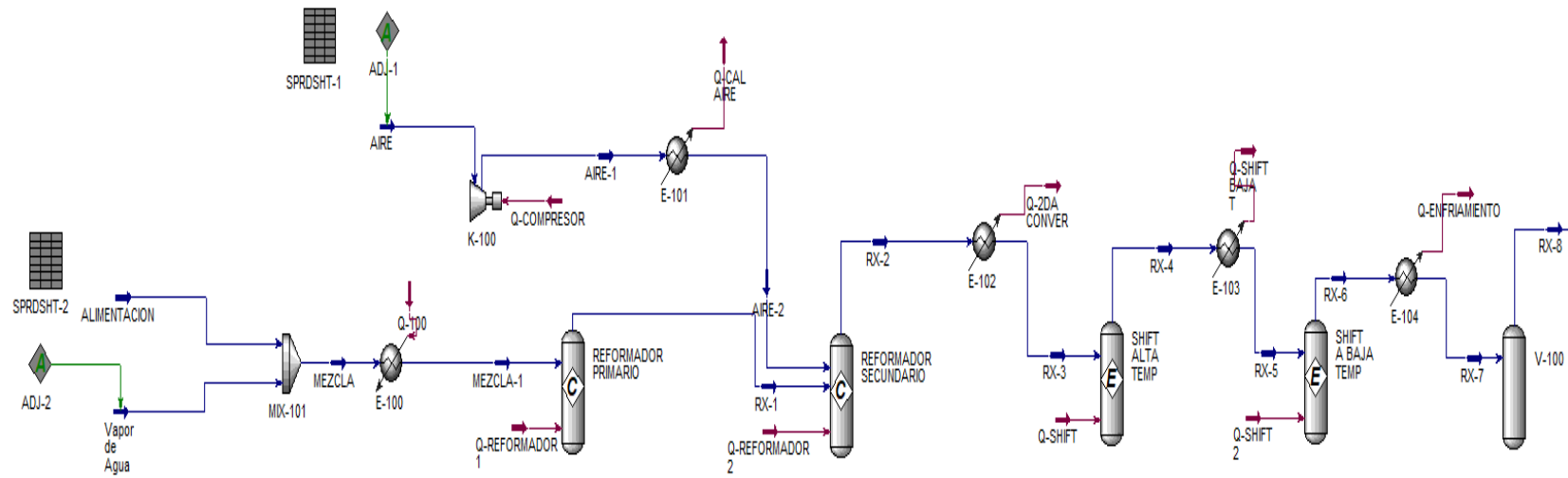


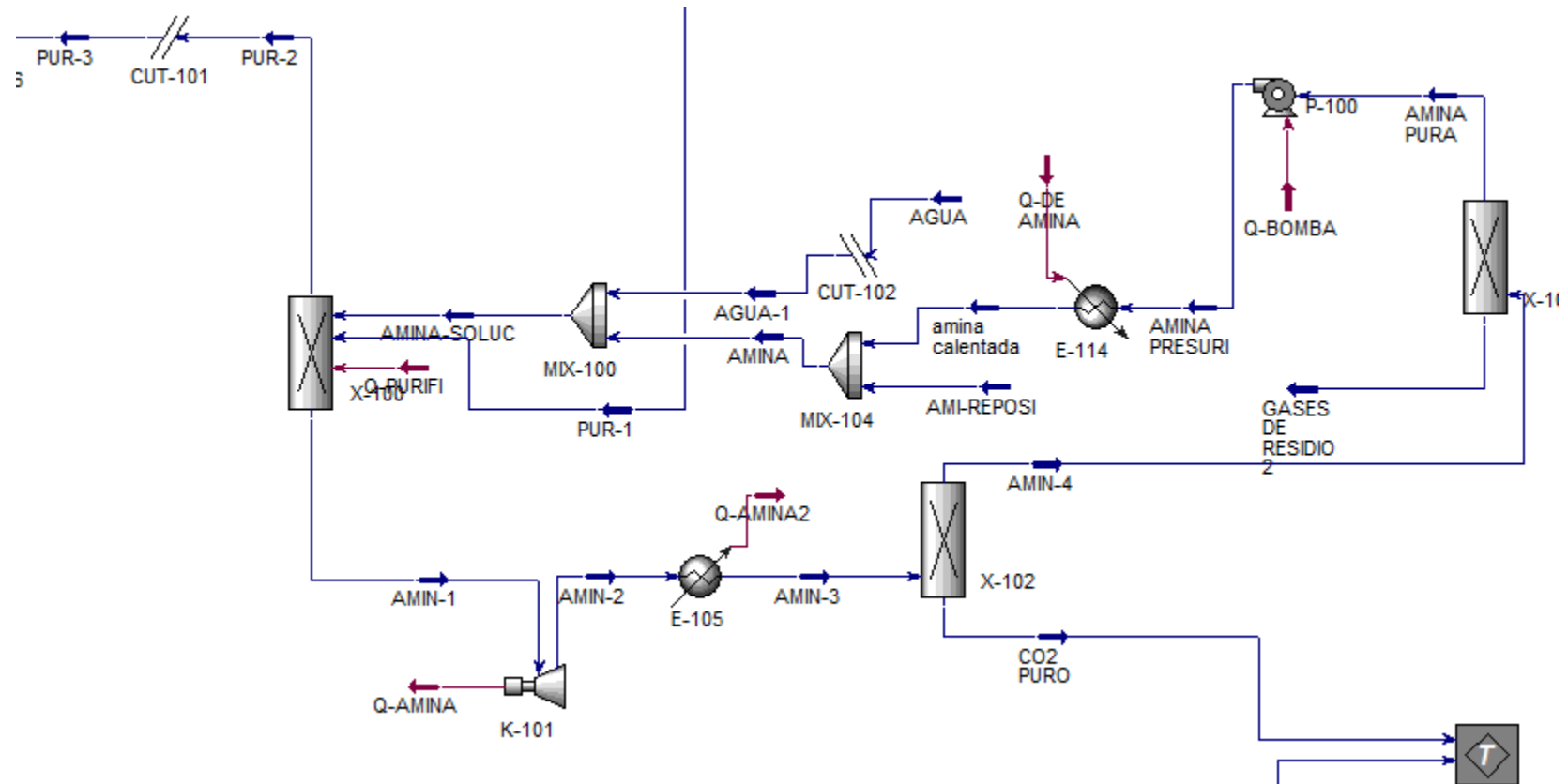
ANEXO 1

SIMULACIÓN DE LOS REACTORES DE OBTENCIÓN DEL GAS DE SÍNTESIS DE AMONIACO



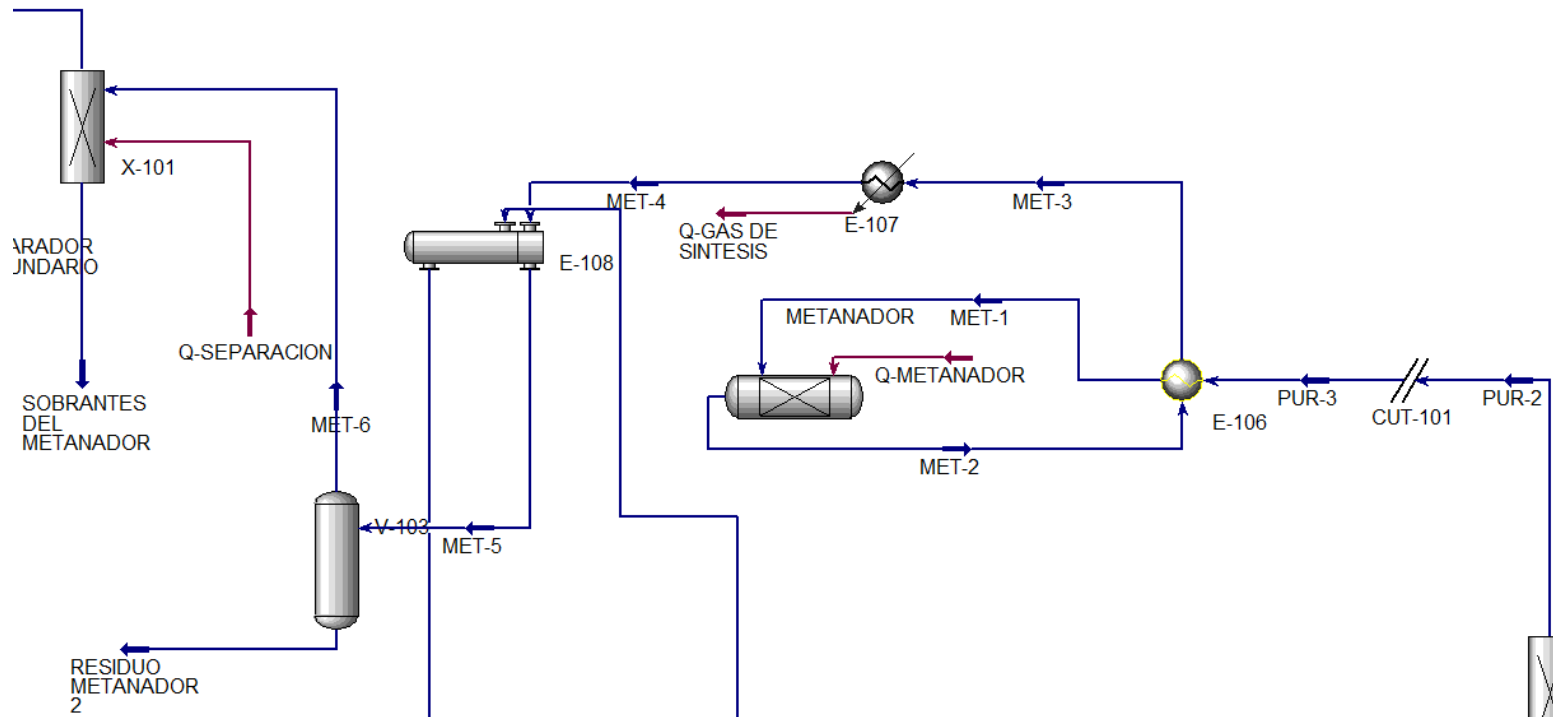
ANEXO 2

SECCION DE PURIFICACION DEL GAS DE SINTESIS DE AMONIACO



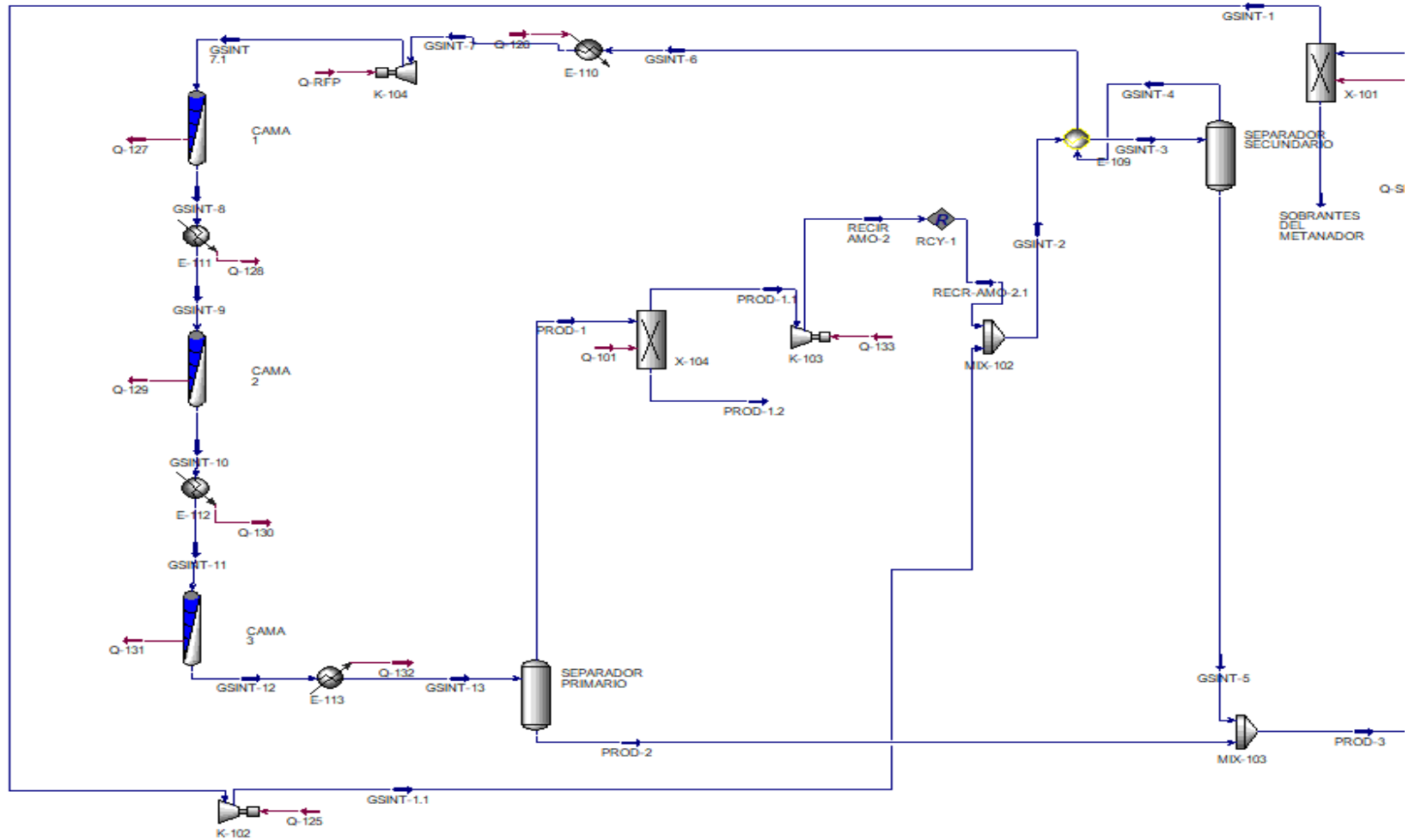
ANEXO 3

SECCION DE METANACIÓN



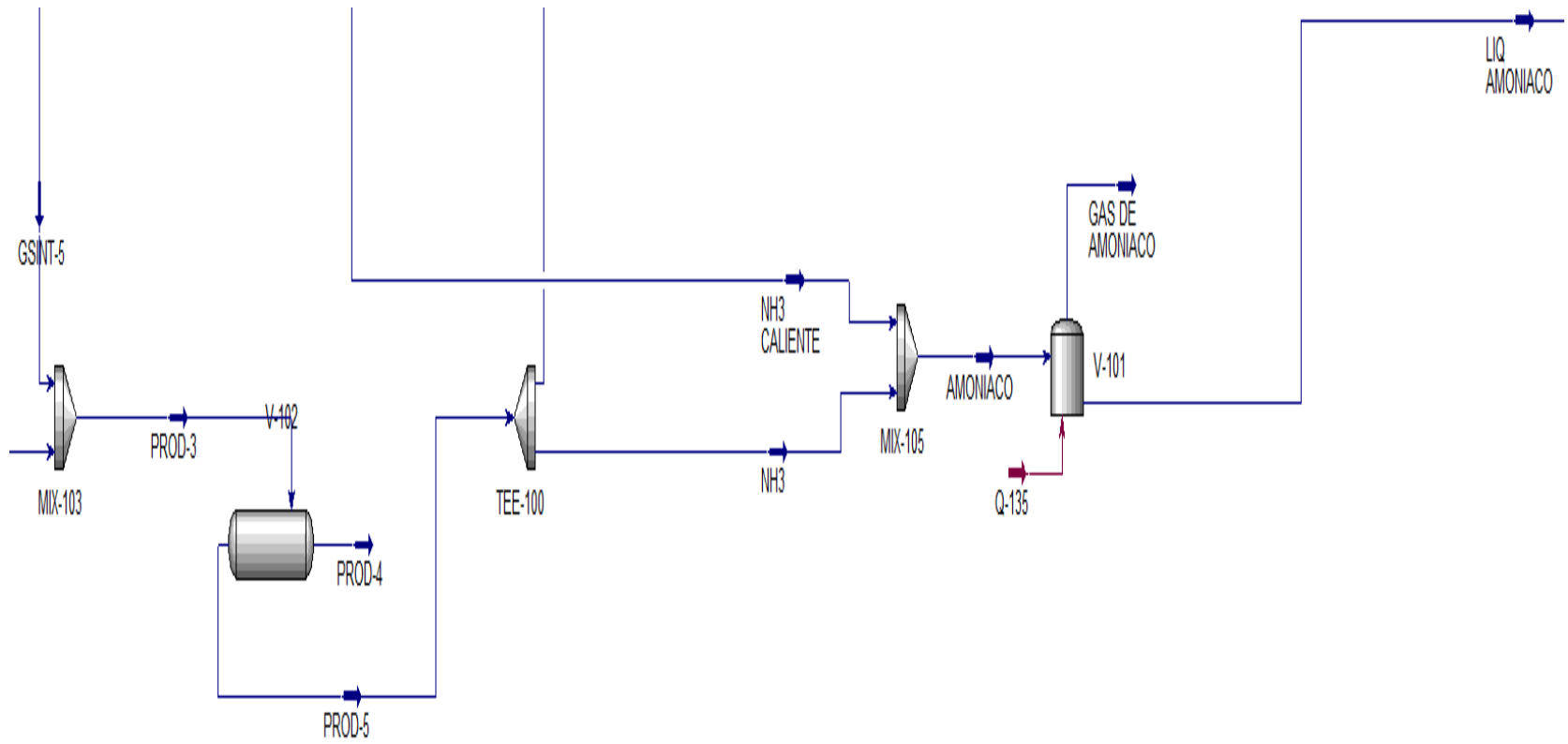
ANEXO 4

CIRCUITO DE PRODUCCION DE AMONIACO



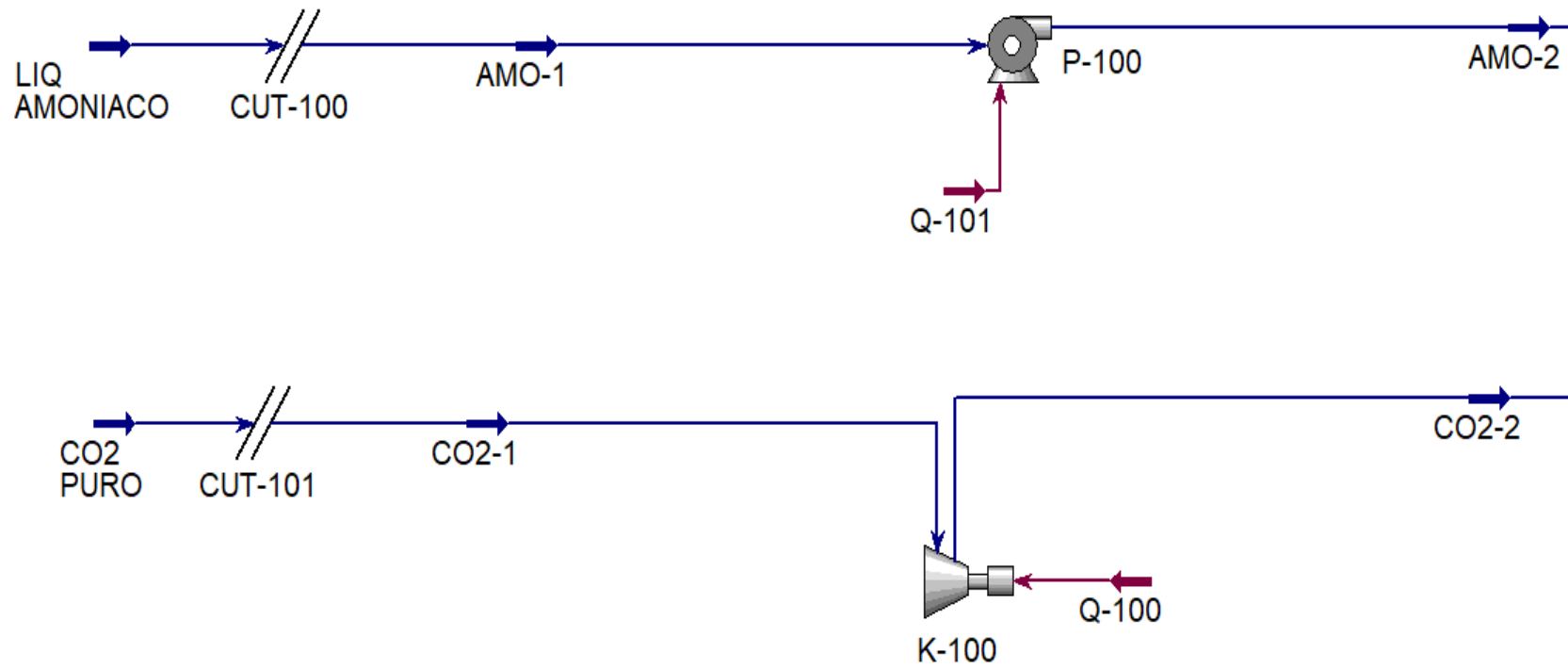
ANEXO 5

SECCION DE ALMACENAJE DE AMONIACO



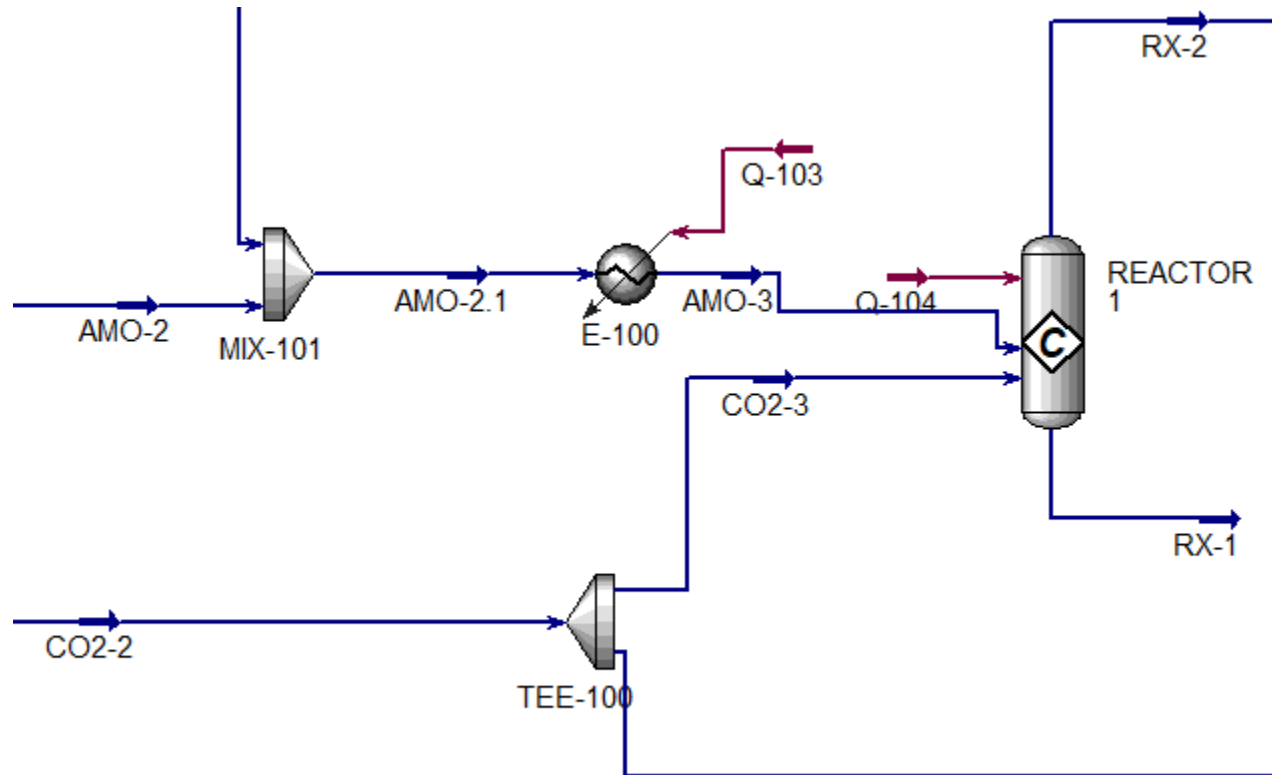
ANEXO 6

SECCION DE COMPRESION DE CO₂ Y BOMBEO DE AMONIACO

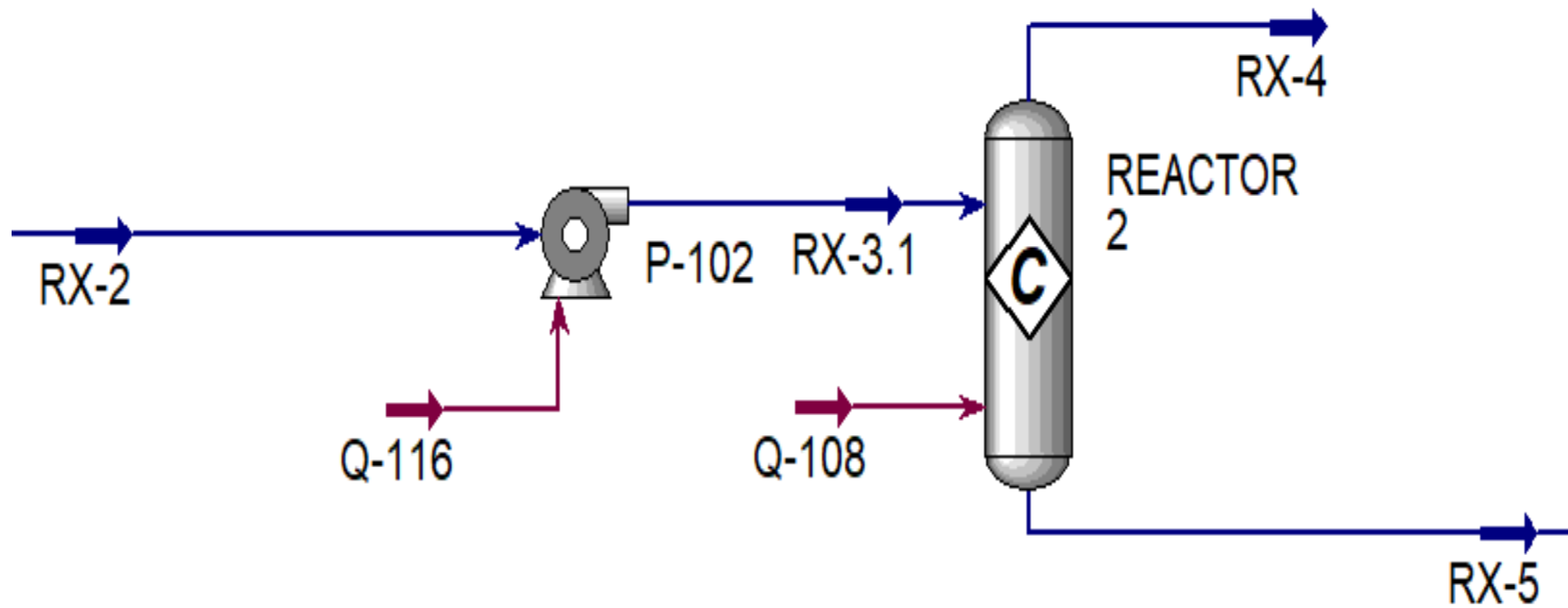


ANEXO 7

REACTOR DE CARBAMATO

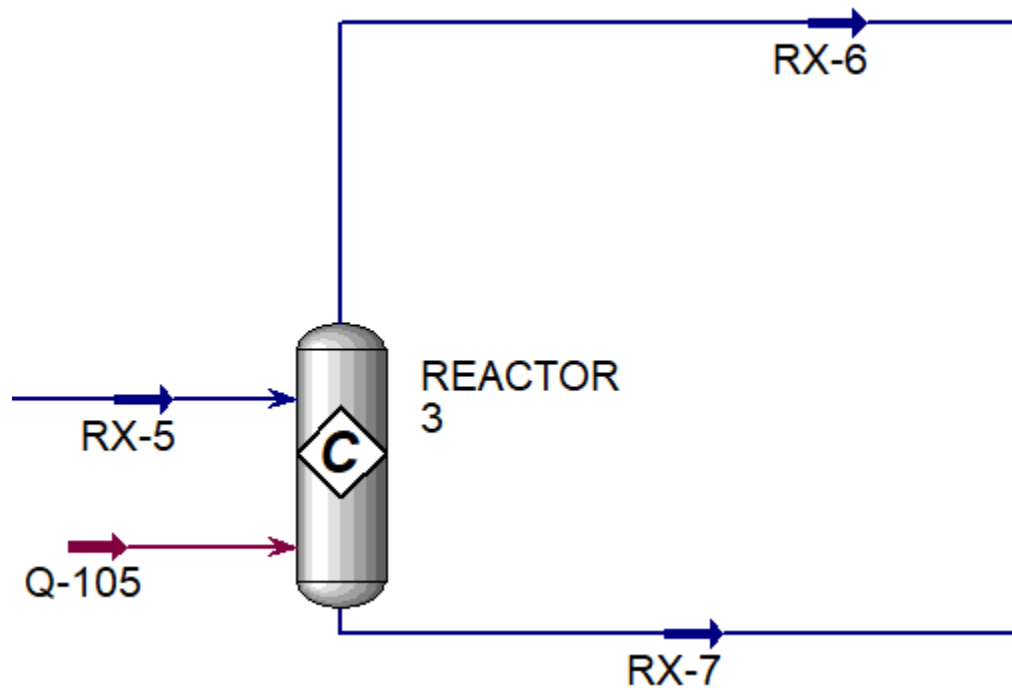


ANEXO 8
REACTOR DE UREA



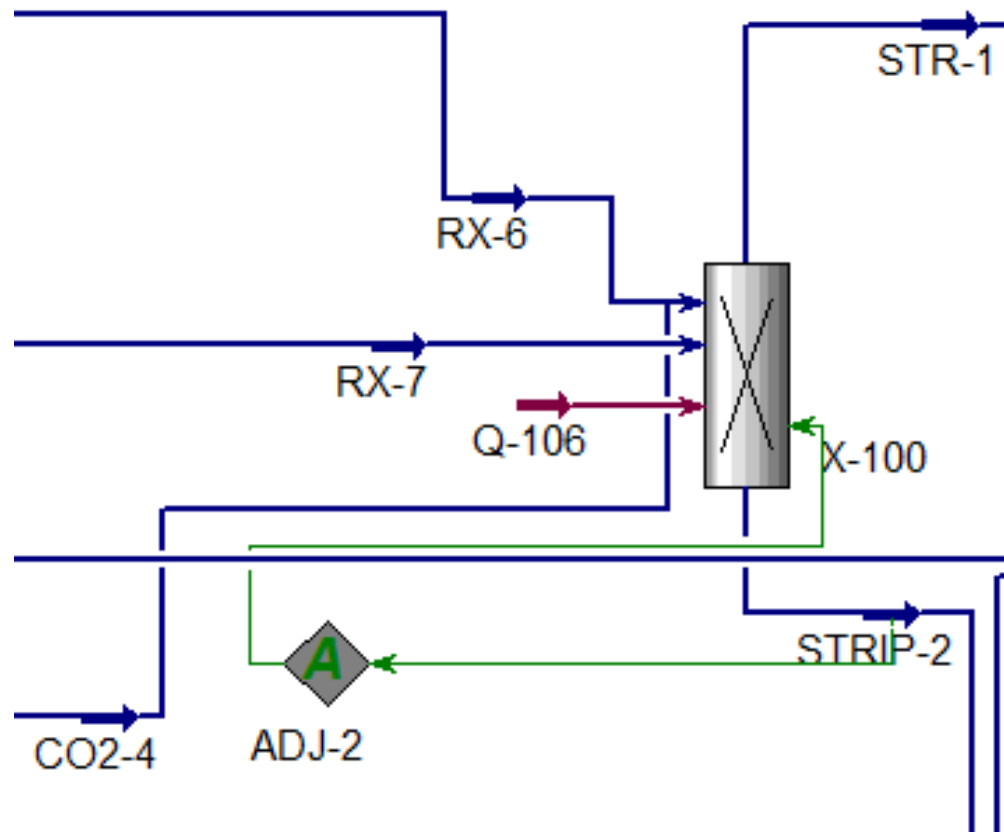
ANEXO 9

REACTOR DE DESCOMPOSICION DE CARBAMATO EN AMONIACO Y DIOXIDO DE CARBONO



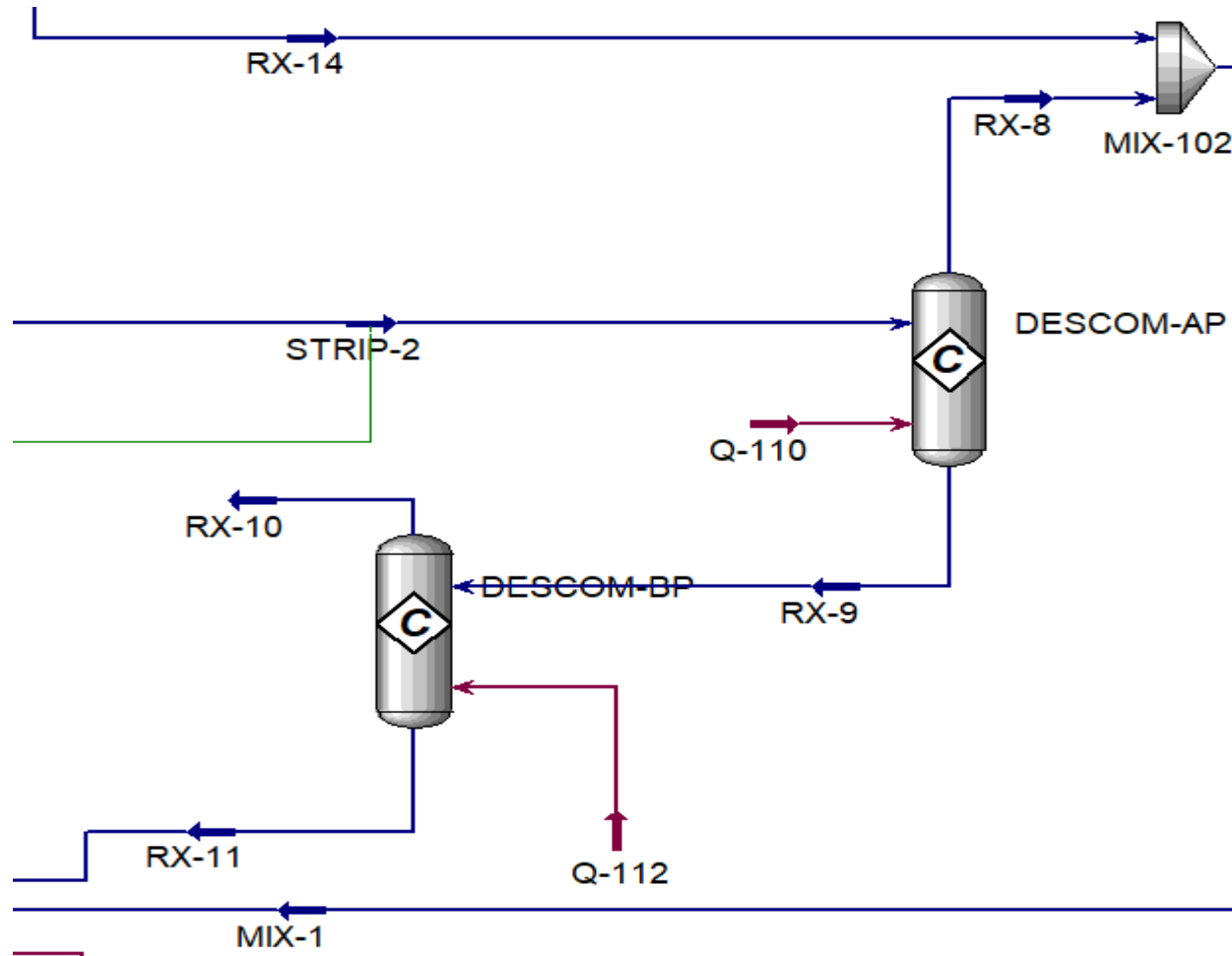
ANEXO 10

ABSORBEDOR DE CARBAMATO



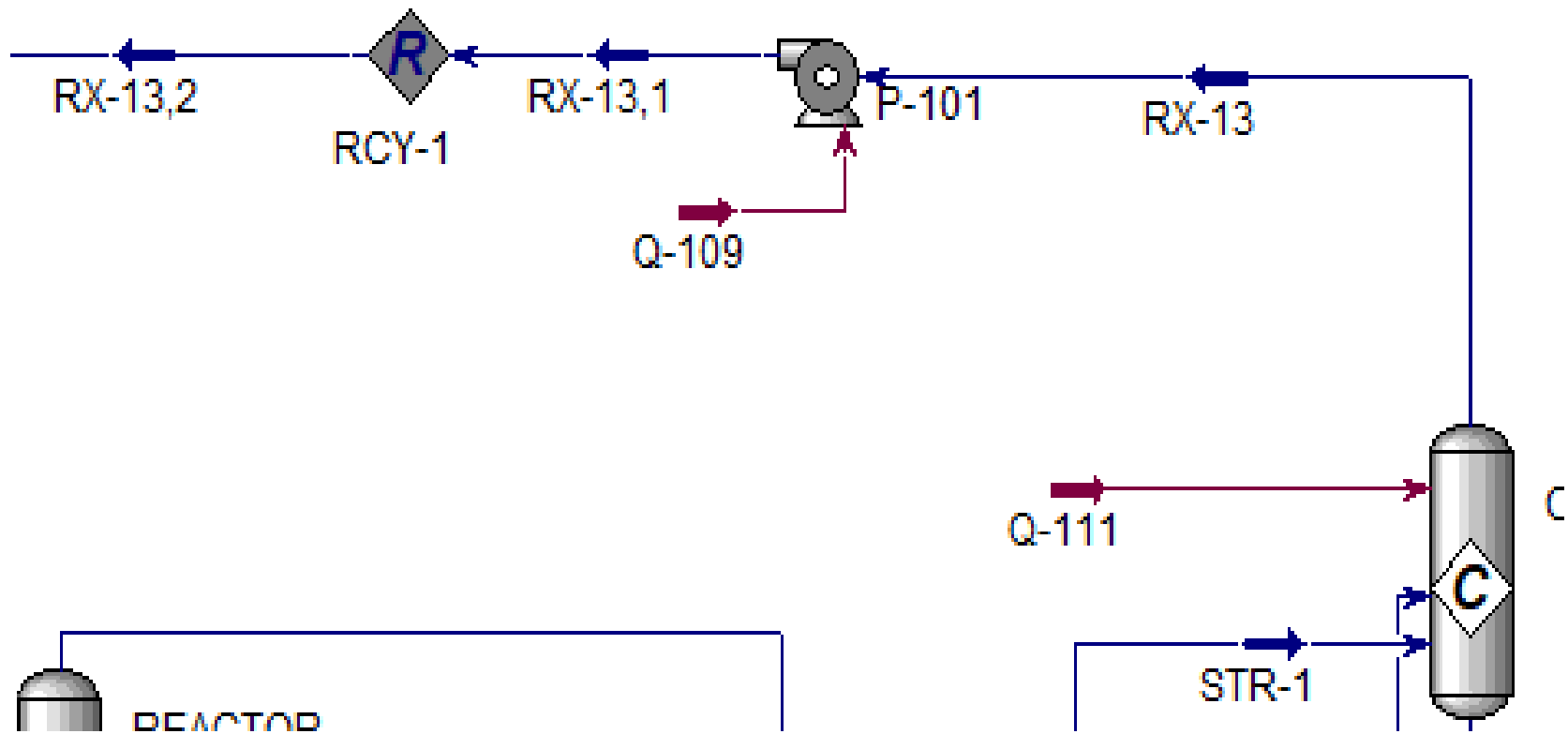
ANEXO 11

DESCOMONEDOR DE CARBAMATO DE ALTA Y BAJA PRESION



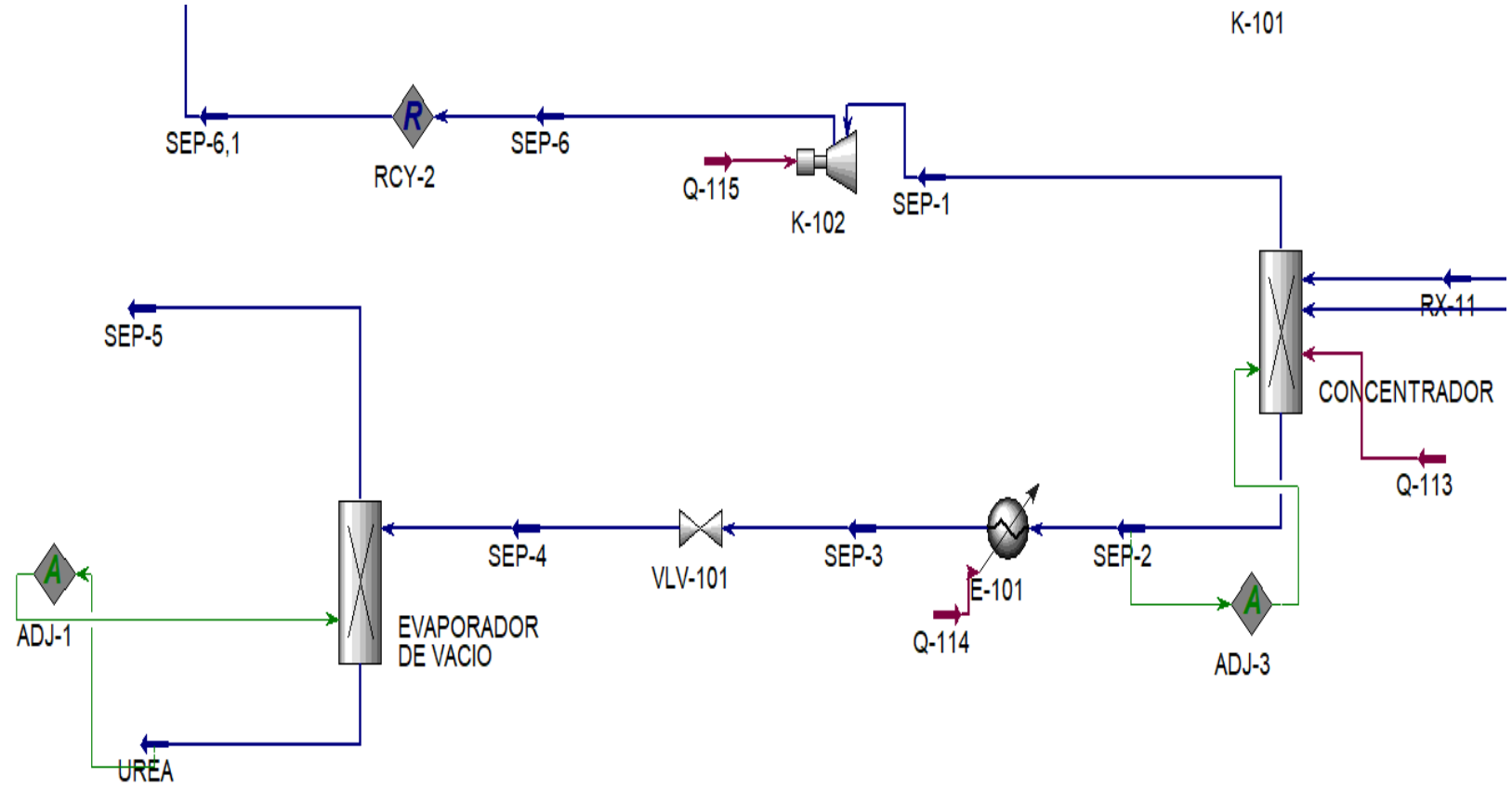
ANEXO 12

CONDENSADOR DE CARBAMATO Y RECIRCULACION



ANEXO 13

CONCENTRADOR Y EVAPORADOR DE VACIO



ANEXO 14

REPORTE DE TODAS LAS CORRIENTES DE MATERIA DE LA PRODUCCION DE AMONIACO EN ASPEN HYSYS

Company Name Not Available Bedford, MA USA		Case Name: SIMULACION DE LA PLANTA DE BULO-BULO.hsc			
		Unit Set: AMONIACO			
		Date/Time: Wed Nov 22 15:54:09 2023			
Workbook: Case (Main)					
Material Streams					Fluid Pkg: All
Name	ALIMENTACION	MEZCLA-1	Vapor de Agua	MEZCLA	RX-1
Vapour Fraction	1.0000	1.0000	1.0000	0.8899	1.0000
Temperature (C)	25.00	540.0	274.3	224.6	713.0
Pressure (bar)	57.57	57.57	57.57	57.57	40.70
Molar Flow (kgmole/h)	2.600e+007	5.600e+007	3.000e+007	5.600e+007	7.421e+007
Mass Flow (kg/h)	4.277e+008	9.682e+008	5.405e+008	9.682e+008	9.682e+008
Liquid Volume Flow (m3/h)	1.373e+006	1.915e+006	5.415e+005	1.915e+006	2.556e+006
Heat Flow (kJ/h)	-2.069e+012	-8.107e+012	-7.076e+012	-9.145e+012	-5.756e+012
Name	RESIDUO 1	AIRE	AIRE-1	AIRE-2	RX-2
Vapour Fraction	0.0000	1.0000	1.0000	1.0000	1.0000
Temperature (C)	713.0	25.00	731.4	500.0	896.0
Pressure (bar)	40.70	1.000	43.74	43.74	40.70
Molar Flow (kgmole/h)	0.0000	3.189e+007	3.189e+007	3.189e+007	1.289e+008
Mass Flow (kg/h)	0.0000	9.200e+008	9.200e+008	9.200e+008	1.888e+009
Liquid Volume Flow (m3/h)	0.0000	1.064e+006	1.064e+006	1.064e+006	4.226e+006
Heat Flow (kJ/h)	0.0000	-2.575e+008	7.056e+011	4.643e+011	-1.727e+012
Name	RESIDUO 2	RX-3	RX-4	RESIDUO 3	RX-5
Vapour Fraction	0.0000	1.0000	1.0000	0.0000	1.0000
Temperature (C)	896.0	370.0	480.0	480.0	210.0
Pressure (bar)	40.70	40.70	40.70	40.70	40.70
Molar Flow (kgmole/h)	0.0000	1.289e+008	1.289e+008	0.0000	1.289e+008
Mass Flow (kg/h)	0.0000	1.888e+009	1.888e+009	0.0000	1.888e+009
Liquid Volume Flow (m3/h)	0.0000	4.226e+006	4.157e+006	0.0000	4.157e+006
Heat Flow (kJ/h)	0.0000	-4.022e+012	-3.471e+012	0.0000	-4.583e+012
Name	RX-6	RESIDUO 4	RX-7	RX-8	AGUA RESIDUO
Vapour Fraction	1.0000	0.0000	1.0000	1.0000	0.0000
Temperature (C)	240.0	240.0	70.00	70.00	70.00
Pressure (bar)	40.70	40.70	40.70	40.70	40.70
Molar Flow (kgmole/h)	1.289e+008	0.0000	1.289e+008	1.289e+008	0.0000
Mass Flow (kg/h)	1.888e+009	0.0000	1.888e+009	1.888e+009	0.0000
Liquid Volume Flow (m3/h)	4.264e+006	0.0000	4.264e+006	4.264e+006	0.0000
Heat Flow (kJ/h)	-4.606e+012	0.0000	-5.287e+012	-5.287e+012	0.0000
Name	PUR-1	AMINA	PUR-2	AMIN-1	PUR-3
Vapour Fraction	1.0000	0.0000	1.0000	1.0000	1.0000
Temperature (C)	70.00	85.30	85.30	277.3	85.30
Pressure (bar)	40.70	40.70	36.87	36.87	36.87
Molar Flow (kgmole/h)	1.289e+008	2.000e+006	1.070e+008	2.683e+007	1.070e+008
Mass Flow (kg/h)	1.888e+009	2.383e+008	1.132e+009	1.048e+009	1.132e+009
Liquid Volume Flow (m3/h)	6.883e+006	2.300e+005	5.733e+006	1.434e+006	3.335e+006
Heat Flow (kJ/h)	-5.277e+012	-8.781e+011	-1.241e+011	-6.281e+012	-1.302e+011
Name	AMIN-2	AMIN-3	MET-1	MET-2	RESIDUO 5
Vapour Fraction	0.9730	0.7972	1.0000	1.0000	0.0000
Temperature (C)	209.4	50.00	316.0	310.0	310.0
Pressure (bar)	7.355	7.355	36.87	36.87	36.87
Molar Flow (kgmole/h)	2.683e+007	2.683e+007	1.070e+008	1.070e+008	0.0000
Mass Flow (kg/h)	1.048e+009	1.048e+009	1.132e+009	1.132e+009	0.0000
Liquid Volume Flow (m3/h)	1.434e+006	1.434e+006	3.335e+006	3.334e+006	0.0000
Heat Flow (kJ/h)	-6.414e+012	-6.893e+012	6.141e+011	5.902e+011	0.0000


ANEXO 14

REPORTE DE TODAS LAS CORRIENTES DE MATERIA DE LA PRODUCCION DE AMONIACO EN ASPEN HYSYS(CONTINUACION)

Company Name Not Available Bedford, MA USA		Case Name: SIMULACION DE LA PLANTA DE BULO-BULO.hsc				
		Unit Set: AMONIACO				
		Date/Time: Wed Nov 22 15:54:09 2023				
Workbook: Case (Main) (continued)						
Material Streams (continued)						Fluid Pkg: All
Name	MET-3	MET-4	MET-5	MET-6	RESIDUO METANADCO	
Vapour Fraction	1.0000	1.0000	1.0000	1.0000	0.0000	
Temperature (C)	79.04	37.00 *	4.000 *	4.000	4.000	
Pressure (bar)	36.87	36.87	36.87	36.87	36.87	
Molar Flow (kgmole/h)	1.070e+008	1.070e+008	1.070e+008	1.070e+008	0.0000	
Mass Flow (kg/h)	1.132e+009	1.132e+009	1.132e+009	1.132e+009	0.0000	
Liquid Volume Flow (m3/h)	3.334e+006	3.334e+006	3.334e+006	3.334e+006	0.0000	
Heat Flow (kJ/h)	-1.541e+011	-2.874e+011	-3.919e+011	-3.919e+011	0.0000	
Name	GSINT-1	SOBRANTES DEL ME	AGUA	AMINA-SOLUC	AGUA-1	
Vapour Fraction	1.0000	1.0000	0.0000	0.0000	0.0000	
Temperature (C)	65.00 *	65.00 *	85.30 *	96.03	85.30	
Pressure (bar)	150.0 *	150.0 *	40.70 *	40.70	40.70	
Molar Flow (kgmole/h)	9.612e+007	1.087e+007	3.000e+006	5.000e+006	3.000e+006	
Mass Flow (kg/h)	8.509e+008	2.814e+008	5.405e+007	2.924e+008	5.405e+007	
Liquid Volume Flow (m3/h)	2.923e+006	4.111e+005	5.415e+004	2.842e+005	5.415e+004	
Heat Flow (kJ/h)	1.037e+011	-3.179e+011	-8.444e+011	-1.722e+012	-8.434e+011	
Name	AMIN-4	AMINA PRESURI	CO2 PURO	GASES DE RESIDUO 2	AMINA PURA	
Vapour Fraction	0.6883	0.0000	1.0000	0.7671	0.0000	
Temperature (C)	50.31	50.78	50.00 *	38.59	50.00 *	
Pressure (bar)	7.350 *	40.70 *	7.355 *	7.350 *	7.350 *	
Molar Flow (kgmole/h)	1.735e+007	1.800e+006	9.483e+006	1.555e+007	1.800e+006	
Mass Flow (kg/h)	6.312e+008	2.145e+008	4.171e+008	4.167e+008	2.145e+008	
Liquid Volume Flow (m3/h)	9.266e+005	2.070e+005	5.079e+005	7.196e+005	2.070e+005	
Heat Flow (kJ/h)	-3.170e+012	-8.087e+011	-3.723e+012	-2.361e+012	-8.097e+011	
Name	amina calentada	AMI-REPOSI	GSINT-2	GSINT-3	GSINT-1.1	
Vapour Fraction	0.0000	0.0178	1.0000	0.9950	1.0000	
Temperature (C)	85.00 *	85.00 *	8.463	-33.00 *	69.29	
Pressure (bar)	40.70	1.189e-003	154.9	154.9	154.9 *	
Molar Flow (kgmole/h)	1.800e+006	2.000e+005	2.860e+008	2.860e+008	9.612e+007	
Mass Flow (kg/h)	2.145e+008	2.383e+007	5.291e+009	5.291e+009	8.509e+008	
Liquid Volume Flow (m3/h)	2.070e+005	2.300e+004	9.291e+006	9.291e+006	2.923e+006	
Heat Flow (kJ/h)	-7.905e+011	-8.765e+010	-5.840e+011	-1.020e+012	1.161e+011	
Name	GSINT-4	GSINT-5	GSINT-6	GSINT-7	GSINT-8	
Vapour Fraction	1.0000	0.0000	1.0000	1.0000	1.0000	
Temperature (C)	-33.00	-33.00	210.0 *	360.0 *	510.0 *	
Pressure (bar)	154.9	154.9	154.9	154.9	153.0 *	
Molar Flow (kgmole/h)	2.845e+008	1.428e+006	2.845e+008	2.845e+008	2.459e+008	
Mass Flow (kg/h)	5.266e+009	2.430e+007	5.266e+009	5.266e+009	5.266e+009	
Liquid Volume Flow (m3/h)	9.251e+006	3.951e+004	9.251e+006	9.251e+006	7.977e+006	
Heat Flow (kJ/h)	-9.184e+011	-1.012e+011	1.315e+012	2.647e+012	1.893e+012	
Name	GSINT-9	GSINT-10	GSINT-11	GSINT-12	GSINT-13	
Vapour Fraction	1.0000	1.0000	1.0000	1.0000	0.8068	
Temperature (C)	388.0 *	468.0 *	395.0 *	436.0 *	-17.80 *	
Pressure (bar)	153.0	152.0 *	152.0	151.0 *	151.0	
Molar Flow (kgmole/h)	2.459e+008	2.399e+008	2.399e+008	2.375e+008	2.375e+008	
Mass Flow (kg/h)	5.266e+009	5.266e+009	5.266e+009	5.266e+009	5.266e+009	
Liquid Volume Flow (m3/h)	7.977e+006	7.777e+006	7.777e+006	7.697e+006	7.697e+006	
Heat Flow (kJ/h)	8.418e+011	1.199e+012	5.762e+011	7.945e+011	-3.914e+012	


ANEXO 14

REPORTE DE TODAS LAS CORRIENTES DE MATERIA DE LA PRODUCCION DE AMONIACO EN ASPEN HYSYS(CONTINUACION)

 Company Name Not Available Bedford, MA USA	Case Name: SIMULACION DE LA PLANTA DE BULO-BULO.hsc				
	Unit Set: AMONIACO				
	Date/Time: Wed Nov 22 15:54:09 2023				
Workbook: Case (Main) (continued)					
Material Streams (continued)					
					Fluid Pkg: All
Name	PROD-1	PROD-2	RECIR AMO-1	RECIR AMO-2	PROD-3
Vapour Fraction	1.0000	0.0000	1.0000	1.0000	0.0000
Temperature (C)	-17.80	-17.80	-17.80 *	-15.44	-18.25
Pressure (bar)	151.0	151.0	151.0 *	154.9 *	151.0
Molar Flow (kgmole/h)	1.916e+008	4.588e+007	1.898e+008 *	1.898e+008	4.730e+007
Mass Flow (kg/h)	4.484e+009	7.824e+008	4.440e+009	4.440e+009	8.067e+008
Liquid Volume Flow (m3/h)	6.427e+006	1.270e+006	6.368e+006	6.368e+006	1.309e+006
Heat Flow (kJ/h)	-7.203e+011	-3.194e+012	-7.134e+011	-7.001e+011	-3.295e+012
Name	NH3 FRIO	NH3	NH3 CALIENTE	AMONIACO	GAS DE AMONIACO
Vapour Fraction	0.0000	0.0000	0.0000	0.0000	1.0000
Temperature (C)	-14.94	-14.94	13.49	12.94	38.00
Pressure (bar)	18.63	18.63	18.63	18.63	18.63
Molar Flow (kgmole/h)	4.608e+007	9.404e+005	4.608e+007	4.702e+007	7.111e+004
Mass Flow (kg/h)	7.848e+008	1.602e+007	7.848e+008	8.008e+008	1.250e+006
Liquid Volume Flow (m3/h)	1.274e+006	2.600e+004	1.274e+006	1.300e+006	2037
Heat Flow (kJ/h)	-3.227e+012	-6.586e+010	-3.122e+012	-3.188e+012	-2.656e+009
Name	LIQ AMONIACO	PROD-4	PROD-5	GSINT 7.1	
Vapour Fraction	0.0000	1.0000	0.0000	1.0000	
Temperature (C)	38.00 *	-14.94	-14.94	360.0	
Pressure (bar)	18.63	18.63	18.63 *	154.9 *	
Molar Flow (kgmole/h)	4.695e+007	2.853e+005	4.702e+007	2.845e+008	
Mass Flow (kg/h)	7.996e+008	5.847e+006	8.008e+008	5.266e+009	
Liquid Volume Flow (m3/h)	1.298e+006	9241	1.300e+006	9.251e+006	
Heat Flow (kJ/h)	-3.084e+012	-2.228e+009	-3.293e+012	2.647e+012	

ANEXO 15

REPORTE DE LA COMPOSICION DE TODAS LAS CORRIENTES DE MATERIA DE LA PRODUCCION DE AMONIACO EN ASPEN HYSYS

 Company Name Not Available Bedford, MA USA	Case Name: SIMULACION DE LA PLANTA DE BULO-BULO.hsc				
	Unit Set: AMONIACO				
	Date/Time: Wed Nov 22 16:06:51 2023				
Workbook: Case (Main)					
Compositions					
					Fluid Pkg: All
Name	ALIMENTACION	MEZCLA-1	Vapor de Agua	MEZCLA	RX-1
Comp Mole Frac (Methane)	0.9467 *	0.4395	0.0000 *	0.4395	0.2089
Comp Mole Frac (H2O)	0.0000 *	0.5357	1.0000 *	0.5357	0.1953
Comp Mole Frac (CO)	0.0000 *	0.0000	0.0000 *	0.0000	0.0365
Comp Mole Frac (CARBAMATO*)	***	***	***	***	***
Comp Mole Frac (Hydrogen)	0.0208 *	0.0097	0.0000 *	0.0097	0.4617
Comp Mole Frac (CO2)	0.0195 *	0.0090	0.0000 *	0.0090	0.0930
Comp Mole Frac (Oxygen)	0.0000 *	0.0000	0.0000 *	0.0000	0.0000
Comp Mole Frac (Nitrogen)	0.0130 *	0.0061	0.0000 *	0.0061	0.0046
Comp Mole Frac (Ammonia)	0.0000 *	0.0000	0.0000 *	0.0000	0.0000
Comp Mole Frac (MDEthnlAmine)	***	***	***	***	***
Comp Mole Frac (H2S)	***	***	***	***	***
Comp Mole Frac (Urea)	***	***	***	***	***
Name	RESIDUO 1	AIRE	AIRE-1	AIRE-2	RX-2
Comp Mole Frac (Methane)	0.2100	0.0000 *	0.0000	0.0000	0.0320
Comp Mole Frac (H2O)	0.1912	0.0000 *	0.0000	0.0000	0.0140
Comp Mole Frac (CO)	0.0367	0.0000 *	0.0000	0.0000	0.0992
Comp Mole Frac (CARBAMATO*)	***	***	***	***	***
Comp Mole Frac (Hydrogen)	0.4646	0.0000 *	0.0000	0.0000	0.5409
Comp Mole Frac (CO2)	0.0929	0.0000 *	0.0000	0.0000	0.0637
Comp Mole Frac (Oxygen)	0.0000	0.2100 *	0.2100	0.2100	0.0520
Comp Mole Frac (Nitrogen)	0.0046	0.7900 *	0.7900	0.7900	0.1981
Comp Mole Frac (Ammonia)	0.0000	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (MDEthnlAmine)	***	***	***	***	***
Comp Mole Frac (H2S)	***	***	***	***	***
Comp Mole Frac (Urea)	***	***	***	***	***
Name	RESIDUO 2	RX-3	RX-4	RESIDUO 3	RX-5
Comp Mole Frac (Methane)	0.0320	0.0320	0.0320	0.0320	0.0320
Comp Mole Frac (H2O)	0.0140	0.0140	0.0325	0.0325	0.0325
Comp Mole Frac (CO)	0.0992	0.0992	0.1176	0.1176	0.1176
Comp Mole Frac (CARBAMATO*)	***	***	***	***	***
Comp Mole Frac (Hydrogen)	0.5409	0.5409	0.5225	0.5225	0.5225
Comp Mole Frac (CO2)	0.0637	0.0637	0.0453	0.0453	0.0453
Comp Mole Frac (Oxygen)	0.0520	0.0520	0.0520	0.0520	0.0520
Comp Mole Frac (Nitrogen)	0.1981	0.1981	0.1981	0.1981	0.1981
Comp Mole Frac (Ammonia)	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (MDEthnlAmine)	***	***	***	***	***
Comp Mole Frac (H2S)	***	***	***	***	***
Comp Mole Frac (Urea)	***	***	***	***	***
Name	RX-6	RESIDUO 4	RX-7	RX-8	AGUA RESIDUO
Comp Mole Frac (Methane)	0.0320	0.0320	0.0320	0.0320	0.0000
Comp Mole Frac (H2O)	0.0041	0.0041	0.0041	0.0041	0.9981
Comp Mole Frac (CO)	0.0893	0.0893	0.0893	0.0893	0.0000
Comp Mole Frac (CARBAMATO*)	***	***	***	***	***
Comp Mole Frac (Hydrogen)	0.5509	0.5509	0.5509	0.5509	0.0002
Comp Mole Frac (CO2)	0.0736	0.0736	0.0736	0.0736	0.0014
Comp Mole Frac (Oxygen)	0.0520	0.0520	0.0520	0.0520	0.0000
Comp Mole Frac (Nitrogen)	0.1981	0.1981	0.1981	0.1981	0.0002
Comp Mole Frac (Ammonia)	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (MDEthnlAmine)	***	***	***	***	***
Comp Mole Frac (H2S)	***	***	***	***	***
Comp Mole Frac (Urea)	***	***	***	***	***
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ANEXO 15

REPORTE DE LA COMPOSICION DE TODAS LAS CORRIENTES DE MATERIA DE LA PRODUCCION DE AMONIACO EN ASPEN HYSYS (CONTINUACION)

Company Name Not Available Bedford, MA USA		Case Name: SIMULACION DE LA PLANTA DE BULO-BULO.hsc				
		Unit Set: AMONIACO				
		Date/Time: Wed Nov 22 15:06:51 2023				
Workbook: Case (Main) (continued)						
Compositions (continued)						
						Fluid Pkg: All
Name	PUR-1	AMINA	PUR-2	AMIN-1	PUR-3	
Comp Mole Frac (Methane)	0.0320	0.0000 *	0.0385	0.0000	0.0385	0.0385
Comp Mole Frac (H2O)	0.0041	0.0000 *	0.0000	0.1316	0.0000	0.0000
Comp Mole Frac (CO)	0.0893	0.0000 *	0.0001	0.4285	0.0001	0.0001
Comp Mole Frac (CARBAMATO*)	***	***	***	***	***	***
Comp Mole Frac (Hydrogen)	0.5509	0.0000 *	0.6626	0.0026	0.6626	0.6626
Comp Mole Frac (CO2)	0.0736	0.0000 *	0.0001	0.3532	0.0001	0.0001
Comp Mole Frac (Oxygen)	0.0520	0.0000 *	0.0626	0.0000	0.0626	0.0626
Comp Mole Frac (Nitrogen)	0.1981	0.0000 *	0.2361	0.0095	0.2361	0.2361
Comp Mole Frac (Ammonia)	0.0000	0.0000 *	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (MDEthniAmine)	0.0000	1.0000 *	0.0000	0.0745	***	***
Comp Mole Frac (H2S)	0.0000	0.0000 *	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Urea)	***	***	***	***	***	***
Name	AMIN-2	AMIN-3	MET-1	MET-2	RESIDUO 5	
Comp Mole Frac (Methane)	0.0000	0.0000	0.0385	0.0387	0.0387	0.0387
Comp Mole Frac (H2O)	0.1316	0.1316	0.0000	0.0003	0.0003	0.0003
Comp Mole Frac (CO)	0.4285	0.4285	0.0001	0.0000	0.0000	0.0000
Comp Mole Frac (CARBAMATO*)	***	***	***	***	***	***
Comp Mole Frac (Hydrogen)	0.0026	0.0026	0.6626	0.6621	0.6621	0.6621
Comp Mole Frac (CO2)	0.3532	0.3532	0.0001	0.0000	0.0000	0.0000
Comp Mole Frac (Oxygen)	0.0000	0.0000	0.0626	0.0626	0.0626	0.0626
Comp Mole Frac (Nitrogen)	0.0095	0.0095	0.2361	0.2362	0.2362	0.2362
Comp Mole Frac (Ammonia)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (MDEthniAmine)	0.0745	0.0745	***	***	***	***
Comp Mole Frac (H2S)	0.0000	0.0000	***	***	***	***
Comp Mole Frac (Urea)	***	***	***	***	***	***
Name	MET-3	MET-4	MET-5	MET-6	RESIDUO METANADO	
Comp Mole Frac (Methane)	0.0387	0.0387	0.0387	0.0387	0.0387	0.0000
Comp Mole Frac (H2O)	0.0003	0.0003	0.0003	0.0003	0.0003	0.9998
Comp Mole Frac (CO)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (CARBAMATO*)	***	***	***	***	***	***
Comp Mole Frac (Hydrogen)	0.6621	0.6621	0.6621	0.6621	0.6621	0.0000
Comp Mole Frac (CO2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Oxygen)	0.0626	0.0626	0.0626	0.0626	0.0626	0.0000
Comp Mole Frac (Nitrogen)	0.2362	0.2362	0.2362	0.2362	0.2362	0.0002
Comp Mole Frac (Ammonia)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (MDEthniAmine)	***	***	***	***	***	***
Comp Mole Frac (H2S)	***	***	***	***	***	***
Comp Mole Frac (Urea)	***	***	***	***	***	***
Name	GSINT-1	SOBRANTES DEL ME	AGUA	AMINA-SOLUC	AGUA-1	
Comp Mole Frac (Methane)	0.0000	0.3813	0.0000 *	0.0000 *	0.0000	0.0000
Comp Mole Frac (H2O)	0.0000	0.0028	1.0000 *	0.6000 *	1.0000	1.0000
Comp Mole Frac (CO)	0.0000	0.0000	0.0000 *	0.0000 *	0.0000	0.0000
Comp Mole Frac (CARBAMATO*)	***	***	***	***	***	***
Comp Mole Frac (Hydrogen)	0.7370	0.0000	0.0000 *	0.0000 *	0.0000	0.0000
Comp Mole Frac (CO2)	0.0000	0.0000	0.0000 *	0.0000 *	0.0000	0.0000
Comp Mole Frac (Oxygen)	0.0000	0.6159	0.0000 *	0.0000 *	0.0000	0.0000
Comp Mole Frac (Nitrogen)	0.2630	0.0000	0.0000 *	0.0000 *	0.0000	0.0000
Comp Mole Frac (Ammonia)	0.0000	0.0000	0.0000 *	0.0000 *	0.0000	0.0000
Comp Mole Frac (MDEthniAmine)	***	***	***	0.4000 *	0.0000	0.0000
Comp Mole Frac (H2S)	***	***	***	0.0000 *	0.0000	0.0000
Comp Mole Frac (Urea)	***	***	***	***	***	***

ANEXO 15

REPORTE DE LA COMPOSICION DE TODAS LAS CORRIENTES DE MATERIA DE LA PRODUCCION DE AMONIACO EN ASPEN HYSYS (CONTINUACION)

Company Name Not Available Bedford, MA USA		Case Name: SIMULACION DE LA PLANTA DE BULO-BULO.hsc				
		Unit Set: AMONIACO				
		Date/Time: Wed Nov 22 16:06:51 2023				
Workbook: Case (Main) (continued)						
Compositions (continued)						Fluid Pkg: All
Name	AMIN-4	AMINA PRESURI	CO2 PURO	GASES DE RESIDIO	AMINA PURA	
Comp Mole Frac (Methane)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (H2O)	0.2035	0.0000	0.0000	0.0000	0.2271	0.0000
Comp Mole Frac (CO)	0.6627	0.0000	0.0000	0.0000	0.7394	0.0000
Comp Mole Frac (CARBAMATO*)	***	***	***	***	***	***
Comp Mole Frac (Hydrogen)	0.0037	0.0000	0.0006	0.0042	0.0000	0.0000
Comp Mole Frac (CO2)	0.0000	0.0000	0.9994	0.0000	0.0000	0.0000
Comp Mole Frac (Oxygen)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Nitrogen)	0.0147	0.0000	0.0000	0.0164	0.0000	0.0000
Comp Mole Frac (Ammonia)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (MDEthnlAmine)	0.1153	1.0000	0.0000	0.0129	1.0000	0.0000
Comp Mole Frac (H2S)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Urea)	***	***	***	***	***	***
Name	amina calentada	AMI-REPOSI	GSINT-2	GSINT-3	GSINT-1.1	
Comp Mole Frac (Methane)	0.0000	0.0000 *	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (H2O)	0.0000	0.0000 *	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (CO)	0.0000	0.0000 *	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (CARBAMATO*)	***	***	***	***	***	***
Comp Mole Frac (Hydrogen)	0.0000	0.0000 *	0.3568	0.3568	0.7370	0.0000
Comp Mole Frac (CO2)	0.0000	0.0000 *	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Oxygen)	0.0000	0.0000 *	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Nitrogen)	0.0000	0.0000 *	0.6216	0.6216	0.2630	0.0000
Comp Mole Frac (Ammonia)	0.0000	0.0000 *	0.0215	0.0215	0.0000	0.0000
Comp Mole Frac (MDEthnlAmine)	1.0000	1.0000 *	***	***	***	***
Comp Mole Frac (H2S)	0.0000	0.0000 *	***	***	***	***
Comp Mole Frac (Urea)	***	***	***	***	***	***
Name	GSINT-4	GSINT-5	GSINT-6	GSINT-7	GSINT-8	
Comp Mole Frac (Methane)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (H2O)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (CO)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (CARBAMATO*)	***	***	***	***	***	***
Comp Mole Frac (Hydrogen)	0.3586	0.0027	0.3586	0.3586	0.1795	0.0000
Comp Mole Frac (CO2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Oxygen)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Nitrogen)	0.6247	0.0024	0.6247	0.6247	0.6443	0.0000
Comp Mole Frac (Ammonia)	0.0167	0.9950	0.0167	0.0167	0.1762	0.0000
Comp Mole Frac (MDEthnlAmine)	***	***	***	***	***	***
Comp Mole Frac (H2S)	***	***	***	***	***	***
Comp Mole Frac (Urea)	***	***	***	***	***	***
Name	GSINT-9	GSINT-10	GSINT-11	GSINT-12	GSINT-13	
Comp Mole Frac (Methane)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (H2O)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (CO)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (CARBAMATO*)	***	***	***	***	***	***
Comp Mole Frac (Hydrogen)	0.1795	0.1461	0.1461	0.1323	0.1323	0.0000
Comp Mole Frac (CO2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Oxygen)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Nitrogen)	0.6443	0.6490	0.6490	0.6495	0.6495	0.0000
Comp Mole Frac (Ammonia)	0.1762	0.2059	0.2059	0.2182	0.2182	0.0000
Comp Mole Frac (MDEthnlAmine)	***	***	***	***	***	***
Comp Mole Frac (H2S)	***	***	***	***	***	***
Comp Mole Frac (Urea)	***	***	***	***	***	***


ANEXO 15

REPORTE DE LA COMPOSICION DE TODAS LAS CORRIENTES DE MATERIA DE LA PRODUCCION DE AMONIACO EN ASPEN HYSYS (CONTINUACION)

Company Name Not Available Bedford, MA USA		Case Name: SIMULACION DE LA PLANTA DE BULO-BULO.hsc				
		Unit Set: AMONIACO				
		Date/Time: Wed Nov 22 16:06:51 2023				
Workbook: Case (Main) (continued)						
Compositions (continued)						Fluid Pkg: All
Name	PROD-1	PROD-2	RECIR AMO-1	RECIR AMO-2	PROD-3	
Comp Mole Frac (Methane)	0.0000	0.0000	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (H2O)	0.0000	0.0000	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (CO)	0.0000	0.0000	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (CARBAMATO*)	***	***	***	***	***	***
Comp Mole Frac (Hydrogen)	0.1636	0.0017	0.1643 *	0.1643	0.0017	0.0017
Comp Mole Frac (CO2)	0.0000	0.0000	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (Oxygen)	0.0000	0.0000	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (Nitrogen)	0.8039	0.0045	0.8032 *	0.8032	0.0044	0.0044
Comp Mole Frac (Ammonia)	0.0325	0.9939	0.0325 *	0.0325	0.9939	0.9939
Comp Mole Frac (MDEthnlAmine)	***	***	***	***	***	***
Comp Mole Frac (H2S)	***	***	***	***	***	***
Comp Mole Frac (Urea)	***	***	***	***	***	***
Name	NH3 FRIO	NH3	NH3 CALIENTE	AMONIACO	GAS DE AMONIACO	
Comp Mole Frac (Methane)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (H2O)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (CO)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (CARBAMATO*)	***	***	***	***	***	***
Comp Mole Frac (Hydrogen)	0.0003	0.0003	0.0003	0.0003	0.0593	0.0593
Comp Mole Frac (CO2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Oxygen)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Nitrogen)	0.0006	0.0006	0.0006	0.0006	0.1310	0.1310
Comp Mole Frac (Ammonia)	0.9991	0.9991	0.9991	0.9991	0.8097	0.8097
Comp Mole Frac (MDEthnlAmine)	***	***	***	***	***	***
Comp Mole Frac (H2S)	***	***	***	***	***	***
Comp Mole Frac (Urea)	***	***	***	***	***	***
Name	LIQ AMONIACO	PROD-4	PROD-5	GSINT 7.1		
Comp Mole Frac (Methane)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (H2O)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (CO)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (CARBAMATO*)	***	***	***	***	***	***
Comp Mole Frac (Hydrogen)	0.0002	0.2298	0.0003	0.3586		
Comp Mole Frac (CO2)	0.0000	0.0000	0.0000	0.0000		
Comp Mole Frac (Oxygen)	0.0000	0.0000	0.0000	0.0000		
Comp Mole Frac (Nitrogen)	0.0004	0.6296	0.0006	0.6247		
Comp Mole Frac (Ammonia)	0.9994	0.1406	0.9991	0.0167		
Comp Mole Frac (MDEthnlAmine)	***	***	***	***		
Comp Mole Frac (H2S)	***	***	***	***		
Comp Mole Frac (Urea)	***	***	***	***		

ANEXO 16

REPORTE DE LA COMPOSICION DE TODAS LAS CORRIENTES DE ENERGIA DE LA PRODUCCION DE AMONIACO EN ASPEN HYSYS

 Company Name Not Available Bedford, MA USA		Case Name: SIMULACION DE LA PLANTA DE BULO-BULO.hsc			
		Unit Set: AMONIACO			
		Date/Time: Wed Nov 22 16:06:58 2023			
Workbook: Case (Main)					
Energy Streams Fluid Pkg: All					
Name	Q-100	Q-REFORMADOR 1	Q-COMPRESOR	Q-CAL AIRE	Q-REFORMADOR 2
Heat Flow (kJ/h)	1.038e+012	2.352e+012	7.058e+011	2.412e+011	3.564e+012
Name	Q-2DA CONVER	Q-SHIFT	Q-SHIFT BAJA T	Q-SHIFT 2	Q-ENFRIAMIENTO
Heat Flow (kJ/h)	2.295e+012	5.513e+011	1.112e+012	-2.321e+010	6.812e+011
Name	Q-PURIFI	Q-AMINA	Q-AMINA2	Q-METANADOR	Q-GAS DE SINTESIS
Heat Flow (kJ/h)	5.935e+011	1.326e+011	4.795e+011	-2.391e+010	1.333e+011
Name	Q-SEPARACION	Q-BOMBA	Q-DE AMINA	Q-125	Q-126
Heat Flow (kJ/h)	1.778e+011	9.370e+008	1.824e+010	1.238e+010	1.332e+012
Name	Q-127	Q-128	Q-129	Q-130	Q-131
Heat Flow (kJ/h)	7.548e+011	1.051e+012	-3.574e+011	6.229e+011	-2.183e+011
Name	Q-132	Q-133	Q-135	Q-RFP	
Heat Flow (kJ/h)	4.709e+012	1.333e+010	1.016e+011	0.0000	
Aspen Technology Inc.		Aspen HYSYS Version 14		Page 1 of 1	
Licensed to: Company Name Not Available				* Specified by user.	


ANEXO17

REPORTE DE TODAS LAS CORRIENTES DE MATERIA DE LA PRODUCCION DE UREA EN ASPEN HYSYS

Company Name Not Available Bedford, MA USA		Case Name: SIMULACION DE LA PLANTA DE BULO-BULO.hsc				
		Unit Set: AMONIACO				
		Date/Time: Wed Nov 22 16:07:32 2023				
Workbook: FLOW-1 (TPL1)						
Material Streams						Fluid Pkg: All
Name	CO2 PURO	LIQ AMONIACO	AMO-1	CO2-1	CO2-2	
Vapour Fraction	1.0000	0.0000	0.0000	1.0000	1.0000	
Temperature (C)	50.00	38.00	38.00	50.00	405.6	
Pressure (bar)	7.355	18.63	18.63	7.355	156.9 *	
Molar Flow (kgmole/h)	9.483e+006	4.695e+007	4.693e+007	9.483e+006	9.483e+006	
Mass Flow (kg/h)	4.171e+008	7.996e+008	7.990e+008	4.171e+008	4.171e+008	
Liquid Volume Flow (m3/h)	5.055e+005	1.298e+006	1.297e+006	5.055e+005	5.055e+005	
Heat Flow (kJ/h)	-3.725e+012	-3.084e+012	-3.059e+012	-3.725e+012	-3.583e+012	
Name	AMO-2	CO2-4	RX-1	RX-2	RX-4	
Vapour Fraction	0.0000	1.0000	1.0000	0.0000	1.0000	
Temperature (C)	45.82	405.6	200.0	200.0 *	188.0	
Pressure (bar)	196.1 *	156.9	152.0	152.0 *	156.9	
Molar Flow (kgmole/h)	4.693e+007	7.776e+006	0.0000	6.277e+007	0.0000	
Mass Flow (kg/h)	7.990e+008	3.420e+008	0.0000	1.895e+009	0.0000	
Liquid Volume Flow (m3/h)	1.297e+006	4.145e+005	0.0000	2.322e+006	0.0000	
Heat Flow (kJ/h)	-3.026e+012	-2.938e+012	0.0000	-5.773e+012	0.0000	
Name	RX-5	RX-6	RX-7	STR-1	STRIP-2	
Vapour Fraction	0.0000	1.0000	0.0000	0.9687	0.2860	
Temperature (C)	188.0 *	138.0 *	138.0	153.0 *	153.0 *	
Pressure (bar)	156.9	156.9	156.9	16.18 *	16.18 *	
Molar Flow (kgmole/h)	7.225e+007	8.785e+006	6.874e+007	6.090e+007	2.440e+007	
Mass Flow (kg/h)	1.895e+009	1.847e+008	1.711e+009	1.405e+009	8.327e+008	
Liquid Volume Flow (m3/h)	2.247e+006	2.725e+005	2.073e+006	2.012e+006	7.480e+005	
Heat Flow (kJ/h)	-8.307e+012	-9.481e+011	-8.298e+012	-6.441e+012	-4.954e+012	
Name	RX-3.1	RX-8	RX-9	RX-7.1	RX-10	
Vapour Fraction	0.0000	1.0000	0.0000	0.2860	1.0000	
Temperature (C)	200.2	152.0	152.0 *	153.0	100.0	
Pressure (bar)	156.9 *	16.18	16.18	16.18 *	2.452 *	
Molar Flow (kgmole/h)	6.277e+007	6.858e+006	1.755e+007	2.440e+007	9.473e+005	
Mass Flow (kg/h)	1.895e+009	1.189e+008	7.138e+008	8.327e+008	1.652e+007	
Liquid Volume Flow (m3/h)	2.322e+006	1.695e+005	5.785e+005	7.480e+005	2.245e+004	
Heat Flow (kJ/h)	-5.771e+012	-6.971e+011	-4.263e+012	-4.954e+012	-1.172e+011	
Name	RX-11	AMO-2.1	RX-13.1	RX-13.2	RX-13	
Vapour Fraction	0.0000	0.0000	0.0000	0.0000	0.0000	
Temperature (C)	100.0 *	86.55	145.8	145.8 *	138.0	
Pressure (bar)	2.452	196.1	196.1 *	196.1 *	16.18	
Molar Flow (kgmole/h)	1.660e+007	6.448e+007	1.755e+007	1.755e+007 *	1.755e+007	
Mass Flow (kg/h)	6.973e+008	1.820e+009	1.021e+009	1.021e+009	1.021e+009	
Liquid Volume Flow (m3/h)	5.561e+005	2.295e+006	9.979e+005	9.978e+005	9.979e+005	
Heat Flow (kJ/h)	-4.214e+012	-6.291e+012	-3.265e+012	-3.264e+012	-3.291e+012	
Name	SEP-1	SEP-2	SEP-3	SEP-4	SEP-5	
Vapour Fraction	1.0000	0.6961	0.6961	0.6961	1.0000	
Temperature (C)	20.00 *	100.0 *	132.0 *	131.9	288.7	
Pressure (bar)	0.5700 *	0.5700 *	0.5700	0.3300 *	0.3300 *	
Molar Flow (kgmole/h)	1.700e+009	3.118e+007	3.118e+007	3.118e+007	2.037e+007	
Mass Flow (kg/h)	2.889e+010	9.477e+008	9.477e+008	9.477e+008	3.545e+008	
Liquid Volume Flow (m3/h)	4.700e+007	9.392e+005	9.392e+005	9.392e+005	4.887e+005	
Heat Flow (kJ/h)	-7.788e+013	-4.971e+012	-4.909e+012	-4.909e+012	-2.249e+012	

ANEXO 17

REPORTE DE TODAS LAS CORRIENTES DE MATERIA DE LA PRODUCCION DE UREA EN ASPEN HYSYS (CONTINUACION)

 Company Name Not Available Bedford, MA USA	Case Name: SIMULACION DE LA PLANTA DE BULO-BULO.hsc				
	Unit Set: AMONIACO				
	Date/Time: Wed Nov 22 16:07:32 2023				
Workbook: FLOW-1 (TPL1) (continued)					
Material Streams (continued)					
					Fluid Pkg: All
Name	UREA	MIX-1	SEP-6	SEP-6,1	CO2-3
Vapour Fraction	0.0000 *	1.0000	1.0000	1.0000	1.0000
Temperature (C)	71.31	138.1	411.3	411.3 *	405.6
Pressure (bar)	0.3300 *	16.18	16.18 *	16.18 *	156.9
Molar Flow (kgmole/h)	1.081e+007	1.715e+009	1.700e+009	1.685e+009 *	1.707e+006
Mass Flow (kg/h)	5.932e+008	2.914e+010	2.899e+010	2.864e+010	7.508e+007
Liquid Volume Flow (m3/h)	4.505e+005	4.738e+007	4.700e+007	4.659e+007	9.100e+004
Heat Flow (kJ/h)	-2.660e+012	-7.236e+013	-5.076e+013	-5.032e+013	-6.449e+011
Name	AMO-3	RX-14			
Vapour Fraction	0.0000	1.0000			
Temperature (C)	138.0 *	138.0 *			
Pressure (bar)	196.1	16.18			
Molar Flow (kgmole/h)	6.448e+007	1.708e+009			
Mass Flow (kg/h)	1.820e+009	2.902e+010			
Liquid Volume Flow (m3/h)	2.295e+006	4.721e+007			
Heat Flow (kJ/h)	-5.901e+012	-7.167e+013			

ANEXO 18

REPORTE DE LA COMPOSICION DE TODAS LAS CORRIENTES DE MATERIA DE LA PRODUCCION DE UREA EN ASPEN HYSYS

Company Name Not Available Bedford, MA USA		Case Name: SIMULACION DE LA PLANTA DE BULO-BULO.hsc				
		Unit Set: AMONIACO				
		Date/Time: Wed Nov 22 16:07:40 2023				
Workbook: FLOW-1 (TPL1)						
Compositions				Fluid Pkg:		All
Name	CO2 PURO	LIQ AMONIACO	AMO-1	CO2-1	CO2-2	
Comp Mole Frac (Methane)	0.0000	0.0000	***	***	***	***
Comp Mole Frac (H2O)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (CO)	0.0000	0.0000	***	***	***	***
Comp Mole Frac (CARBAMATO*)	***	***	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Hydrogen)	0.0006	0.0002	0.0002	0.0006	0.0006	0.0006
Comp Mole Frac (CO2)	0.9994	0.0000	0.0000	0.9994	0.9994	0.9994
Comp Mole Frac (Oxygen)	0.0000	0.0000	***	***	***	***
Comp Mole Frac (Nitrogen)	0.0000	0.0004	***	***	***	***
Comp Mole Frac (Ammonia)	0.0000	0.9994	0.9998	0.0000	0.0000	0.0000
Comp Mole Frac (MDEthniAmine)	***	***	***	***	***	***
Comp Mole Frac (H2S)	***	***	***	***	***	***
Comp Mole Frac (Urea)	***	***	0.0000	0.0000	0.0000	0.0000
Name	AMO-2	CO2-4	RX-1	RX-2	RX-4	
Comp Mole Frac (Methane)	***	***	***	***	***	***
Comp Mole Frac (H2O)	0.0000	0.0000	0.0000	0.0000	0.0483	0.0483
Comp Mole Frac (CO)	***	***	***	***	***	***
Comp Mole Frac (CARBAMATO*)	0.0000	0.0000	0.0001	0.2157	0.0000	0.0000
Comp Mole Frac (Hydrogen)	0.0002	0.0006	0.0006	0.0002	0.0010	0.0010
Comp Mole Frac (CO2)	0.0000	0.9994	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Oxygen)	***	***	***	***	***	***
Comp Mole Frac (Nitrogen)	***	***	***	***	***	***
Comp Mole Frac (Ammonia)	0.9998	0.0000	0.9994	0.7841	0.9507	0.9507
Comp Mole Frac (MDEthniAmine)	***	***	***	***	***	***
Comp Mole Frac (H2S)	***	***	***	***	***	***
Comp Mole Frac (Urea)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Name	RX-5	RX-6	RX-7	STR-1	STRIP-2	
Comp Mole Frac (Methane)	***	***	***	***	***	***
Comp Mole Frac (H2O)	0.1312	0.0352	0.1334	0.0000	0.3883	0.3883
Comp Mole Frac (CO)	***	***	***	***	***	***
Comp Mole Frac (CARBAMATO*)	0.0562	0.0043	0.0201	0.0233	0.0000	0.0000
Comp Mole Frac (Hydrogen)	0.0002	0.0005	0.0001	0.0003	0.0000	0.0000
Comp Mole Frac (CO2)	0.0000	0.1373	0.0209	0.1710	0.0000	0.0000
Comp Mole Frac (Oxygen)	***	***	***	***	***	***
Comp Mole Frac (Nitrogen)	***	***	***	***	***	***
Comp Mole Frac (Ammonia)	0.6813	0.8227	0.6877	0.8054	0.2233	0.2233
Comp Mole Frac (MDEthniAmine)	***	***	***	***	***	***
Comp Mole Frac (H2S)	***	***	***	***	***	***
Comp Mole Frac (Urea)	0.1312	0.0000	0.1379	0.0000	0.3883	0.3883
Name	RX-3.1	RX-8	RX-9	RX-7.1	RX-10	
Comp Mole Frac (Methane)	***	***	***	***	***	***
Comp Mole Frac (H2O)	0.0000	0.3054	0.4208	0.3883	0.4110	0.4110
Comp Mole Frac (CO)	***	***	***	***	***	***
Comp Mole Frac (CARBAMATO*)	0.2157	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Hydrogen)	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (CO2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Oxygen)	***	***	***	***	***	***
Comp Mole Frac (Nitrogen)	***	***	***	***	***	***
Comp Mole Frac (Ammonia)	0.7841	0.6946	0.0391	0.2233	0.5890	0.5890
Comp Mole Frac (MDEthniAmine)	***	***	***	***	***	***
Comp Mole Frac (H2S)	***	***	***	***	***	***
Comp Mole Frac (Urea)	0.0000	0.0000	0.5401	0.3883	0.0000	0.0000


ANEXO 18

REPORTE DE LA COMPOSICION DE TODAS LAS CORRIENTES DE MATERIA DE LA PRODUCCION DE UREA EN ASPEN HYSYS (CONTINUACION)

Company Name Not Available Bedford, MA USA		Case Name: SIMULACION DE LA PLANTA DE BULO-BULO.hsc				
		Unit Set: AMONIACO				
		Date/Time: Wed Nov 22 16:07:40 2023				
Workbook: FLOW-1 (TPL1) (continued)						
Compositions (continued)						
						Fluid Pkg: All
Name	RX-11	AMO-2.1	RX-13,1	RX-13,2	RX-13	
Comp Mole Frac (Methane)	***	***	***	***	***	***
Comp Mole Frac (H2O)	0.4213	0.0000	0.0000	0.0000	0.0000 *	0.0000
Comp Mole Frac (CO)	***	***	***	***	***	***
Comp Mole Frac (CARBAMATO*)	0.0000	0.1835	0.6742	0.6743	0.6743 *	0.6742
Comp Mole Frac (Hydrogen)	0.0000	0.0002	0.0001	0.0001	0.0001 *	0.0001
Comp Mole Frac (CO2)	0.0000	0.0000	0.0000	0.0000	0.0000 *	0.0000
Comp Mole Frac (Oxygen)	***	***	***	***	***	***
Comp Mole Frac (Nitrogen)	***	***	***	***	***	***
Comp Mole Frac (Ammonia)	0.0077	0.8163	0.3257	0.3256	0.3256 *	0.3257
Comp Mole Frac (MDEthnlAmine)	***	***	***	***	***	***
Comp Mole Frac (H2S)	***	***	***	***	***	***
Comp Mole Frac (Urea)	0.5710	0.0000	0.0000	0.0000	0.0000 *	0.0000
Name	SEP-1	SEP-2	SEP-3	SEP-4	SEP-5	
Comp Mole Frac (Methane)	***	***	***	***	***	***
Comp Mole Frac (H2O)	0.0000	0.2914	0.2914	0.2914	0.2914	0.3805
Comp Mole Frac (CO)	***	***	***	***	***	***
Comp Mole Frac (CARBAMATO*)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Hydrogen)	0.0024	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (CO2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Oxygen)	***	***	***	***	***	***
Comp Mole Frac (Nitrogen)	***	***	***	***	***	***
Comp Mole Frac (Ammonia)	0.9976	0.4047	0.4047	0.4047	0.4047	0.6195
Comp Mole Frac (MDEthnlAmine)	***	***	***	***	***	***
Comp Mole Frac (H2S)	***	***	***	***	***	***
Comp Mole Frac (Urea)	0.0000	0.3039	0.3039	0.3039	0.3039	0.0000
Name	UREA	MIX-1	SEP-6	SEP-6,1	CO2-3	
Comp Mole Frac (Methane)	***	***	***	***	***	***
Comp Mole Frac (H2O)	0.1237	0.0012	0.0000	0.0000	0.0000 *	0.0000
Comp Mole Frac (CO)	***	***	***	***	***	***
Comp Mole Frac (CARBAMATO*)	0.0000	0.0000	0.0000	0.0000	0.0000 *	0.0000
Comp Mole Frac (Hydrogen)	0.0000	0.0024	0.0024	0.0024	0.0024 *	0.0006
Comp Mole Frac (CO2)	0.0000	0.0000	0.0000	0.0000	0.0000 *	0.9994
Comp Mole Frac (Oxygen)	***	***	***	***	***	***
Comp Mole Frac (Nitrogen)	***	***	***	***	***	***
Comp Mole Frac (Ammonia)	0.0000	0.9964	0.9976	0.9976	0.9976 *	0.0000
Comp Mole Frac (MDEthnlAmine)	***	***	***	***	***	***
Comp Mole Frac (H2S)	***	***	***	***	***	***
Comp Mole Frac (Urea)	0.8763	0.0000	0.0000	0.0000	0.0000 *	0.0000
Name	AMO-3	RX-14				
Comp Mole Frac (Methane)	***	***				
Comp Mole Frac (H2O)	0.0000	0.0000				
Comp Mole Frac (CO)	***	***				
Comp Mole Frac (CARBAMATO*)	0.1835	0.0000				
Comp Mole Frac (Hydrogen)	0.0002	0.0024				
Comp Mole Frac (CO2)	0.0000	0.0000				
Comp Mole Frac (Oxygen)	***	***				
Comp Mole Frac (Nitrogen)	***	***				
Comp Mole Frac (Ammonia)	0.8163	0.9976				
Comp Mole Frac (MDEthnlAmine)	***	***				
Comp Mole Frac (H2S)	***	***				
Comp Mole Frac (Urea)	0.0000	0.0000				


ANEXO 19

REPORTE DE LA COMPOSICION DE TODAS LAS CORRIENTES DE ENERGIA DE LA PRODUCCION DE UREA EN ASPEN HYSY

 Company Name Not Available Bedford, MA USA		Case Name: SIMULACION DE LA PLANTA DE BULO-BULO.hsc			
		Unit Set: AMONIACO			
		Date/Time: Wed Nov 22 16:07:46 2023			
Workbook: FLOW-1 (TPL1)					
Energy Streams Fluid Pkg: All					
Name	Q-100	Q-101	Q-103	Q-104	Q-105
Heat Flow (kJ/h)	1.426e+011	3.263e+010	3.894e+011	7.735e+011	-9.383e+011
Name	Q-106	Q-108	Q-107	Q-109	Q-110
Heat Flow (kJ/h)	7.880e+011	-2.536e+012	2.137e+006	2.642e+010	-5.997e+009
Name	Q-111	Q-112	Q-113	Q-114	Q-115
Heat Flow (kJ/h)	-1.820e+013	-6.777e+010	-6.277e+012	6.158e+010	2.712e+013
Name	Q-116				
Heat Flow (kJ/h)	1.954e+009				
Aspen Technology Inc.		Aspen HYSYS Version 14		Page 1 of 1	
Licensed to: Company Name Not Available		* Specified by user.			


ANEXO 20

REPORTE DE LA REACCIÓN DE REFORMADOR PRIMARIO

 <p style="margin-left: 20px;">Company Name Not Available Bedford, MA USA</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Case Name:</td> <td style="padding: 2px;">REPORTES Y BALANCE DE MATERIA.hsc</td> </tr> <tr> <td style="padding: 2px;">Unit Set:</td> <td style="padding: 2px;">PAU</td> </tr> <tr> <td style="padding: 2px;">Date/Time:</td> <td style="padding: 2px;">Sun Jun 9 18:38:31 2024</td> </tr> </table>	Case Name:	REPORTES Y BALANCE DE MATERIA.hsc	Unit Set:	PAU	Date/Time:	Sun Jun 9 18:38:31 2024
Case Name:	REPORTES Y BALANCE DE MATERIA.hsc						
Unit Set:	PAU						
Date/Time:	Sun Jun 9 18:38:31 2024						
Conversion: CO-1							
STOICHIOMETRY							
Component	Mole Weight	Stoichiometric Coeff.					
Methane	16.043	-1.000 *					
H2O	18.015	-1.000 *					
CO	28.011	1.000 *					
Hydrogen	2.016	3.000 *					
Balance Error: 0.0000		Reaction Heat (25 C) : 2.061e+005 kJ/kgmole					
BASIS							
Base Component: Methane	Conversion Percent: 9.80 *	Reaction Phase: VapourPhase					
PARAMETERS							


ANEXO 21

REPORTE DE LA REACCIÓN DEL REFORMADOR SECUNDARIO

 <p>Company Name Not Available Bedford, MA USA</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Case Name:</td> <td>REPORTES Y BALANCE DE MATERIA.hsc</td> </tr> <tr> <td>Unit Set:</td> <td>PAU</td> </tr> <tr> <td>Date/Time:</td> <td>Sun Jun 9 18:38:31 2024</td> </tr> </table>	Case Name:	REPORTES Y BALANCE DE MATERIA.hsc	Unit Set:	PAU	Date/Time:	Sun Jun 9 18:38:31 2024
Case Name:	REPORTES Y BALANCE DE MATERIA.hsc						
Unit Set:	PAU						
Date/Time:	Sun Jun 9 18:38:31 2024						
Conversion: CO2-1							
STOICHIOMETRY							
Component	Mole Weight	Stoichiometric Coeff.					
Methane	16.043	-1.000 *					
H2O	18.015	-2.000 *					
CO2	44.010	1.000 *					
Hydrogen	2.016	4.000 *					
Balance Error: 0.0000		Reaction Heat (25 C) : 1.647e+005 kJ/kgmole					
BASIS							
Base Component: Methane	Conversion Percent: 23.80 *	Reaction Phase: VapourPhase					
PARAMETERS							


ANEXO 22

REPORTE DE LA REACCIÓN DE SHIFT

		Company Name Not Available Bedford, MA USA		Case Name: REPORTES Y BALANCE DE MATERIA.hsc	
				Unit Set: PAU	
				Date/Time: Sun Jun 9 18:38:31 2024	
Equilibrium: SHIFT					
STOICHIOMETRY					
Component		Molecular Weight		Stoichiometric Coefficient	
CO		28.01		-1 *	
H2O		18.02		-1 *	
CO2		44.01		1 *	
Hydrogen		2.016		1 *	
Balance Error : 0.0000			Reaction Heat (25 C) : -4.139e+004 kJ/kgmole		
BASIS					
Basis	Phase	Approach (C)	Min. Temp (C)	Max. Temp (C)	
Partial Press	VapourPhase	---	-273.1	3000	
PARAMETERS					
Source : K Vs. T Table					
Coeff A	-12.11	R2	0.999972 *		
Coeff B	5319	T High	---		
Coeff C	1.012	T Low	---		
Coeff D	1.144e-004				
Temperature (C)	Keq	KCalc	Percentage Error		
93.33 *	4523 *	4547 *	-0.5253 *		
148.9 *	783.6 *	781.3 *	0.2930 *		
204.4 *	206.8 *	205.7 *	0.5220 *		
232.2 *	119.0 *	118.5 *	0.4317 *		
260.0 *	72.75 *	72.52 *	0.3227 *		
287.8 *	46.70 *	46.73 *	-6.095e-002 *		
315.6 *	31.44 *	31.47 *	-9.652e-002 *		
343.3 *	22.00 *	22.02 *	-7.583e-002 *		
371.1 *	15.89 *	15.92 *	-0.1914 *		
398.9 *	11.80 *	11.85 *	-0.4180 *		
426.7 *	9.030 *	9.046 *	-0.1747 *		
454.4 *	7.050 *	7.062 *	-0.1689 *		
482.2 *	5.610 *	5.624 *	-0.2448 *		
510.0 *	4.550 *	4.558 *	-0.1851 *		
537.8 *	3.749 *	3.754 *	-0.1305 *		
565.6 *	3.130 *	3.136 *	-0.1800 *		
593.3 *	2.653 *	2.653 *	4.376e-004 *		
621.1 *	2.270 *	2.271 *	-3.510e-002 *		
648.9 *	1.966 *	1.964 *	9.143e-002 *		
676.7 *	1.720 *	1.715 *	0.2717 *		
704.4 *	1.512 *	1.511 *	5.921e-002 *		
565.6 *	3.130 *	3.136 *	-0.1800 *		
593.3 *	2.653 *	2.653 *	4.376e-004 *		
621.1 *	2.270 *	2.271 *	-3.510e-002 *		
648.9 *	1.966 *	1.964 *	9.143e-002 *		
676.7 *	1.720 *	1.715 *	0.2717 *		
704.4 *	1.512 *	1.511 *	5.921e-002 *		
732.2 *	1.340 *	1.342 *	-0.1385 *		
760.0 *	1.202 *	1.200 *	0.1409 *		
787.8 *	1.080 *	1.081 *	-8.556e-002 *		
815.6 *	0.9813 *	0.9795 *	0.1881 *		
843.3 *	0.8940 *	0.8926 *	0.1580 *		
871.1 *	0.8192 *	0.8177 *	0.1799 *		
898.9 *	0.7540 *	0.7528 *	0.1574 *		
926.7 *	0.6970 *	0.6962 *	0.1147 *		
954.4 *	0.6470 *	0.6466 *	6.748e-002 *		
982.2 *	0.6037 *	0.6028 *	0.1451 *		


ANEXO 23

REPORTE DE LA REACCIÓN DEL METANADOR

 <p>Company Name Not Available Bedford, MA USA</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Case Name:</td> <td>REPORTES Y BALANCE DE MATERIA.hsc</td> </tr> <tr> <td>Unit Set:</td> <td>PAU</td> </tr> <tr> <td>Date/Time:</td> <td>Sun Jun 9 18:38:31 2024</td> </tr> </table>	Case Name:	REPORTES Y BALANCE DE MATERIA.hsc	Unit Set:	PAU	Date/Time:	Sun Jun 9 18:38:31 2024
Case Name:	REPORTES Y BALANCE DE MATERIA.hsc						
Unit Set:	PAU						
Date/Time:	Sun Jun 9 18:38:31 2024						
<h3>Equilibrium: CO₂+2H₂-CH₄+2H₂O</h3>							
<h4>STOICHIOMETRY</h4>							
Component	Molecular Weight	Stoichiometric Coefficient					
CO ₂	44.01	-1 *					
Hydrogen	2.016	-4 *					
Methane	16.04	1 *					
H ₂ O	18.02	2 *					
Balance Error : 0.0000		Reaction Heat (25 C) : -1.647e+005 kJ/kgmole					
<h4>BASIS</h4>							
Basis	Phase	Approach (C)	Min. Temp (C)	Max. Temp (C)			
Partial Press	VapourPhase	---	-273.1	3000			
<h4>PARAMETERS</h4>							
<p>Source : Gibbs Free Energy</p>							


ANEXO 24

REPORTE DE LA REACCIÓN DE AMONIACO

 <p>Company Name Not Available USA</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Case Name:</td> <td>REPORTES Y BALANCE DE MATERIA.hsc</td> </tr> <tr> <td>Unit Set:</td> <td>PAU</td> </tr> <tr> <td>Date/Time:</td> <td>Sun Jun 9 18:48:12 2024</td> </tr> </table>	Case Name:	REPORTES Y BALANCE DE MATERIA.hsc	Unit Set:	PAU	Date/Time:	Sun Jun 9 18:48:12 2024														
Case Name:	REPORTES Y BALANCE DE MATERIA.hsc																				
Unit Set:	PAU																				
Date/Time:	Sun Jun 9 18:48:12 2024																				
Kinetic: AMONIACO																					
STOICHIOMETRY																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">Component</th> <th style="width: 15%;">Molecular Weight</th> <th style="width: 15%;">Stoich Coeff</th> <th style="width: 15%;">Forward Order</th> <th style="width: 15%;">Reverse Order</th> </tr> </thead> <tbody> <tr> <td>Nitrogen</td> <td style="text-align: right;">28.01</td> <td style="text-align: right;">-1 *</td> <td style="text-align: right;">1.000</td> <td style="text-align: right;">0.0000</td> </tr> <tr> <td>Hydrogen</td> <td style="text-align: right;">2.016</td> <td style="text-align: right;">-3 *</td> <td style="text-align: right;">3.000</td> <td style="text-align: right;">0.0000</td> </tr> <tr> <td>Ammonia</td> <td style="text-align: right;">17.03</td> <td style="text-align: right;">2 *</td> <td style="text-align: right;">0.0000</td> <td style="text-align: right;">2.000</td> </tr> </tbody> </table>		Component	Molecular Weight	Stoich Coeff	Forward Order	Reverse Order	Nitrogen	28.01	-1 *	1.000	0.0000	Hydrogen	2.016	-3 *	3.000	0.0000	Ammonia	17.03	2 *	0.0000	2.000
Component	Molecular Weight	Stoich Coeff	Forward Order	Reverse Order																	
Nitrogen	28.01	-1 *	1.000	0.0000																	
Hydrogen	2.016	-3 *	3.000	0.0000																	
Ammonia	17.03	2 *	0.0000	2.000																	
<table style="width: 100%;"> <tr> <td style="width: 50%;">Balance Error : 0.0000</td> <td style="width: 50%;">Reaction Heat (25 C) : -9.142e+004 kJ/kgmole</td> </tr> </table>		Balance Error : 0.0000	Reaction Heat (25 C) : -9.142e+004 kJ/kgmole																		
Balance Error : 0.0000	Reaction Heat (25 C) : -9.142e+004 kJ/kgmole																				
BASIS																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Basis</th> <th style="width: 20%;">Base Component</th> <th style="width: 20%;">Rxn Phase</th> <th style="width: 15%;">Min. Temp (C)</th> <th style="width: 15%;">Max. Temp (C)</th> </tr> </thead> <tbody> <tr> <td>Partial Pres</td> <td>Nitrogen</td> <td>VapourPhase</td> <td style="text-align: right;">-273.1</td> <td style="text-align: right;">3000</td> </tr> </tbody> </table>		Basis	Base Component	Rxn Phase	Min. Temp (C)	Max. Temp (C)	Partial Pres	Nitrogen	VapourPhase	-273.1	3000										
Basis	Base Component	Rxn Phase	Min. Temp (C)	Max. Temp (C)																	
Partial Pres	Nitrogen	VapourPhase	-273.1	3000																	
PARAMETERS																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Forward Reaction</th> <th style="width: 50%;">Reverse Reaction</th> </tr> </thead> <tbody> <tr> <td>A : 1.000e+004 *</td> <td>A' : 1.300e+010 *</td> </tr> <tr> <td>E : 9.100e+004 *</td> <td>E' : 1.410e+005 *</td> </tr> </tbody> </table>		Forward Reaction	Reverse Reaction	A : 1.000e+004 *	A' : 1.300e+010 *	E : 9.100e+004 *	E' : 1.410e+005 *														
Forward Reaction	Reverse Reaction																				
A : 1.000e+004 *	A' : 1.300e+010 *																				
E : 9.100e+004 *	E' : 1.410e+005 *																				


ANEXO 25

Reporte de la reacción de obtención de carbamato

 <p style="margin-left: 20px;">Company Name Not Available Bedford, MA USA</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Case Name:</td> <td>REPORTES Y BALANCE DE MATERIA.hsc</td> </tr> <tr> <td>Unit Set:</td> <td>PAU</td> </tr> <tr> <td>Date/Time:</td> <td>Sun Jun 9 18:48:12 2024</td> </tr> </table>	Case Name:	REPORTES Y BALANCE DE MATERIA.hsc	Unit Set:	PAU	Date/Time:	Sun Jun 9 18:48:12 2024
Case Name:	REPORTES Y BALANCE DE MATERIA.hsc						
Unit Set:	PAU						
Date/Time:	Sun Jun 9 18:48:12 2024						
<h3>Conversion: AMO+CO2-CARBAM</h3>							
<h4>STOICHIOMETRY</h4>							
Component	Mole Weight	Stoichiometric Coeff.					
Ammonia	17.030	-2.000 *					
CO2	44.010	-1.000 *					
CARBAMATO*	78.071	1.000 *					
Balance Error: 0.0000		Reaction Heat (25 C) : 1.713e+005 kJ/kgmole					
<h4>BASIS</h4>							
Base Component: Ammonia	Conversion Percent: 60.00 *	Reaction Phase: Overall					
<h4>PARAMETERS</h4>							


ANEXO 25

REPORTE DE LA REACCIÓN DE OBTENCIÓN DE UREA

 Company Name Not Available Bedford, MA USA	Case Name: REPORTES Y BALANCE DE MATERIA.hsc	
	Unit Set: PAU	
	Date/Time: Sun Jun 9 18:48:12 2024	
Conversion: CARBAM-UREA+H2O		
STOICHIOMETRY		
Component	Mole Weight	Stoichiometric Coeff.
CARBAMATO*	78.071	-1.000 *
Urea	60.056	1.000 *
H2O	18.015	1.000 *
Balance Error: 0.0000		Reaction Heat (25 C): -3.448e+005 kJ/kgmole
BASIS		
Base Component: CARBAMATO*	Conversion Percent: 70.00 *	Reaction Phase: Overall
PARAMETERS		

ANEXO 26

REPORTE DE LA REACCIÓN DEGRADACIÓN DE CARBAMATO

 <p>Company Name Not Available Bedford, MA USA</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Case Name:</td> <td>REPORTES Y BALANCE DE MATERIA.hsc</td> </tr> <tr> <td>Unit Set:</td> <td>PAU</td> </tr> <tr> <td>Date/Time:</td> <td>Sun Jun 9 18:48:12 2024</td> </tr> </table>	Case Name:	REPORTES Y BALANCE DE MATERIA.hsc	Unit Set:	PAU	Date/Time:	Sun Jun 9 18:48:12 2024
Case Name:	REPORTES Y BALANCE DE MATERIA.hsc						
Unit Set:	PAU						
Date/Time:	Sun Jun 9 18:48:12 2024						
<h3 style="margin: 0;">Conversion: CARBAM-AMO+CO2</h3>							
<h4 style="margin: 0;">STOICHIOMETRY</h4>							
Component	Mole Weight	Stoichiometric Coeff.					
CARBAMATO*	78.071	-1.000 *					
Ammonia	17.030	2.000 *					
CO2	44.010	1.000 *					
Balance Error: 0.0000		Reaction Heat (25 C) : -3.426e+005 kJ/kgmole					
<h4 style="margin: 0;">BASIS</h4>							
Base Component: CARBAMATO*	Conversion Percent: 65.00 *	Reaction Phase: Overall					
<h4 style="margin: 0;">PARAMETERS</h4>							