Supplementary Materials

Table S1. Simulation results of the integrated system in real condition.

No.	Stream	*X*	*T* (°C)	*P* (kPa)	vapor fraction	*m* (kg/s)	*h* (kJ/kg)	*s* (kJ·kg^{-1}·K^{-1})
A1	LiBr/H_2O	0.56	63.62	5.69	0.00	1.04	145.16	0.40
A2	H_2O	0.00	80.00	5.69	1.00	0.11	2650.02	8.61
A3	H_2O	0.00	35.00	5.69	0.00	0.11	146.66	0.51
A4	H_2O	0.00	2.01	0.76	0.06	0.11	8.45	0.03
A5	H_2O	0.00	2.01	0.76	1.00	0.11	8.45	0.03
A6	LiBr/H_2O	0.62	80.00	5.69	0.00	0.94	203.52	0.44
A7	LiBr/H_2O	0.62	39.99	5.69	0.00	0.94	128.80	0.22
A8	LiBr/H_2O	0.62	39.99	0.76	0.00	0.94	128.80	0.22
A9	LiBr/H_2O	0.56	34.99	0.95	0.00	1.04	86.95	0.21
A10	LiBr/H_2O	0.56	34.99	5.69	0.00	1.04	86.96	0.21
K1	NH_3/H_2O	0.70	7.00	293	0.00	0.56	-7818.85	-10.97
K2	NH_3/H_2O	0.70	7.49	3300	0.00	0.56	-7813.20	-10.97
K3	NH_3/H_2O	0.70	12.49	3300	0.00	0.56	-7789.79	-10.88
K4	NH_3/H_2O	0.70	73.12	3300	0.00	0.56	-7498.86	-9.96
K5	NH_3/H_2O	0.98	109.40	3300	1.00	0.19	-2815.58	-7.02
K6	NH_3/H_2O	0.98	3.63	293	0.92	0.19	-3109.37	-6.87
K7	NH_3/H_2O	0.56	109.40	3300	0.00	0.38	-8991.55	-9.21
K8	NH_3/H_2O	0.56	17.49	3300	0.00	0.38	-9425.66	-10.51
K9	NH_3/H_2O	0.56	18.22	293	0.00	0.38	-9425.66	-10.49
K10	NH_3/H_2O	0.70	17.64	293	0.30	0.56	-7342.37	-9.30
K11	NH_3/H_2O	0.70	16.87	293	0.28	0.56	-7365.78	-9.38

Table S2. Simulation results of the integrated system in unavoidable condition.

No.	Stream	*X*	*T* (°C)	*P* (kPa)	vapor fraction	*m* (kg/s)	*h* (kJ/kg)	*s* (kJ·kg^{-1}·K^{-1})
A1	LiBr/H_2O	0.56	59.16	4.82	0.00	0.53	136.00	0.37
A2	H_2O	0.00	86.99	4.82	1.00	0.09	2663.41	8.72
A3	H_2O	0.00	31.99	4.82	0.00	0.09	134.06	0.46
A4	H_2O	0.00	2.01	0.76	0.05	0.09	8.45	0.03
A5	H_2O	0.00	2.01	0.76	1.00	0.09	8.45	0.03
A6	LiBr/H_2O	0.67	86.99	4.82	0.00	0.44	247.11	0.45
A7	LiBr/H_2O	0.67	34.09	4.82	0.00	0.44	156.94	0.18
A8	LiBr/H_2O	0.67	34.09	0.76	0.00	0.44	156.94	0.18
A9	LiBr/H_2O	0.56	32.09	0.80	0.00	0.53	81.15	0.20
A10	LiBr/H_2O	0.56	32.09	4.82	0.00	0.53	85.16	0.21
K1	NH_3/H_2O	0.70	4.00	261	0.00	0.39	-7832.95	-11.02
K2	NH_3/H_2O	0.70	4.42	3300	0.00	0.39	-7827.55	-11.02
K3	NH_3/H_2O	0.70	9.42	3300	0.00	0.39	-7804.17	-10.93
K4	NH_3/H_2O	0.70	70.33	3300	0.00	0.39	-7512.71	-10.00
K5	NH_3/H_2O	0.97	116.40	3300	1.00	0.16	-2895.44	-6.92
K6	NH_3/H_2O	0.97	4.85	261	0.91	0.16	-3235.62	-6.86
K7	NH_3/H_2O	0.51	116.40	3300	0.00	0.23	-9529.56	-9.03
K8	NH_3/H_2O	0.51	11.42	3300	0.00	0.23	-10020.52	-10.50
K9	NH_3/H_2O	0.51	12.18	261	0.00	0.23	-10020.52	-10.48
K10	NH_3/H_2O	0.70	17.82	261	0.35	0.39	-7263.45	-9.01
K11	NH_3/H_2O	0.70	16.91	261	0.34	0.39	-7286.84	-9.09

Table S3. Simulation results of the integrated system in ideal condition.

No.	Stream	X	T (°C)	P (kPa)	vapor fraction	m (kg/s)	h (kJ/kg)	s (kJ·kg^{-1}·K^{-1})
A1	LiBr/H_2O	0.56	56.01	4.31	0.00	0.41	129.54	0.35
A2	H_2O	0.00	90.00	4.31	1.00	0.08	2669.18	8.79
A3	H_2O	0.00	29.99	4.31	0.00	0.08	125.70	0.44
A4	H_2O	0.00	2.01	0.76	0.05	0.08	8.45	0.03
A5	H_2O	0.00	2.01	0.76	1.00	0.08	8.45	0.03
A6	LiBr/H_2O	0.69	90.00	4.31	0.00	0.33	268.25	0.45
A7	LiBr/H_2O	0.69	30.21	4.31	0.00	0.33	171.21	0.16
A8	LiBr/H_2O	0.69	32.84	0.76	0.00	0.33	175.35	0.18
A9	LiBr/H_2O	0.56	30.11	0.71	0.00	0.41	77.20	0.18
A10	LiBr/H_2O	0.56	30.11	4.31	0.00	0.41	77.20	0.18
K1	NH_3/H_2O	0.70	2.00	241	0.00	0.33	-7842.34	-11.05
K2	NH_3/H_2O	0.70	2.36	3300	0.00	0.33	-7837.19	-11.05
K3	NH_3/H_2O	0.70	7.36	3300	0.00	0.33	-7813.82	-10.97
K4	NH_3/H_2O	0.70	69.10	3300	0.00	0.33	-7518.84	-10.02
K5	NH_3/H_2O	0.97	119.40	3300	1.00	0.14	-2937.94	-6.88
K6	NH_3/H_2O	0.97	3.68	241	0.90	0.14	-3310.21	-6.88
K7	NH_3/H_2O	0.50	119.40	3300	0.00	0.19	-9743.27	-8.96
K8	NH_3/H_2O	0.50	7.46	3300	0.00	0.19	-10264.83	-10.52
K9	NH_3/H_2O	0.50	8.23	241	0.00	0.19	-10264.83	-10.50
K10	NH_3/H_2O	0.70	16.81	241	0.37	0.33	-7243.55	-8.92
K11	NH_3/H_2O	0.70	15.86	241	0.35	0.33	-7266.92	-9.00

Table S4. Splitting on the exogenous destruction (kW).

kth component	$\dot{E}_{D,k}^{EX}$	rth component	$\dot{E}_{D,k}^{EX,r}$	$\dot{E}_{D,k}^{AV,EX,r}$	$\dot{E}_{D,k}^{UN,EX,r}$
Generator 1	5.63	Condenser	-1.08	-0.85	-0.24
		Evaporator	0.80	0.40	0.40
		Absorber	-0.04	-0.04	<0.01
		Heatx	0.03	0.03	<0.01
		Pump 2	0.06	0.03	0.02
		Generator 2	0.36	2.02	-1.66
		Turbine	2.11	1.05	1.06
		HTR	0.28	0.15	0.13
		LTR	<0.01	<0.01	<0.01
		mexo	3.12		
Condenser	2.23	Generator 1	-0.26	-0.25	<0.01
		Evaporator	0.49	0.12	0.37
		Absorber	<0.01	<0.01	<0.01
		Heatx	<0.01	<0.01	<0.01
		Pump 2	0.03	0.01	0.02
		Generator 2	0.22	0.05	0.16
		Turbine	1.31	0.33	0.98
		HTR	0.16	0.04	0.12
		LTR	<0.01	<0.01	<0.01
		mexo	0.27		
Evaporator	0.48	Generator 1	<0.01	<0.01	<0.01
		Condenser	<0.01	<0.01	<0.01
		Absorber	<0.01	<0.01	<0.01
		Heatx	<0.01	<0.01	<0.01
		Pump 2	0.04	0.02	0.02
		Generator 2	-1.24	-3.08	1.83
		Turbine	1.56	0.90	0.66
		HTR	0.31	0.31	<0.01
		LTR	<0.01	<0.01	<0.01
		mexo	-0.17		
Absorber	1.16	Generator 1	-2.78	-0.43	-2.35
		Condenser	-1.57	1.86	-3.44
		Evaporator	1.03	0.21	0.81
		Heatx	0.10	0.10	<0.01
		Pump 2	0.05	0.01	0.04
		Generator 2	0.45	5.07	-4.61
		Turbine	2.73	0.57	2.16

		HTR	0.33	0.07	0.26
		LTR	<0.01	<0.01	<0.01
		mexo	0.81		
Heatx	0.69	Generator 1	-0.05	-0.63	0.58
		Condenser	0.30	-0.03	0.33
		Evaporator	0.14	0.01	0.12
		Absorber	-0.27	-0.27	<0.01
		Pump 2	0.01	<0.01	0.01
		Generator 2	0.06	0.01	0.06
		Turbine	0.36	0.04	0.33
		HTR	0.04	<0.01	0.04
		LTR	<0.01	<0.01	<0.01
		mexo	0.10		
Pump 2	0.13	Generator 1	0	0	0
		Condenser	0	0	0
		Evaporator	0.01	<0.01	0.01
		Absorber	0	0	0
		Heatx	0	0	0
		Generator 2	0.08	0.04	0.04
		Turbine	0.03	0.02	0.01
		HTR	<0.01	<0.01	<0.01
		LTR	<0.01	<0.01	<0.01
		mexo	0.02		
Generator 2	5.91	Generator 1	0	0	0
		Condenser	0	0	0
		Evaporator	0.78	-0.22	1.00
		Absorber	0	0	0
		Heatx	0	0	0
		Pump 2	0.08	0.01	0.07
		Turbine	2.63	0.57	2.06
		HTR	0.89	0.89	<0.01
		LTR	<0.01	<0.01	<0.01
		mexo	1.53		
Turbine	2.11	Generator 1	0	0	0
		Condenser	0	0	0
		Evaporator	-0.16	-0.54	0.38
		Absorber	0	0	0
		Heatx	0	0	0
		Pump 2	0.03	0.01	0.02
		Generator 2	0.43	0.02	0.40
		HTR	<0.01	<0.01	<0.01
		LTR	<0.01	<0.01	<0.01
		mexo	1.81		
HTR	1.89	Generator 1	0	0	0
		Condenser	0	0	0
		Evaporator	-0.25	-0.66	0.42
		Absorber	0	0	0
		Heatx	0	0	0
		Pump 2	0.01	-0.01	0.02
		Generator 2	1.02	-2.19	3.21
		Turbine	1.03	0.18	0.85
		LTR	<0.01	<0.01	<0.01
		mexo	0.08		
LTR	0.02	Generator 1	0	0	0
		Condenser	0	0	0
		Evaporator	<0.01	<0.01	<0.01
		Absorber	0	0	0
		Heatx	0	0	0
		Pump 2	<0.01	<0.01	<0.01
		Generator 2	<0.01	<0.01	<0.01
		Turbine	<0.01	<0.01	<0.01
		HTR	<0.01	<0.01	<0.01
		mexo	0.02		