

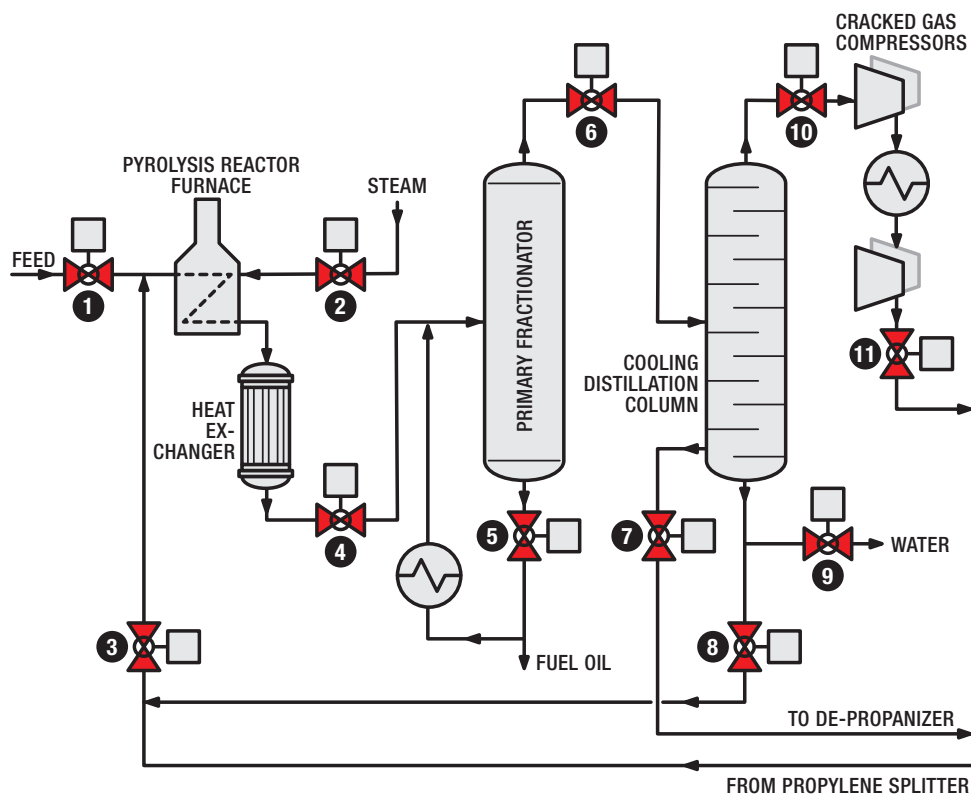
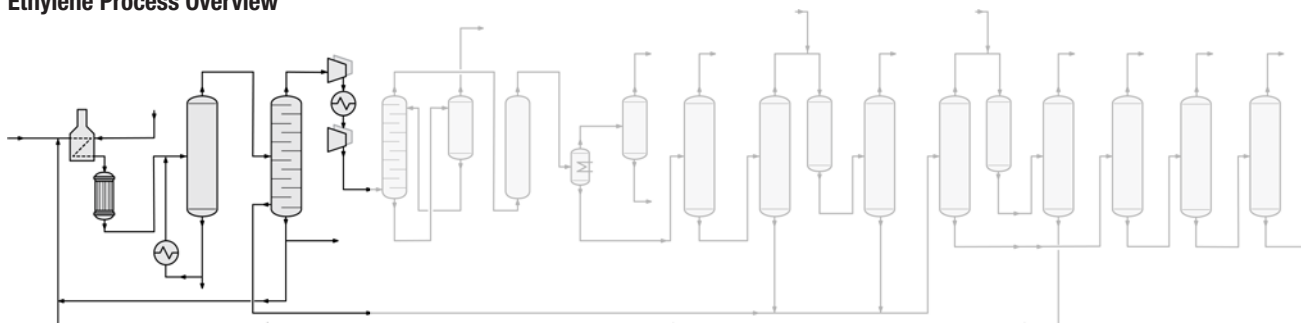
Ethylene – Liquid / Gas Steam Cracking														
Valve Number	Valve Description	Design Temperature Range		Design Pressure Range		Pipe Size		Recommended Valve ¹						
		deg F	deg C	psig	bar g	in	dn	C-Series	T-Series	G-Series	ISOLATOR 2.0	IRSV	Watson Series	FlexStream®
1	Feed	50 – 100	10 – 37	150 – 200	10.3 – 13.8	10 – 14	250 – 350		•		•			
2	Steam	350 – 400	176 – 204	150 – 200	10.3 – 13.8	8 – 12	200 – 300		•		•			
3	Recycle Feed	50 – 100	10 – 37	150 – 200	10.3 – 13.8	6 – 10	75 – 250		•		•			
4	Primary Heat Exchanger	650 – 850	343 – 454	50	3.5	24 – 42	610–1070	•						
5	Fuel Oil	300 – 500	149 – 260	50	3.5	10 – 14	250 – 350	•			•			
6	Primary Fractionator Overhead	200 – 400	93 – 148	50	3.5	24 – 36	610 – 915		•					
7	Cooling Distillation Tower Ethylene Cut	100 – 300	37 – 149	50	3.5	10 – 14	250 – 350		•		•			
8	Cooling Distillation Tower Recycle	100 – 300	37 – 149	50	3.5	10 – 14	250 – 350		•		•			
9	Cooling Distillation Tower Water	100 – 300	37 – 149	50	3.5	6 – 10	75 – 250				•			
10	Cooling Distillation Tower Overhead	100 – 200	37 – 93	50	3.5	24 – 36	610 – 915		•					
11	Cracked Gas Compressor	100 – 200	37 – 93	150 – 500	10.3 – 34.5	24 – 36	610 – 915		•					
12	Pre-Fractionator	100 – 200	37 – 93	150 – 200	10.3 – 13.8	12 – 18	300 – 460		•		•			
13	Caustic Wash Column	100 – 200	37 – 93	150 – 200	10.3 – 13.8	12 – 18	300 – 460		•		•			
14	Pre-Fractionator Overhead	100 – 200	37 – 93	150 – 200	10.3 – 13.8	24 – 36	610 – 915		•					
15	Caustic Wash Column Overhead	100 – 200	37 – 93	150 – 200	10.3 – 13.8	12 – 18	300 – 460		•		•			
16	Drying Column	50 – 100	10 – 37	500 – 600	34.5 – 41.4	18 – 30	460 – 760		•					
17	Main Cooler	50 – 100	10 – 37	300 – 500	20.7 – 34.5	18 – 30	460 – 760		•					
18	Main Cooler Overhead	0 – 50	-17 – 10	200 – 300	10.3 – 20.7	12 – 18	300 – 460		•		•			
19	Hydrogen Separator Methane	0 – 50	-17 – 10	100 – 200	6.9 – 13.8	6 – 12	150 – 300				•			
20	Hydrogen Separator Hydrogen	0 – 50	-17 – 10	100 – 200	6.9 – 13.8	6 – 12	150 – 300				•			
21	De-methanizer	-50 – 0	-45 – -17	50 – 100	3.5 – 6.9	12 – 18	300 – 460		•		•			
22	De-methanizer Overhead	-50 – 0	-45 – -17	50 – 100	3.5 – 6.9	12 – 18	300 – 460		•		•			
23	De-ethanizer	0 – 50	-17 – 10	300 – 400	20.7 – 27.6	14 – 20	355 – 510		•					
24	De-ethanizer Overhead	0 – 50	-17 – 10	300 – 400	20.7 – 27.6	14 – 20	355 – 510		•					
25	Acetylene Hydrogenator	100 – 200	37 – 93	200 – 300	13.8 – 20.7	12 – 18	300 – 460		•		•			
26	Hydrogen	0 – 50	-17 – 10	100 – 200	6.9 – 13.8	6 – 12	150 – 300				•			
27	Ethylene Separator	100 – 200	37 – 93	200 – 300	13.8 – 20.7	12 – 18	300 – 460		•		•			
28	Ethylene Overhead	100 – 200	37 – 93	200 – 300	13.8 – 20.7	12 – 18	300 – 460		•		•			
29	Ethylene Separator Bottoms	100 – 200	37 – 93	200 – 300	13.8 – 20.7	12 – 18	300 – 460		•		•			
30	De-propanizer	100 – 200	37 – 93	50 – 100	3.5 – 6.9	18 – 30	460 – 760		•					
31	De-propanizer Overhead	50	-45	50 – 100	3.5 – 6.9	18 – 30	460 – 760		•					
32	Methylacetylene Hydrogenation	50	-45	50 – 100	3.5 – 6.9	18 – 30	460 – 760		•					
33	Hydrogen	0 – 50	-17 – 10	100 – 200	6.9 – 13.8	6 – 12	150 – 300				•			
34	Propylene Splitter	50	-45	50 – 100	3.5 – 6.9	24 – 36	610 – 915		•					
35	Propylene Splitter Overhead	50	-45	50 – 100	3.5 – 6.9	12 – 18	300 – 460		•		•			
36	De-butanizer	50	-45	50 – 100	3.5 – 6.9	24 – 36	610 – 915		•					

¹ Recommend ISOLATOR 2.0 or T-Series if size, pressure and temperature conditions are met.

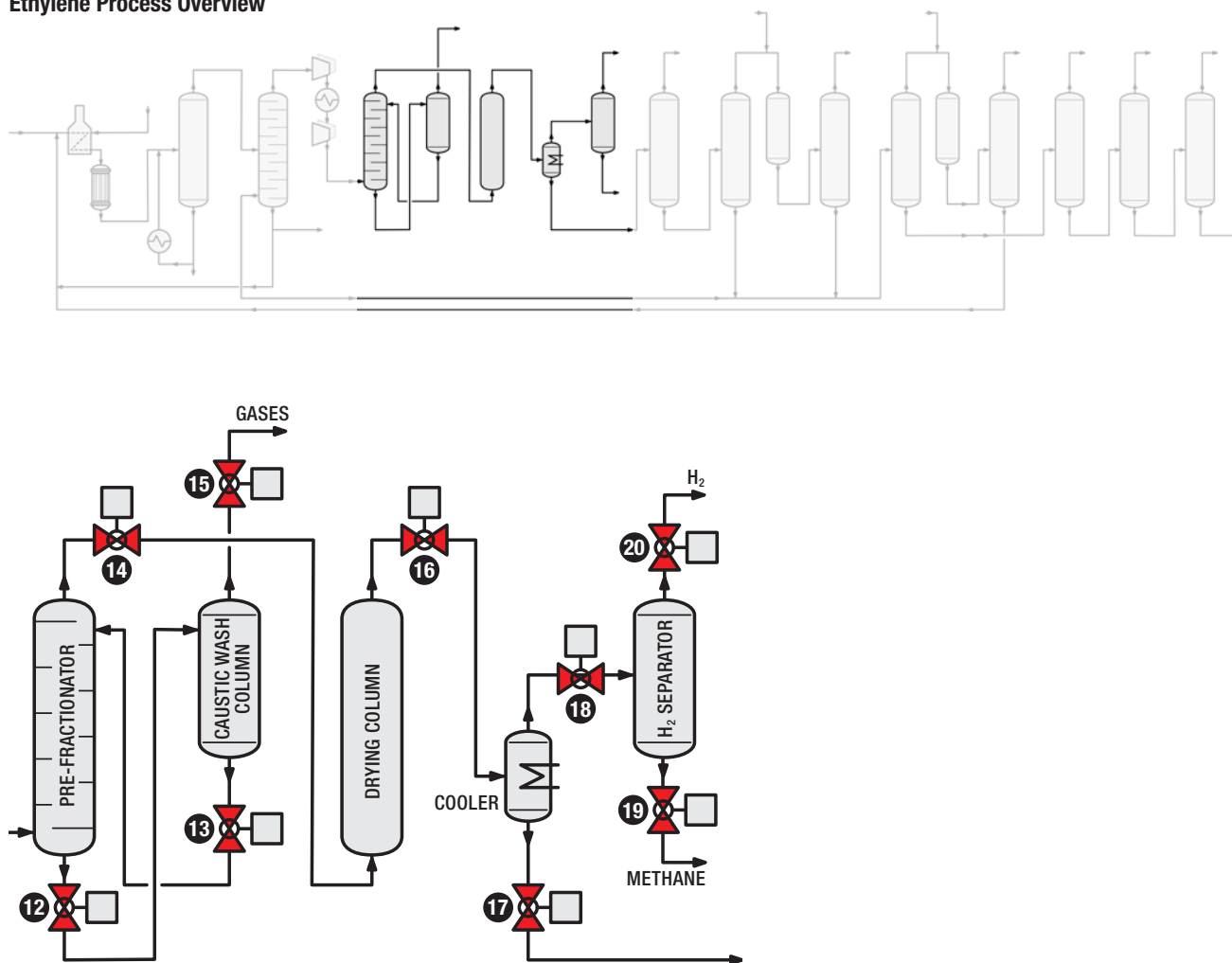
Ethylene – Liquid / Gas Steam Cracking														
Valve Number	Valve Description	Design Temperature Range		Design Pressure Range		Pipe Size		Recommended Valve ¹						
		deg F	deg C	psig	bar g	in	dn	C-Series	T-Series	G-Series	ISOLATOR 2.0	IRSV	Watson Series	FlexStream®
37	De-butanizer C ₄ Overhead Fraction	50	-45	50 – 100	3.5 – 6.9	12 – 18	300 – 460		•		•			
38	De-pentanizer	50	-45	50 – 100	3.5 – 6.9	24 – 36	610 – 915		•					
39	De-pentanizer C ₅ Overhead Fraction	50	-45	50 – 100	3.5 – 6.9	12 – 18	300 – 460		•		•			
40	Gasoline Splitter	50	-45	50 – 100	3.5 – 6.9	24 – 36	610 – 915		•					
41	Gasoline Splitter C ₆ -C ₉ Overhead	50	-45	50 – 100	3.5 – 6.9	12 – 18	300 – 460		•		•			
	Heat Exchanger – Steam	300 – 1500	150 – 815	200 – 900	13.8 – 62.0	1/2 – 2	13 – 50					•		
	General Ball Valves	25 – 900	-4 – 482	25 – 600	1.7 – 41.4	1 – 3	25 – 75			•				

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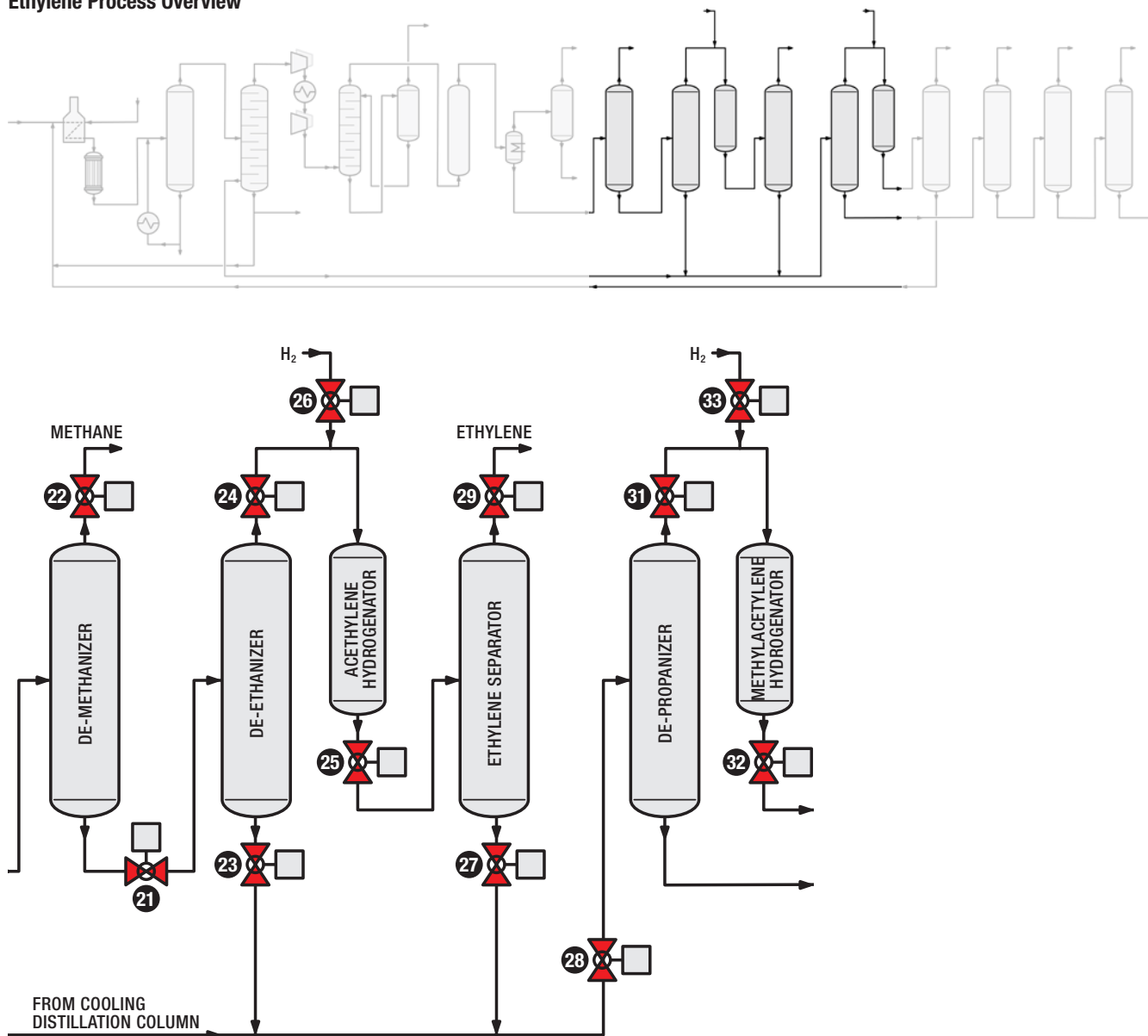
Ethylene Process Overview



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