/ - /2100	3071/ - /6142	3071/ - /6142
Molecular Weight	Kg/Kmol	5.933	2.26	2.26	17.607	17.607
Molecular Flow	Kmol/h	1389	1040	1040	349	349
HHV	MJ/Nm ³	20.68	12.75	12.75	44.31	44.31
Wobbe Index	MJ/Nm ³	45.7	48.33	48.33	56.85	56.85

* : Design Case 2 - CCR only no
LPG

Molar Composition by Component

H2	mol%	88.1	99.99	99.99	52.63	52.63
N2	ppmv	500	balance	balance	<2000	<2000
C1	mol%	3.3			13.1	13.1
C2	mol%	3.6			14.3	14.3
C3	mol%	3.3			13.1	13.1
IC4	mol%	0.9			3.6	3.6
NC4	mol%	0.3			1.2	1.2
IC5	mol%	0.08			0.32	0.32
NC5	mol%	0.04			0.16	0.16
C6+	mol%	0.3			1.19	1.19
Olefines	mol%	0.02			0.08	0.08
Carbon Monoxide (CO)	ppmv	70	< 20 wt.ppm	< 20 wt.ppm	<0,022	<0,022
Carbon Dioxide (CO ₂)	ppmv	3			<0,002	<0,002
Chloride	ppmv	1			4	4
H ₂ S	ppmv	4			16	16
Water	ppmv	60	<0,5 wt.ppm	<0,5 wt.ppm	220	220