

ภาคผนวก ก
ตารางบันทึกข้อมูล

ตารางที่ ก. 1 ตารางบันทึกอุณหภูมิวันที่ 20 ตุลาคม 2556

Time Hr	2. Toal in collector	3. Total out collector	4. Temp1 in	5. Temp1 out	6. Temp2 in	7. Temp2 out	8. Tank center	9. Tank buttom	10. Tank Top	11. User return
6:00:00	21.63	23.17	22.76	23.10	22.99	22.40	34.95	38.77	42.82	33.29
7:00:00	27.95	27.53	29.53	27.93	29.68	27.24	35.29	38.15	42.18	33.82
8:00:00	38.93	40.01	38.73	40.02	39.13	39.39	38.79	39.17	39.28	36.97
9:00:00	40.16	41.74	40.21	41.72	40.41	41.05	40.12	40.31	40.46	37.83
10:00:00	41.55	43.18	41.60	43.21	41.80	42.67	41.50	41.70	41.87	39.08
11:00:00	43.86	45.83	43.86	45.95	44.12	45.38	43.82	43.91	44.17	41.94
12:00:00	46.61	48.62	46.49	48.67	46.83	48.08	46.52	46.66	46.94	43.48
13:00:00	48.74	50.43	48.60	50.40	48.95	49.96	48.74	48.84	49.05	42.39
14:00:00	50.16	51.42	50.01	51.34	50.40	50.76	50.49	50.62	50.71	38.58
15:00:00	50.89	51.94	50.60	51.79	50.97	51.22	51.37	51.53	51.61	37.73
16:00:00	45.31	46.95	44.30	45.78	44.55	46.13	50.99	51.79	51.85	36.52
17:00:00	32.94	34.33	31.11	30.46	30.34	31.67	49.73	51.27	51.75	34.74
18:00:00	29.37	30.50	28.12	27.67	27.65	28.38	48.86	50.67	51.63	33.38
19:00:00	27.48	28.30	26.33	25.88	25.79	26.47	47.76	49.55	51.54	33.10
20:00:00	26.12	26.90	25.21	25.03	24.86	25.38	46.77	47.96	51.44	35.03
21:00:00	25.46	26.23	24.89	24.83	24.68	25.06	45.62	47.65	51.35	32.87
22:00:00	25.07	25.77	24.63	24.54	24.34	24.75	42.37	46.36	51.17	40.11
23:00:00	24.84	25.47	24.51	24.61	24.41	24.62	41.43	46.15	51.12	33.22
0:00:00	25.04	25.51	24.89	25.06	24.90	24.76	41.89	44.57	50.92	33.60
1:00:00	25.30	25.64	25.14	25.55	25.33	25.08	39.38	43.69	50.56	38.20
2:00:00	25.30	25.63	25.06	25.51	25.26	25.15	39.39	43.04	50.23	33.31
3:00:00	25.29	25.58	24.96	25.46	25.24	25.11	38.46	42.55	49.84	31.88
4:00:00	25.22	25.01	24.99	25.00	24.20	24.21	38.86	41.02	49.01	32.88
5:00:00	25.22	25.02	25.00	25.01	24.30	24.40	35.50	37.65	43.54	33.42

ตารางที่ ก. 1 (ต่อ) ตารางบันทึกข้อมูลวันที่ ๒ ธันวาคม ๒๕๕๖

Time Hr	12. Temp before heater	13. Temp after heater	14. User reach temp	15. Raw water temp	16. Ambient temp	solar w/m ²
6:00:00	37.03	42.03	41.26	30.68	24.44	40.72
7:00:00	33.87	37.51	41.52	30.69	26.81	272.08
8:00:00	31.98	35.32	39.30	30.73	28.57	510.24
9:00:00	31.95	36.27	40.07	30.79	29.72	555.78
10:00:00	32.79	36.80	41.46	30.85	30.37	639.97
11:00:00	34.50	38.18	43.98	30.96	32.00	898.93
12:00:00	37.63	38.77	45.81	30.87	32.76	905.53
13:00:00	40.07	37.92	47.16	30.98	32.74	810.01
14:00:00	41.21	37.38	49.60	30.97	32.60	531.15
15:00:00	40.58	37.05	50.37	30.94	32.24	426.19
16:00:00	37.61	35.71	50.49	31.10	28.68	133.24
17:00:00	34.33	33.48	49.87	31.09	26.96	27.16
18:00:00	32.10	31.97	49.49	31.01	26.66	0.63
19:00:00	30.61	30.93	49.19	31.04	26.63	0.57
20:00:00	29.62	30.24	48.68	31.05	26.74	0.54
21:00:00	28.93	29.82	49.46	31.02	26.41	0.57
22:00:00	28.45	29.56	49.06	30.97	26.55	0.56
23:00:00	28.16	29.40	47.63	31.01	26.40	0.58
0:00:00	27.89	29.20	48.54	30.96	26.34	0.59
1:00:00	27.76	29.14	48.91	30.92	26.33	0.59
2:00:00	27.67	29.02	47.03	30.93	26.44	0.58
3:00:00	27.52	28.90	48.12	30.90	26.11	0.61
4:00:00	27.18	28.59	47.83	30.91	25.49	0.59
5:00:00	32.26	35.68	44.59	30.74	23.97	0.88

ตารางที่ ก. 2 ตารางบันทึกอุณหภูมิวันที่ 21 ตุลาคม 2556

Time Hr	2. Toal in collector	3. Total out collector	4. Temp1 in	5. Temp1 out	6. Temp2 in	7. Temp2 out	8. Tank center	9. Tank bottom	10. Tank Top	11. User return
6:00:00	21.63	23.22	28.15	26.71	29.37	29.98	37.62	39.28	46.99	34.86
7:00:00	35.47	38.63	35.16	34.67	36.37	36.38	37.41	39.72	44.38	36.73
8:00:00	40.35	41.43	40.19	41.38	40.54	40.71	40.33	41.11	41.22	35.49
9:00:00	41.98	43.65	42.03	43.66	42.23	43.01	42.09	42.37	42.50	36.18
10:00:00	44.05	46.12	44.15	46.21	44.27	45.60	43.95	44.16	44.39	36.55
11:00:00	46.42	48.13	46.31	48.16	46.66	47.54	46.43	46.53	46.72	35.02
12:00:00	48.74	50.68	48.69	50.70	48.94	50.07	48.66	48.76	48.98	34.64
13:00:00	49.28	49.89	48.78	49.77	49.43	49.24	49.88	50.20	50.30	35.92
14:00:00	49.99	51.30	49.64	51.18	50.38	50.71	50.39	50.63	50.72	37.43
15:00:00	50.05	50.62	49.45	50.40	49.98	49.98	50.96	51.14	51.17	36.25
16:00:00	46.67	47.41	45.66	47.61	45.53	47.31	50.47	51.08	51.16	36.62
17:00:00	39.51	41.94	37.94	39.44	37.72	40.93	48.39	50.58	51.13	35.70
18:00:00	32.94	34.33	31.11	30.46	30.34	31.67	47.25	50.10	51.06	39.24
19:00:00	29.37	30.50	28.12	27.67	27.65	28.38	46.26	49.15	50.95	38.41
20:00:00	27.48	28.30	26.33	25.88	25.79	26.47	45.49	47.74	50.88	38.97
21:00:00	26.12	26.90	25.21	25.03	24.86	25.38	45.10	47.68	50.81	34.07
22:00:00	25.46	26.23	24.89	24.83	24.68	25.06	44.68	46.27	50.69	33.52
23:00:00	25.07	25.77	24.63	24.54	24.34	24.75	44.64	46.30	50.62	31.74
0:00:00	24.84	25.47	24.51	24.61	24.41	24.62	43.80	44.79	50.46	31.53
1:00:00	25.04	25.51	24.89	25.06	24.90	24.76	42.74	44.08	50.25	31.51
2:00:00	25.30	25.64	25.14	25.55	25.33	25.08	42.37	43.63	50.10	31.26
3:00:00	25.30	25.63	25.06	25.51	25.26	25.15	42.17	43.27	49.97	30.71
4:00:00	25.29	25.58	24.96	25.46	25.24	25.11	41.53	41.94	49.69	32.74
5:00:00	25.32	25.61	25.01	25.47	25.30	25.13	38.37	39.94	48.06	35.36

ตารางที่ ก. 2 (ต่อ) ตารางบันทึกอุณหภูมิวันที่ 21 ตุลาคม 2556

Time Hr	12. Temp before heater	13. Temp after heater	14. User reach temp	15. Raw water temp	16. Ambient temp	solar w/m2
6:00:00	26.55	27.97	47.80	30.81	26.00	62.69
7:00:00	27.13	28.51	45.67	30.81	28.50	290.26
8:00:00	28.51	30.63	41.13	30.78	29.55	444.25
9:00:00	30.49	34.61	41.82	30.84	30.98	616.92
10:00:00	32.47	37.42	43.90	30.80	31.83	836.25
11:00:00	34.27	39.20	45.83	30.83	32.07	775.13
12:00:00	37.33	39.18	47.09	30.80	33.01	863.41
13:00:00	37.98	37.91	47.94	30.83	31.26	351.11
14:00:00	38.54	36.80	49.71	30.84	32.67	466.25
15:00:00	38.15	36.10	49.39	30.89	31.05	323.51
16:00:00	36.38	35.07	48.81	30.94	29.94	160.70
17:00:00	34.28	33.68	49.32	30.95	28.94	38.06
18:00:00	32.50	32.34	49.68	30.93	28.54	0.00
19:00:00	31.33	31.48	49.90	30.96	28.02	0.00
20:00:00	30.24	30.72	49.10	31.02	27.01	0.00
21:00:00	29.42	30.13	47.16	31.02	27.06	0.00
22:00:00	28.79	29.63	48.04	31.04	26.69	0.00
23:00:00	28.30	29.25	46.75	31.12	26.50	0.00
0:00:00	27.95	29.01	49.39	31.04	26.31	0.00
1:00:00	27.78	28.89	48.69	30.96	26.58	0.00
2:00:00	27.69	28.81	46.69	30.99	26.33	0.00
3:00:00	27.50	28.71	46.55	31.03	26.12	0.00
4:00:00	27.36	28.59	47.44	30.99	26.02	0.00
5:00:00	26.77	28.17	47.52	30.93	25.24	0.00

ตารางที่ ก.3 ตารางบันทึกอุณหภูมิวันที่ 22 ตุลาคม 2556

Time Hr	2. Toal in collector	3. Total out collector	4. Temp1 in	5. Temp1 out	6. Temp2 in	7. Temp2 out	8. Tank center	9. Tank bottom	10. Tank Top	11. User return
6:00:00	21.63	25.13	24.47	24.87	24.68	24.31	40.73	40.87	48.89	35.29
7:00:00	29.28	28.68	31.74	29.20	31.47	28.54	40.29	40.64	47.70	36.34
8:00:00	42.29	43.48	42.13	43.54	42.54	42.95	42.25	43.42	43.62	36.70
9:00:00	44.31	46.13	44.19	46.16	44.51	45.52	44.30	44.55	44.73	37.33
10:00:00	45.81	47.47	45.83	47.52	46.09	47.03	45.88	46.30	46.44	42.58
11:00:00	48.11	50.40	48.12	50.47	48.30	49.79	47.95	48.23	48.53	42.78
12:00:00	50.63	52.50	50.59	52.48	50.88	51.93	50.71	51.07	51.29	47.67
13:00:00	50.94	51.97	50.59	51.71	51.20	51.30	51.59	52.17	52.27	43.45
14:00:00	52.30	53.97	52.20	54.03	52.51	53.51	52.34	52.70	52.88	39.23
15:00:00	53.67	54.85	53.31	54.72	53.79	54.29	54.04	54.24	54.28	39.10
16:00:00	52.17	52.26	50.89	52.64	51.85	52.04	53.64	54.42	54.48	39.41
17:00:00	44.51	45.96	41.50	44.99	43.92	43.06	49.65	54.00	54.32	49.39
18:00:00	34.80	36.77	31.25	34.29	33.07	32.18	48.83	53.61	54.20	42.82
19:00:00	30.10	31.48	27.29	29.45	28.62	27.73	48.92	52.54	54.08	35.62
20:00:00	27.70	28.87	25.73	27.34	26.77	26.08	48.19	50.67	54.02	36.67
21:00:00	26.70	27.58	25.22	26.48	26.06	25.48	47.36	50.51	53.89	34.46
22:00:00	25.93	26.79	24.79	25.96	25.62	25.04	46.97	48.90	53.78	34.69
23:00:00	25.33	26.12	24.32	25.43	25.11	24.57	46.84	48.83	53.67	32.91
0:00:00	24.93	25.67	24.23	25.13	24.84	24.35	45.98	47.27	53.53	32.75
1:00:00	24.74	25.42	24.10	25.00	24.72	24.26	45.56	46.54	53.40	32.47
2:00:00	24.34	25.06	23.63	24.66	24.40	23.83	45.11	45.86	53.26	31.84
3:00:00	23.94	24.70	23.27	24.30	24.03	23.52	44.82	45.60	53.13	30.94
4:00:00	23.62	24.37	22.96	24.00	23.69	23.14	43.93	44.32	52.89	32.66
5:00:00	24.86	25.31	24.14	25.17	24.98	24.25	41.08	41.23	49.32	35.31

ตารางที่ ก. 3 (ต่อ) ตารางบันทึกอุณหภูมิวันที่ 22 ตุลาคม 2556

Time Hr	12. Temp before heater	13. Temp after heater	14. User reach temp	15. Raw water temp	16. Ambient temp	solar w/m2
6:00:00	27.01	28.32	46.84	30.95	26.13	25.10
7:00:00	27.62	29.02	48.15	30.89	28.30	304.21
8:00:00	29.20	31.60	44.58	30.97	30.39	526.24
9:00:00	30.69	36.66	44.06	30.78	31.37	654.00
10:00:00	32.70	39.32	46.13	31.02	32.66	670.79
11:00:00	35.16	40.06	47.54	30.79	33.24	985.36
12:00:00	38.70	40.76	50.09	30.89	33.59	778.79
13:00:00	38.70	39.05	49.91	31.05	31.97	361.93
14:00:00	40.64	37.79	51.57	31.00	34.24	749.85
15:00:00	42.49	37.71	52.93	31.22	33.75	556.24
16:00:00	40.99	36.92	52.80	31.20	31.89	286.09
17:00:00	37.81	35.61	52.94	31.28	30.06	32.47
18:00:00	35.04	34.09	51.01	31.31	28.97	0.00
19:00:00	33.07	32.91	51.81	31.33	28.23	0.00
20:00:00	31.72	32.06	52.33	31.44	27.95	0.00
21:00:00	30.70	31.37	51.08	31.44	27.69	0.00
22:00:00	29.88	30.81	51.18	31.49	27.15	0.00
23:00:00	29.15	30.23	49.27	31.44	26.66	0.00
0:00:00	28.61	29.78	50.79	31.37	26.52	0.00
1:00:00	28.17	29.48	50.36	31.43	26.19	0.00
2:00:00	27.75	29.12	49.51	31.39	25.82	0.00
3:00:00	27.36	28.76	48.83	31.37	25.53	0.00
4:00:00	26.96	28.41	50.33	31.30	25.21	0.00
5:00:00	27.07	28.34	46.94	30.99	25.76	0.00

ตารางที่ ก. 4 ตารางบันทึกอุณหภูมิวันที่ 23 ตุลาคม 2556

Time Hr	2. Toal in collector	3. Total out collector	4. Temp1 in	5. Temp1 out	6. Temp2 in	7. Temp2 out	8. Tank center	9. Tank buttom	10. Tank Top	11. User return
6:00:00	21.63	23.96	23.27	23.78	23.55	23.02	42.88	43.02	52.21	35.94
7:00:00	26.91	26.00	30.57	27.12	30.67	26.28	42.24	42.49	51.26	37.50
8:00:00	43.28	43.89	43.01	44.48	43.41	43.76	43.26	45.17	46.48	37.11
9:00:00	46.46	48.40	46.30	48.44	46.66	47.81	46.45	46.69	46.87	35.89
10:00:00	48.56	50.22	48.24	50.20	48.85	49.66	48.69	48.85	49.00	34.58
11:00:00	48.86	49.54	48.30	49.34	48.98	48.75	49.65	49.84	49.86	34.26
12:00:00	49.43	51.14	49.37	51.19	49.68	50.42	50.04	50.39	50.54	39.82
13:00:00	51.58	53.17	51.26	53.00	51.83	52.50	51.77	52.21	52.37	42.91
14:00:00	52.91	54.52	52.64	54.51	53.12	53.92	52.84	53.10	53.28	43.15
15:00:00	54.02	55.19	53.59	55.05	54.12	54.57	54.30	54.49	54.55	38.55
16:00:00	53.23	53.39	52.11	53.47	52.28	53.02	54.09	54.78	54.82	37.99
17:00:00	44.13	46.21	41.72	42.49	40.98	44.42	52.39	54.48	54.82	36.92
18:00:00	34.72	36.42	32.28	31.81	31.30	33.35	51.74	53.88	54.72	35.85
19:00:00	30.00	31.19	28.04	27.58	27.25	28.60	50.40	52.49	54.56	41.29
20:00:00	27.66	28.62	26.28	25.95	25.74	26.60	48.24	50.96	54.46	37.08
21:00:00	26.24	27.22	25.42	25.18	25.02	25.60	45.67	50.63	54.36	38.90
22:00:00	25.46	26.32	24.82	24.64	24.46	24.95	46.29	49.16	54.20	35.18
23:00:00	24.98	25.72	24.44	24.33	24.13	24.45	45.74	48.99	54.07	34.44
0:00:00	24.68	25.34	24.32	24.32	24.08	24.33	45.15	47.46	53.90	33.92
1:00:00	24.61	25.17	24.34	24.51	24.16	24.33	44.65	46.67	53.74	33.60
2:00:00	24.60	25.06	24.34	24.44	24.07	24.36	44.26	45.87	53.55	32.85
3:00:00	24.42	24.92	24.07	24.03	23.76	24.16	44.02	45.52	53.36	31.42
4:00:00	24.05	24.62	23.72	23.74	23.31	23.81	43.18	43.87	52.96	32.80
5:00:00	23.43	24.13	22.93	23.79	23.53	23.08	43.33	43.55	52.63	36.14

ตารางที่ ก. 4 (ต่อ) ตารางบันทึกอุณหภูมิวันที่ 23 ตุลาคม 2556

Time Hr	12. Temp before heater	13. Temp after heater	14. User reach temp	15. Raw water temp	16. Ambient temp	solar w/m ²
6:00:00	26.41	27.93	49.74	31.21	25.64	47.05
7:00:00	26.82	28.40	51.34	31.15	27.86	263.50
8:00:00	28.16	30.69	48.89	31.12	29.94	526.47
9:00:00	30.14	36.84	46.48	31.20	31.19	757.69
10:00:00	32.23	39.96	47.98	31.17	32.15	639.90
11:00:00	33.26	38.32	48.00	31.29	30.85	310.22
12:00:00	35.29	37.18	48.75	31.16	32.37	739.29
13:00:00	39.18	37.31	51.10	31.19	32.91	648.44
14:00:00	41.37	37.05	52.42	31.13	33.95	744.46
15:00:00	42.62	37.07	52.60	31.36	33.56	549.92
16:00:00	41.61	36.67	53.38	31.40	32.63	298.10
17:00:00	38.07	35.43	52.76	31.56	30.37	32.74
18:00:00	35.05	33.86	51.58	31.58	28.82	0.00
19:00:00	32.94	32.64	52.60	31.49	27.87	0.00
20:00:00	31.48	31.76	53.52	31.47	27.48	0.00
21:00:00	30.37	31.09	53.13	31.53	27.02	0.00
22:00:00	29.46	30.39	51.67	31.55	26.58	0.00
23:00:00	28.77	29.91	51.23	31.51	26.33	0.00
0:00:00	28.26	29.56	51.66	31.53	26.30	0.00
1:00:00	27.87	29.26	50.61	31.50	26.00	0.00
2:00:00	27.53	28.95	49.77	31.49	25.76	0.00
3:00:00	27.21	28.67	49.06	31.49	25.55	0.00
4:00:00	26.90	28.43	50.81	31.41	25.24	0.00
5:00:00	26.65	28.16	49.90	31.30	25.08	0.00

ตารางที่ ก. 5 ตารางบันทึกอุณหภูมิวันที่ 24 ตุลาคม 2556

Time Hr	2. Toal in collector	3. Total out collector	4. Temp1 in	5. Temp1 out	6. Temp2 in	7. Temp2 out	8. Tank center	9. Tank bottom	10. Tank Top	11. User return
6:00:00	21.63	24.31	23.64	23.85	23.50	23.66	41.87	42.42	51.79	35.85
7:00:00	27.55	26.75	30.38	27.42	30.33	26.54	39.63	41.75	49.16	37.20
8:00:00	41.64	42.73	41.43	42.82	41.82	42.19	41.71	43.76	44.51	36.98
9:00:00	44.80	46.73	44.74	46.80	45.03	46.22	44.78	45.10	45.29	36.26
10:00:00	46.72	48.44	46.63	48.51	46.97	48.00	46.85	47.11	47.30	37.87
11:00:00	48.47	50.09	48.34	50.16	48.73	49.62	48.52	48.67	48.85	37.48
12:00:00	50.12	51.59	49.73	51.43	50.41	51.03	50.33	50.57	50.72	35.12
13:00:00	51.50	53.36	51.36	53.36	51.74	52.92	51.56	51.91	52.13	36.12
14:00:00	53.16	54.69	52.95	54.71	53.34	54.27	53.26	53.40	53.55	37.94
15:00:00	53.88	54.90	53.29	54.69	53.91	54.35	54.36	54.56	54.61	37.74
16:00:00	51.70	52.27	50.63	52.63	51.23	52.28	53.85	54.68	54.76	37.83
17:00:00	42.16	45.63	41.27	42.45	40.85	44.32	51.83	54.19	54.72	39.13
18:00:00	32.61	38.13	32.06	31.70	31.55	34.00	50.47	53.56	54.64	37.86
19:00:00	29.03	31.35	28.10	27.58	27.60	28.75	50.06	52.48	54.55	36.84
20:00:00	27.28	28.53	26.24	25.87	25.74	26.57	49.20	50.71	54.46	37.19
21:00:00	26.06	27.12	25.33	25.11	25.00	25.56	48.90	50.61	54.32	34.40
22:00:00	25.46	26.38	24.95	24.81	24.69	25.20	46.47	49.14	54.31	40.45
23:00:00	25.12	25.89	24.70	24.70	24.48	24.84	44.92	48.78	54.12	41.62
0:00:00	24.80	25.56	24.43	24.43	24.11	24.57	44.69	47.41	53.91	33.54
1:00:00	24.58	25.26	24.25	24.30	24.00	24.34	42.74	46.17	53.60	33.20
2:00:00	24.45	25.09	24.11	23.95	23.91	24.15	43.12	45.37	53.33	32.42
3:00:00	24.26	24.79	23.87	23.64	23.52	23.77	42.90	45.02	53.14	31.56
4:00:00	23.96	24.51	23.62	23.45	23.31	23.51	42.28	43.38	52.59	33.42
5:00:00	23.78	24.39	23.50	23.63	23.16	23.72	42.65	42.89	52.49	36.24

ตารางที่ ก. 5 (ต่อ) ตารางบันทึกอุณหภูมิวันที่ 24 ตุลาคม 2556

Time Hr	12. Temp before heater	13. Temp after heater	14. User reach temp	15. Raw water temp	16. Ambient temp	solar w/m ²
6:00:00	26.50	28.12	51.34	31.42	25.63	45.19
7:00:00	27.04	28.74	51.61	31.35	28.51	248.88
8:00:00	28.45	30.97	47.97	31.45	29.71	523.63
9:00:00	30.33	36.59	44.87	31.42	31.20	730.20
10:00:00	32.06	39.70	46.80	31.46	31.54	692.26
11:00:00	33.94	39.43	47.62	31.46	32.43	737.23
12:00:00	36.63	39.17	50.04	31.45	32.52	583.84
13:00:00	38.97	38.02	50.91	31.49	33.41	802.90
14:00:00	41.51	37.59	52.20	31.46	33.75	706.99
15:00:00	42.09	37.16	53.26	31.51	33.19	480.34
16:00:00	40.55	36.50	53.46	31.53	32.22	239.01
17:00:00	37.43	35.27	53.55	31.61	30.32	32.07
18:00:00	34.80	33.89	53.21	31.66	28.97	0.00
19:00:00	32.90	32.74	51.56	31.74	28.15	0.00
20:00:00	31.48	31.83	52.34	31.75	27.58	0.00
21:00:00	30.40	31.10	51.15	31.73	27.26	0.00
22:00:00	29.62	30.61	53.54	31.83	27.14	0.00
23:00:00	28.96	30.12	49.94	31.77	26.75	0.00
0:00:00	28.37	29.70	52.70	31.66	26.29	0.00
1:00:00	28.00	29.43	51.58	31.56	26.32	0.00
2:00:00	27.80	29.23	49.72	31.46	26.23	0.00
3:00:00	27.50	28.95	49.02	31.50	25.95	0.00
4:00:00	27.20	28.74	50.53	31.55	25.84	0.00
5:00:00	26.62	28.23	50.19	31.46	25.18	0.00

ตารางที่ ก. 6 ตารางบันทึกอุณหภูมิวันที่ 25 ตุลาคม 2556

Time Hr	2. Toal in collector	3. Total out collector	4. Temp1 in	5. Temp1 out	6. Temp2 in	7. Temp2 out	8. Tank center	9. Tank buttom	10. Tank Top	11. User return
6:00:00	21.63	24.43	23.86	24.12	23.90	23.83	41.51	41.79	51.27	36.22
7:00:00	27.59	26.74	31.04	27.49	30.84	26.67	41.12	41.29	50.08	37.74
8:00:00	41.43	41.81	41.16	42.09	41.41	41.14	41.68	43.96	46.01	36.98
9:00:00	44.96	46.96	44.88	47.01	45.24	46.36	45.21	45.52	45.67	35.42
10:00:00	47.27	49.46	47.21	49.52	47.49	48.94	47.35	47.64	47.84	34.84
11:00:00	49.47	51.67	49.43	51.67	49.70	50.95	49.49	49.82	50.03	34.37
12:00:00	51.56	53.54	51.67	53.50	51.82	52.89	51.59	51.83	52.04	35.00
13:00:00	52.85	54.61	52.87	54.47	53.16	53.99	53.10	53.62	53.81	36.53
14:00:00	52.75	54.01	52.81	54.03	53.22	53.40	53.52	54.41	54.48	47.00
15:00:00	50.97	50.56	49.96	51.20	50.53	50.21	53.39	54.54	54.55	47.32
16:00:00	50.48	50.40	49.48	50.31	49.73	50.15	51.14	53.78	53.87	49.45
17:00:00	42.04	43.96	40.17	40.92	39.81	42.51	49.93	53.25	53.56	41.93
18:00:00	33.89	35.35	31.67	31.15	30.79	32.55	49.01	52.90	53.49	38.84
19:00:00	29.28	30.58	27.74	27.29	27.09	28.21	48.57	51.95	53.41	36.10
20:00:00	27.25	28.16	26.06	25.64	25.60	26.27	47.81	50.49	53.29	35.62
21:00:00	25.70	26.50	24.67	24.28	24.13	24.79	47.09	50.25	53.19	33.08
22:00:00	24.29	25.24	23.53	23.32	23.03	23.78	44.42	48.13	53.08	34.01
23:00:00	23.49	24.39	22.90	22.80	22.55	23.10	41.49	47.77	52.93	42.28
0:00:00	23.05	23.83	22.53	22.50	22.25	22.72	39.93	46.69	52.78	39.65
1:00:00	22.69	23.42	22.26	22.16	21.99	22.38	38.76	45.82	52.55	38.79
2:00:00	22.40	23.09	22.00	21.87	21.73	22.00	38.32	45.02	52.28	36.03
3:00:00	22.11	22.75	21.70	21.54	21.41	21.65	37.97	44.44	51.97	38.05
4:00:00	21.77	22.43	21.38	21.26	21.10	21.40	39.55	42.54	51.42	33.23
5:00:00	23.91	24.44	23.70	23.88	23.72	23.70	41.83	42.33	51.93	36.34

ตารางที่ ก. 6 (ต่อ) ตารางบันทึกอุณหภูมิวันที่ 25 ตุลาคม 2556

Time Hr	12. Temp before heater	13. Temp after heater	14. User reach temp	15. Raw water temp	16. Ambient temp	solar w/m ²
6:00:00	26.76	28.33	49.82	31.51	25.66	46.18
7:00:00	27.18	28.87	50.32	31.47	27.87	253.17
8:00:00	28.46	30.84	46.91	31.47	29.37	495.61
9:00:00	30.32	35.69	45.07	31.59	31.09	704.82
10:00:00	32.45	39.38	47.18	31.64	32.15	822.45
11:00:00	34.95	40.08	48.89	31.52	32.77	830.75
12:00:00	37.62	39.67	49.43	31.50	32.97	760.62
13:00:00	39.82	38.93	51.00	31.68	32.72	653.55
14:00:00	40.72	38.07	53.07	31.68	32.56	509.20
15:00:00	39.13	36.71	50.53	31.66	31.25	289.73
16:00:00	38.17	35.78	52.89	31.63	31.33	232.43
17:00:00	35.89	34.68	50.80	31.74	29.62	26.40
18:00:00	33.66	33.33	49.65	31.77	28.13	0.00
19:00:00	31.96	32.17	50.83	31.80	27.67	0.00
20:00:00	30.67	31.23	50.51	31.80	26.88	0.00
21:00:00	29.50	30.32	51.20	31.78	25.86	0.00
22:00:00	28.49	29.49	51.75	31.79	25.29	0.00
23:00:00	27.64	28.88	51.31	31.76	24.62	0.00
0:00:00	26.91	28.33	50.79	31.73	24.31	0.00
1:00:00	26.32	27.87	50.89	31.68	24.11	0.00
2:00:00	25.80	27.40	49.70	31.58	23.86	0.00
3:00:00	25.34	27.00	48.79	31.61	23.44	0.00
4:00:00	24.94	26.68	49.34	31.55	23.14	0.00
5:00:00	27.02	28.59	50.05	31.60	25.74	0.00

ตารางที่ ก. 7 (ต่อ) ตารางบันทึกอุณหภูมิวันที่ 26 ตุลาคม 2556

Time Hr	12. Temp before heater	13. Temp after heater	14. User reach temp	15. Raw water temp	16. Ambient temp	solar w/m ²
6:00:00	24.53	26.32	50.00	31.42	23.72	45.23
7:00:00	25.19	27.07	49.42	31.45	25.43	169.60
8:00:00	26.60	28.83	44.68	31.46	27.16	378.94
9:00:00	28.34	31.33	40.83	31.47	28.19	407.23
10:00:00	30.24	34.16	42.33	31.49	29.99	786.96
11:00:00	32.66	36.58	44.53	31.44	30.67	809.33
12:00:00	35.24	36.68	45.63	31.47	30.71	745.76
13:00:00	36.40	36.13	46.43	31.52	30.81	388.56
14:00:00	37.86	35.70	47.50	31.52	31.85	537.87
15:00:00	37.77	35.01	47.02	31.50	30.67	345.88
16:00:00	36.13	34.17	47.73	31.54	30.16	127.12
17:00:00	33.83	32.87	46.87	31.61	28.15	20.28
18:00:00	31.61	31.43	47.21	31.60	26.80	0.00
19:00:00	30.11	30.39	47.34	31.58	26.29	0.00
20:00:00	29.21	29.80	46.22	31.52	26.71	0.00
21:00:00	28.57	29.39	44.35	31.56	26.39	0.00
22:00:00	27.94	28.86	46.07	31.54	25.69	0.00
23:00:00	27.23	28.27	44.45	31.48	24.75	0.00
0:00:00	26.51	27.68	46.86	31.48	24.01	0.00
1:00:00	25.90	27.17	46.98	31.41	23.54	0.00
2:00:00	25.38	26.77	46.39	31.39	23.28	0.00
3:00:00	24.94	26.38	45.20	31.39	23.09	0.00
4:00:00	24.52	26.05	46.04	31.34	22.55	0.00
5:00:00	24.61	26.39	49.68	31.50	23.08	0.00

ตารางที่ ก. 8 ตารางบันทึกอุณหภูมิวันที่ 11 ธันวาคม 2556

Time Hr	2. Toal in collector	3. Total out collector	4. Temp1 in	5. Temp1 out	6. Temp2 in	7. Temp2 out	8. Tank center	9. Tank bottom	10. Tank Top	11. User return
6:00:00	21.63	19.28	16.86	17.51	17.09	18.34	35.02	37.72	45.32	33.26
7:00:00	18.37	19.26	19.31	18.74	20.11	18.70	34.16	38.59	43.75	32.44
8:00:00	31.37	33.85	31.74	34.02	31.74	33.31	34.44	39.61	42.57	32.19
9:00:00	37.41	41.91	36.67	41.75	37.47	41.35	37.51	40.89	41.25	30.07
10:00:00	40.59	45.86	39.91	45.62	40.69	45.27	40.76	42.73	43.68	29.76
11:00:00	43.41	48.45	42.70	48.21	43.49	47.94	43.55	45.46	46.13	30.05
12:00:00	45.96	51.06	45.33	50.85	46.00	50.54	46.14	48.37	49.03	30.84
13:00:00	48.36	52.66	47.69	52.37	48.33	52.15	48.48	50.74	51.14	32.61
14:00:00	49.40	53.23	49.02	52.93	49.40	52.53	49.83	51.93	52.29	34.71
15:00:00	50.33	53.11	50.11	52.92	50.00	52.45	50.83	52.69	52.98	34.48
16:00:00	48.73	50.03	47.88	50.11	47.15	49.74	49.90	52.64	53.00	34.92
17:00:00	40.18	43.25	37.81	39.13	37.10	41.49	48.43	51.86	52.93	34.91
18:00:00	31.75	33.79	28.91	28.70	28.18	30.77	45.08	51.20	52.87	43.26
19:00:00	26.98	28.72	24.37	24.46	23.91	26.17	44.52	50.01	52.70	34.24
20:00:00	24.29	25.91	22.11	22.45	21.90	23.80	44.44	48.30	52.59	33.81
21:00:00	22.83	24.30	20.87	21.36	20.89	22.55	43.66	48.19	52.48	30.98
22:00:00	21.66	23.21	20.18	20.64	20.27	21.70	41.55	46.04	52.33	38.66
23:00:00	21.11	22.53	19.88	20.40	20.08	21.23	40.05	45.78	52.14	32.52
0:00:00	20.74	22.06	19.49	19.91	19.61	20.90	41.01	44.26	51.95	29.55
1:00:00	20.25	21.58	19.09	19.59	19.35	20.49	40.59	43.34	51.79	29.10
2:00:00	19.99	21.27	18.93	19.47	19.25	20.26	39.61	42.30	51.58	36.57
3:00:00	19.64	20.89	18.54	19.07	18.72	19.89	39.15	41.90	51.34	29.43
4:00:00	19.23	20.43	18.09	18.60	18.22	19.50	38.72	40.22	50.94	29.45
5:00:00	18.37	19.60	17.25	17.92	17.51	18.71	35.96	37.10	47.90	30.56

ตารางที่ ก. 8 (ต่อ) ตารางบันทึกอุณหภูมิวันที่ 11 ธันวาคม 2556

Time Hr	12. Temp before heater	13. Temp after heater	14. User reach temp	15. Raw water temp	16. Ambient temp	solar w/m ²
6:00:00	33.40	38.36	46.19	30.32	20.03	14.65
7:00:00	36.30	41.44	42.21	30.23	21.93	154.36
8:00:00	32.19	36.40	41.89	30.29	25.22	400.80
9:00:00	30.38	36.15	41.59	30.37	27.26	624.12
10:00:00	30.31	37.01	41.84	30.34	29.03	789.16
11:00:00	31.94	38.17	44.22	30.33	30.61	877.64
12:00:00	34.67	38.46	47.03	30.33	31.27	875.28
13:00:00	37.53	38.33	49.93	30.32	31.98	783.24
14:00:00	39.46	37.02	50.84	30.38	32.07	571.45
15:00:00	40.15	36.02	51.03	30.37	31.96	421.86
16:00:00	39.28	35.18	50.28	30.43	31.17	188.64
17:00:00	35.66	33.88	49.89	30.55	28.46	20.54
18:00:00	32.62	32.30	49.86	30.56	26.47	0.00
19:00:00	30.39	30.90	50.15	30.63	25.53	0.00
20:00:00	28.77	29.80	49.24	30.57	25.12	0.00
21:00:00	27.51	28.92	48.36	30.53	24.15	0.00
22:00:00	26.50	28.18	50.95	30.50	23.65	0.00
23:00:00	25.73	27.62	48.40	30.44	23.55	0.00
0:00:00	25.02	27.06	49.04	30.39	23.01	0.00
1:00:00	24.45	26.60	47.94	30.34	22.89	0.00
2:00:00	23.95	26.22	47.95	30.32	22.31	0.00
3:00:00	23.34	25.69	47.42	30.27	21.63	0.00
4:00:00	22.90	25.29	47.71	30.30	21.43	0.00
5:00:00	21.66	23.99	45.94	30.40	20.25	0.00

ตารางที่ ก. 9 ตารางบันทึกอุณหภูมิวันที่ 12 ธันวาคม 2556

Time Hr	2. Toal in collector	3. Total out collector	4. Temp1 in	5. Temp1 out	6. Temp2 in	7. Temp2 out	8. Tank center	9. Tank bottom	10. Tank Top	11. User return
6:00:00	21.63	24.26	23.14	23.07	22.98	23.49	40.66	40.98	48.46	34.43
7:00:00	26.50	26.06	29.51	26.09	29.71	25.88	39.90	40.34	47.35	35.42
8:00:00	41.00	41.74	40.69	41.64	40.95	41.50	40.77	42.32	43.06	37.39
9:00:00	43.64	45.49	43.53	45.24	43.75	45.16	43.47	43.60	43.71	36.37
10:00:00	45.93	48.05	45.83	48.02	46.04	47.90	45.72	45.86	46.03	36.86
11:00:00	48.11	50.32	47.98	50.28	48.22	50.15	47.93	48.28	48.47	46.54
12:00:00	50.78	52.84	50.53	52.77	50.87	52.65	50.51	50.62	50.84	44.94
13:00:00	52.96	54.81	52.75	54.58	53.06	54.49	52.77	53.11	53.24	44.90
14:00:00	54.44	56.00	54.53	55.72	54.66	55.65	54.46	54.67	54.73	40.35
15:00:00	54.23	55.13	53.88	54.78	54.41	54.68	55.02	55.41	55.39	39.29
16:00:00	53.11	53.34	52.04	53.50	52.23	53.35	54.58	55.33	55.37	38.94
17:00:00	45.48	47.39	43.69	45.05	43.19	46.76	49.93	54.62	55.30	49.80
18:00:00	36.67	38.49	34.31	33.77	33.30	35.67	48.44	54.12	55.22	43.38
19:00:00	31.50	33.21	29.51	29.10	28.68	30.63	49.23	53.12	55.15	37.26
20:00:00	28.76	30.22	27.23	26.80	26.50	28.03	48.70	51.11	55.06	38.00
21:00:00	27.28	28.56	26.11	25.83	25.50	26.76	47.86	51.01	54.93	34.93
22:00:00	26.28	27.54	25.43	25.22	24.90	26.01	47.02	49.34	54.81	34.69
23:00:00	25.70	26.86	24.97	24.80	24.52	25.54	46.56	49.17	54.68	33.57
0:00:00	25.22	26.31	24.64	24.46	24.21	25.15	45.67	47.60	54.52	33.74
1:00:00	24.90	25.90	24.36	24.22	23.93	24.83	45.23	46.84	54.35	33.56
2:00:00	24.65	25.62	24.25	24.12	23.86	24.66	44.86	46.09	54.22	32.93
3:00:00	24.39	25.29	23.92	23.72	23.51	24.42	44.55	45.73	54.02	31.50
4:00:00	23.99	24.85	23.52	23.31	23.05	23.94	43.68	44.20	53.71	33.18
5:00:00	23.60	24.52	23.16	23.09	22.61	23.70	41.18	41.42	48.89	35.34

ตารางที่ ก. 9 (ต่อ) ตารางบันทึกอุณหภูมิวันที่ 12 ธันวาคม 2556

Time Hr	12. Temp before heater	13. Temp after heater	14. User reach temp	15. Raw water temp	16. Ambient temp	solar w/m ²
6:00:00	25.88	27.27	46.26	31.20	24.81	35.80
7:00:00	26.29	27.80	48.19	31.06	27.30	438.31
8:00:00	27.63	30.38	43.59	31.13	29.37	483.63
9:00:00	29.57	35.51	42.50	31.14	30.97	556.16
10:00:00	31.88	38.74	44.57	31.14	32.26	606.55
11:00:00	34.58	40.07	47.87	31.11	33.19	672.15
12:00:00	38.29	39.94	48.87	31.10	33.72	643.28
13:00:00	41.32	38.98	51.38	31.11	33.82	542.06
14:00:00	42.64	38.46	53.07	31.15	33.69	486.52
15:00:00	42.18	37.91	54.30	31.21	33.03	344.10
16:00:00	41.19	36.97	52.98	31.23	32.54	255.45
17:00:00	38.14	35.70	54.25	31.27	30.88	63.58
18:00:00	35.47	34.37	53.48	31.40	29.16	0.00
19:00:00	33.51	33.17	52.02	31.43	28.63	0.00
20:00:00	32.01	32.16	53.15	31.46	28.00	0.00
21:00:00	30.87	31.34	52.32	31.45	27.52	0.00
22:00:00	29.99	30.71	52.69	31.48	27.10	0.00
23:00:00	29.30	30.20	51.25	31.53	26.75	0.00
0:00:00	28.67	29.73	51.91	31.44	26.29	0.00
1:00:00	28.18	29.37	51.15	31.45	25.93	0.00
2:00:00	27.76	29.03	50.19	31.41	25.57	0.00
3:00:00	27.34	28.65	50.73	31.42	25.25	0.00
4:00:00	26.90	28.29	51.11	31.42	25.00	0.00
5:00:00	26.14	27.48	46.69	31.26	24.56	0.00

ตารางที่ ก. 10 ตารางบันทึกอุณหภูมิวันที่ 13 ธันวาคม 2556

Time Hr	2. Toal in collector	3. Total out collector	4. Temp1 in	5. Temp1 out	6. Temp2 in	7. Temp2 out	8. Tank center	9. Tank buttom	10. Tank Top	11. User return
6:00:00	21.63	20.64	18.52	19.24	18.85	19.84	38.26	38.81	50.10	33.34
7:00:00	19.97	20.82	20.39	20.26	21.18	20.32	37.55	38.25	48.71	33.54
8:00:00	31.12	33.05	32.82	33.45	32.50	32.54	37.34	38.13	46.17	32.73
9:00:00	37.84	42.04	37.10	41.79	37.93	41.45	37.74	42.44	43.33	30.67
10:00:00	42.36	47.11	41.73	46.90	42.46	46.67	42.64	43.99	44.94	30.30
11:00:00	44.66	49.46	43.94	49.24	44.70	48.97	44.68	46.73	47.40	31.37
12:00:00	47.15	52.11	46.41	51.86	47.16	51.57	47.25	49.39	49.99	31.79
13:00:00	48.84	53.83	48.23	53.61	48.80	53.23	48.95	51.70	52.32	37.16
14:00:00	50.25	54.73	49.96	54.51	50.23	54.10	50.86	53.02	53.46	38.95
15:00:00	51.23	54.24	50.97	54.04	51.03	53.56	51.65	53.98	54.33	36.58
16:00:00	48.30	49.13	47.44	49.36	46.67	48.82	48.72	53.83	54.25	36.79
17:00:00	40.61	43.22	38.39	39.89	37.53	41.87	47.09	53.00	54.15	35.45
18:00:00	32.50	34.46	29.74	29.55	29.05	31.53	43.77	52.21	54.05	34.41
19:00:00	27.92	29.62	25.48	25.64	25.13	27.23	40.65	50.55	53.91	33.82
20:00:00	25.89	27.30	23.98	24.39	24.08	25.51	39.84	48.48	53.80	43.14
21:00:00	24.87	26.22	23.35	23.67	23.39	24.72	36.47	48.14	53.67	43.81
22:00:00	23.75	25.15	22.35	22.74	22.37	23.74	35.70	46.67	53.49	40.75
23:00:00	22.84	24.28	21.58	22.04	21.60	23.00	33.77	46.05	53.30	40.98
0:00:00	22.16	23.52	20.86	21.44	21.09	22.35	33.18	44.42	52.88	37.41
1:00:00	21.65	22.99	20.45	21.05	20.60	21.87	32.77	43.35	52.39	36.23
2:00:00	21.23	22.52	20.10	20.78	20.31	21.51	32.97	42.54	52.01	31.31
3:00:00	20.99	22.17	19.89	20.52	20.07	21.24	33.24	41.94	51.66	29.15
4:00:00	20.81	21.90	19.72	20.36	19.92	21.03	34.25	39.80	50.90	29.51
5:00:00	19.54	20.77	18.45	19.14	18.61	19.87	38.74	39.51	50.92	32.44

ตารางที่ ก. 10 (ต่อ) ตารางบันทึกอุณหภูมิวันที่ 13 ธันวาคม 2556

Time Hr	12. Temp before heater	13. Temp after heater	14. User reach temp	15. Raw water temp	16. Ambient temp	solar w/m ²
6:00:00	22.74	25.19	49.01	30.07	21.59	10.42
7:00:00	22.74	25.29	49.55	30.02	23.35	136.69
8:00:00	23.73	26.50	48.07	30.06	26.23	349.83
9:00:00	25.56	30.27	46.82	30.09	28.65	568.97
10:00:00	27.84	33.90	46.25	30.10	30.53	735.11
11:00:00	30.57	36.34	45.75	30.11	31.73	812.57
12:00:00	33.87	37.55	48.51	30.09	32.50	848.56
13:00:00	37.29	37.93	50.88	30.09	32.41	812.80
14:00:00	40.22	37.30	52.08	30.12	33.14	669.69
15:00:00	41.37	36.60	52.48	30.24	32.42	434.24
16:00:00	40.11	35.72	52.62	30.29	31.09	198.24
17:00:00	36.50	34.55	52.22	30.45	29.44	21.59
18:00:00	33.46	33.08	52.61	30.59	27.44	0.00
19:00:00	31.39	31.88	51.42	30.64	26.93	0.00
20:00:00	30.07	31.15	51.77	30.66	26.90	0.00
21:00:00	28.94	30.42	50.75	30.78	26.11	0.00
22:00:00	27.91	29.68	52.28	30.78	25.37	0.00
23:00:00	27.03	28.99	51.93	30.77	24.65	0.00
0:00:00	26.19	28.32	51.36	30.77	24.00	0.00
1:00:00	25.50	27.77	49.33	30.77	23.57	0.00
2:00:00	24.87	27.20	47.53	30.74	23.22	0.00
3:00:00	24.34	26.65	47.49	30.66	23.11	0.00
4:00:00	23.93	26.26	48.32	30.60	22.99	0.00
5:00:00	23.08	25.45	47.97	30.12	21.70	0.00

ตารางที่ ก. 11 ตารางบันทึกอุณหภูมิวันที่ 14 ธันวาคม 2556

Time Hr	2. Toal in collector	3. Total out collector	4. Temp1 in	5. Temp1 out	6. Temp2 in	7. Temp2 out	8. Tank center	9. Tank bottom	10. Tank Top	11. User return
6:00:00	21.63	21.41	19.39	20.00	19.69	20.70	34.49	37.62	48.96	32.22
7:00:00	20.90	21.61	21.41	21.14	22.04	21.15	33.79	36.75	47.03	34.21
8:00:00	33.28	35.75	32.78	35.64	33.13	35.17	33.94	37.77	41.94	35.14
9:00:00	36.68	41.10	35.93	40.87	36.77	40.60	36.76	40.21	40.58	37.26
10:00:00	39.93	45.03	39.19	44.78	40.00	44.52	40.15	41.96	42.74	38.14
11:00:00	42.31	47.85	41.69	47.63	42.33	47.29	42.48	44.85	45.56	40.49
12:00:00	45.07	50.48	44.43	50.26	45.10	49.90	45.17	47.50	48.28	40.73
13:00:00	46.88	51.66	46.55	51.40	46.93	50.99	47.13	49.71	50.37	38.71
14:00:00	47.24	51.10	47.01	50.84	47.26	50.43	47.46	50.93	51.15	43.19
15:00:00	47.91	49.79	47.66	49.36	47.80	48.93	48.20	50.95	51.04	44.83
16:00:00	48.08	49.31	47.39	49.23	47.46	48.81	47.41	50.81	50.96	40.06
17:00:00	41.24	42.61	38.56	41.28	40.73	39.84	42.82	50.27	50.58	35.43
18:00:00	32.25	34.51	28.12	31.87	30.56	30.22	42.07	49.90	50.51	34.36
19:00:00	27.41	29.34	23.76	26.89	25.85	25.55	40.39	48.72	50.38	40.70
20:00:00	24.98	26.59	21.94	24.52	23.75	23.60	39.17	47.45	50.24	34.46
21:00:00	23.76	25.17	21.20	23.51	22.89	22.84	38.03	47.28	50.18	33.70
22:00:00	23.18	24.54	21.36	23.17	22.61	22.75	37.65	45.46	50.01	31.47
23:00:00	22.78	24.13	21.00	22.98	22.53	22.44	35.56	45.04	49.88	29.76
0:00:00	22.23	23.62	20.60	22.53	22.16	22.07	35.33	43.08	49.69	35.15
1:00:00	21.79	23.19	20.20	22.12	21.71	21.65	33.65	42.15	49.42	34.83
2:00:00	21.41	22.83	19.77	21.82	21.44	21.41	33.31	41.35	49.18	30.07
3:00:00	21.08	22.48	19.47	21.53	21.06	21.08	33.82	40.85	48.92	28.53
4:00:00	20.77	22.13	19.28	21.18	20.79	20.86	35.01	38.92	48.27	29.47
5:00:00	20.59	21.67	19.56	20.14	19.79	20.87	35.30	38.48	50.16	30.93

ตารางที่ ก. 11 (ต่อ) ตารางบันทึกอุณหภูมิวันที่ 14 ธันวาคม 2556

Time Hr	12. Temp before heater	13. Temp after heater	14. User reach temp	15. Raw water temp	16. Ambient temp	solar w/m ²
6:00:00	23.31	25.77	50.20	30.62	22.53	5.89
7:00:00	23.37	25.88	48.45	30.63	24.75	154.51
8:00:00	24.44	27.11	48.42	30.66	28.33	379.71
9:00:00	26.35	31.51	44.64	30.77	30.29	617.65
10:00:00	28.64	35.17	41.39	30.62	31.50	788.59
11:00:00	31.48	37.74	44.49	30.73	32.50	859.21
12:00:00	34.49	38.53	46.31	30.69	33.04	851.11
13:00:00	37.28	38.56	48.84	30.67	32.95	704.28
14:00:00	39.04	37.47	49.96	30.68	32.95	543.16
15:00:00	38.66	36.53	48.42	30.80	31.89	320.54
16:00:00	38.53	35.84	49.78	30.78	31.57	287.09
17:00:00	35.83	34.73	48.98	30.91	29.75	22.94
18:00:00	33.06	33.13	47.70	31.06	27.90	0.00
19:00:00	31.03	31.75	49.05	31.03	26.84	0.00
20:00:00	29.57	30.70	47.86	31.00	26.06	0.00
21:00:00	28.47	29.88	47.93	31.16	25.72	0.00
22:00:00	27.68	29.30	48.28	31.09	25.71	0.00
23:00:00	26.97	28.77	48.24	31.02	25.11	0.00
0:00:00	26.33	28.19	48.26	30.99	24.58	0.00
1:00:00	25.74	27.74	46.83	30.94	24.27	0.00
2:00:00	25.28	27.33	46.32	30.93	23.77	0.00
3:00:00	24.79	26.89	46.01	30.84	23.58	0.00
4:00:00	24.34	26.49	46.38	30.86	23.15	0.00
5:00:00	23.58	25.95	48.48	30.58	22.65	0.00

ตารางที่ ก. 12 ตารางบันทึกอุณหภูมิวันที่ 15 ธันวาคม 2556

Time Hr	2. Toal in collector	3. Total out collector	4. Temp1 in	5. Temp1 out	6. Temp2 in	7. Temp2 out	8. Tank center	9. Tank buttom	10. Tank Top	11. User return
6:00:00	21.63	21.64	18.97	20.71	20.38	20.44	33.26	36.89	45.93	33.96
7:00:00	21.19	22.12	21.44	21.57	21.97	21.74	31.90	37.65	43.11	33.96
8:00:00	27.40	29.13	28.71	29.16	29.13	29.01	32.31	38.21	42.05	32.63
9:00:00	36.93	41.54	36.30	41.24	37.07	40.94	37.07	39.70	40.14	35.77
10:00:00	39.43	44.47	38.83	44.17	39.58	43.80	39.58	41.42	42.34	35.15
11:00:00	41.80	47.51	41.12	47.24	41.88	46.87	41.89	44.13	44.97	38.15
12:00:00	43.86	49.39	43.23	49.11	43.90	48.75	44.19	46.98	47.53	39.16
13:00:00	47.03	51.30	46.25	51.00	47.03	50.75	47.09	49.05	49.58	38.98
14:00:00	47.39	50.80	47.25	50.38	47.46	49.97	47.78	50.22	50.50	35.56
15:00:00	45.36	47.03	44.56	46.54	45.22	46.57	46.74	50.35	50.57	34.90
16:00:00	43.35	44.31	42.48	44.00	42.38	43.91	44.93	49.91	50.35	39.48
17:00:00	39.07	40.61	37.80	39.36	37.22	40.29	44.74	49.44	50.26	35.29
18:00:00	32.30	34.54	30.34	30.34	30.03	32.20	42.31	48.85	50.12	39.75
19:00:00	28.69	30.26	26.77	26.77	26.66	28.14	42.50	47.86	49.96	34.07
20:00:00	26.72	28.01	24.97	25.14	25.06	26.26	42.43	46.11	49.86	33.83
21:00:00	25.57	26.65	24.03	24.27	24.26	25.22	37.92	45.78	49.74	39.95
22:00:00	24.76	25.83	23.54	23.74	23.71	24.65	35.87	44.72	49.61	39.40
23:00:00	23.99	25.13	22.79	23.03	22.96	23.95	36.02	44.58	49.46	35.74
0:00:00	23.70	24.75	22.70	23.32	23.26	23.85	37.86	43.06	49.31	31.38
1:00:00	23.93	24.81	23.03	23.94	23.80	24.23	38.36	42.31	49.19	30.44
2:00:00	24.04	24.85	23.06	24.15	23.99	24.37	38.67	41.48	48.98	29.68
3:00:00	24.01	24.76	22.89	24.15	24.02	24.15	38.35	41.08	48.78	28.76
4:00:00	23.47	24.40	22.10	23.64	23.50	23.15	38.04	39.55	48.39	30.16
5:00:00	20.22	21.85	18.99	20.95	20.54	20.54	33.26	37.56	47.07	34.04

ตารางที่ ก. 12 (ต่อ) ตารางบันทึกอุณหภูมิวันที่ 15 ธันวาคม 2556

Time Hr	12. Temp before heater	13. Temp after heater	14. User reach temp	15. Raw water temp	16. Ambient temp	solar w/m2
6:00:00	23.63	25.90	45.99	30.71	23.08	6.80
7:00:00	36.24	41.69	44.71	30.62	24.66	64.81
8:00:00	34.27	38.79	42.00	30.68	27.18	301.96
9:00:00	32.57	38.11	40.30	30.68	29.46	603.74
10:00:00	32.18	38.01	39.41	30.70	30.30	677.10
11:00:00	33.29	38.93	43.57	30.67	31.75	869.82
12:00:00	35.65	39.40	46.51	30.73	32.75	835.17
13:00:00	38.02	39.34	47.51	30.72	33.51	703.62
14:00:00	38.78	38.03	48.90	30.79	32.55	384.00
15:00:00	37.20	36.75	47.69	30.86	32.01	157.37
16:00:00	36.11	35.72	48.58	30.80	31.82	152.59
17:00:00	34.66	34.74	47.33	31.01	30.53	36.97
18:00:00	32.74	33.34	48.27	30.99	29.00	0.00
19:00:00	31.18	32.10	46.40	30.95	28.04	0.00
20:00:00	29.93	31.10	48.22	30.91	27.16	0.00
21:00:00	28.92	30.26	48.32	30.88	26.68	0.00
22:00:00	28.15	29.66	47.27	30.94	26.04	0.00
23:00:00	27.45	29.22	45.03	30.95	25.63	0.00
0:00:00	27.13	29.03	46.12	30.88	25.86	0.00
1:00:00	26.90	28.89	45.94	30.99	25.82	0.00
2:00:00	26.60	28.66	44.96	30.90	25.63	0.00
3:00:00	26.34	28.35	44.37	30.85	25.15	0.00
4:00:00	25.99	28.01	45.61	30.83	24.87	0.00
5:00:00	23.94	26.15	46.60	30.78	23.00	0.00

ตารางที่ ก. 13 ตารางบันทึกอุณหภูมิวันที่ 16 ธันวาคม 2556

Time Hr	2. Toal in collector	3. Total out collector	4. Temp1 in	5. Temp1 out	6. Temp2 in	7. Temp2 out	8. Tank center	9. Tank bottom	10. Tank Top	11. User return
6:00:00	21.63	23.83	21.98	23.02	22.96	22.92	36.81	37.93	47.07	33.07
7:00:00	23.78	24.27	24.99	23.91	25.26	23.96	36.05	37.34	45.74	34.69
8:00:00	30.04	31.22	31.78	31.44	31.74	30.86	35.89	37.28	43.94	34.27
9:00:00	35.92	38.52	35.79	38.07	36.08	37.69	36.11	38.48	41.52	32.91
10:00:00	37.16	41.93	36.53	41.63	37.31	41.35	37.23	40.95	41.39	37.90
11:00:00	39.86	43.32	39.66	42.99	40.04	42.63	40.28	42.08	42.41	38.85
12:00:00	40.60	43.80	40.34	43.46	40.78	43.17	40.99	42.69	42.96	37.88
13:00:00	42.48	47.56	41.87	47.28	42.52	46.95	42.59	44.20	45.27	36.34
14:00:00	43.07	46.25	42.71	45.70	43.28	45.50	43.48	46.32	46.54	34.59
15:00:00	41.26	42.61	40.36	42.15	41.50	42.18	42.79	46.41	46.55	33.38
16:00:00	37.84	39.02	36.98	38.32	37.29	38.62	41.45	46.07	46.47	32.70
17:00:00	34.94	36.19	34.00	35.18	34.39	35.82	41.99	45.20	46.45	32.91
18:00:00	30.96	32.72	29.48	29.60	29.33	31.10	38.97	44.74	46.39	40.04
19:00:00	28.07	29.58	26.52	26.55	26.48	27.85	38.49	44.02	46.32	35.31
20:00:00	26.04	27.32	24.43	24.54	24.37	25.66	39.38	42.95	46.22	33.27
21:00:00	24.91	26.09	23.49	23.97	23.85	24.79	38.91	42.87	46.11	31.03
22:00:00	24.50	25.55	23.40	23.96	23.87	24.56	38.01	41.40	45.99	30.34
23:00:00	23.59	24.67	22.50	22.63	22.67	23.70	37.46	41.29	45.86	28.49
0:00:00	22.55	23.64	21.44	21.71	21.69	22.55	37.71	39.94	45.69	31.26
1:00:00	21.74	22.86	20.66	21.06	21.09	21.88	37.02	39.26	45.48	30.38
2:00:00	21.12	22.24	20.08	20.54	20.64	21.34	36.92	38.69	45.30	26.93
3:00:00	20.79	21.81	19.83	20.33	20.45	20.95	36.64	38.28	45.08	25.67
4:00:00	20.63	21.49	19.62	20.19	20.37	20.79	36.05	37.79	44.27	26.73
5:00:00	23.50	24.00	21.84	23.17	23.06	22.91	37.45	38.53	47.86	32.71

ตารางที่ ก. 13 (ต่อ) ตารางบันทึกอุณหภูมิวันที่ 16 ธันวาคม 2556

Time Hr	12. Temp before heater	13. Temp after heater	14. User reach temp	15. Raw water temp	16. Ambient temp	solar w/m ²
6:00:00	25.42	27.53	46.55	30.73	24.53	16.76
7:00:00	25.64	27.78	46.27	30.63	25.59	98.99
8:00:00	26.47	28.65	45.46	30.83	26.68	206.99
9:00:00	27.66	29.78	45.00	30.73	28.29	241.69
10:00:00	29.26	31.84	43.37	30.63	30.69	652.15
11:00:00	31.19	34.15	41.25	30.64	31.37	359.56
12:00:00	32.25	34.48	41.78	30.72	31.45	417.26
13:00:00	34.42	35.06	43.48	30.65	32.09	767.07
14:00:00	36.01	34.91	44.49	30.69	31.40	354.48
15:00:00	34.51	34.34	44.02	30.78	29.94	100.66
16:00:00	33.07	33.47	44.72	30.75	29.78	77.07
17:00:00	32.16	32.74	43.84	30.76	28.72	21.34
18:00:00	30.98	31.88	45.24	30.97	28.23	0.00
19:00:00	29.87	31.04	43.92	30.92	27.18	0.00
20:00:00	28.84	30.12	43.05	30.90	26.26	0.00
21:00:00	28.05	29.50	42.15	30.82	26.28	0.00
22:00:00	27.51	29.03	43.66	30.87	25.30	0.00
23:00:00	26.54	28.01	42.19	30.86	23.86	0.00
0:00:00	25.60	27.10	43.09	30.80	23.11	0.00
1:00:00	24.68	26.28	42.32	30.74	22.45	0.00
2:00:00	23.94	25.57	40.58	30.71	22.08	0.00
3:00:00	23.33	24.95	40.14	30.52	21.71	0.00
4:00:00	29.81	33.26	41.65	30.69	21.56	0.00
5:00:00	25.67	27.77	46.22	30.82	24.59	0.00

ตารางที่ ก. 14 ตารางบันทึกอุณหภูมิวันที่ 17 ธันวาคม 2556

Time Hr	2. Toal in collector	3. Total out collector	4. Temp1 in	5. Temp1 out	6. Temp2 in	7. Temp2 out	8. Tank center	9. Tank bottom	10. Tank Top	11. User return
6:00:00	21.63	20.55	18.58	18.93	19.11	19.70	35.16	38.65	42.66	28.58
7:00:00	19.37	20.19	19.47	19.32	20.59	19.51	35.13	38.88	42.34	29.28
8:00:00	31.73	35.12	31.90	35.14	32.16	34.25	35.12	40.23	41.67	28.20
9:00:00	37.07	42.42	36.30	42.15	37.21	41.71	37.16	40.86	41.22	26.74
10:00:00	39.99	46.49	39.34	46.22	40.22	45.83	40.53	42.55	43.97	34.78
11:00:00	42.56	48.45	41.83	48.10	42.76	47.84	42.90	45.41	46.09	38.40
12:00:00	45.23	51.14	44.49	50.78	45.37	50.53	45.65	48.25	48.97	41.41
13:00:00	48.24	53.39	47.41	53.04	48.26	52.80	48.41	50.70	51.36	38.39
14:00:00	48.98	53.59	48.52	53.25	48.97	52.89	49.46	52.23	52.47	41.02
15:00:00	49.79	53.00	49.60	52.73	49.54	52.23	50.42	52.83	53.21	42.48
16:00:00	46.61	48.89	45.08	48.37	46.43	47.39	48.68	52.74	53.10	37.03
17:00:00	37.44	40.51	34.24	38.31	36.70	36.27	44.45	51.88	53.00	30.84
18:00:00	28.68	31.34	24.54	28.29	27.07	26.48	42.78	51.05	52.89	30.31
19:00:00	23.37	25.72	19.64	22.99	21.97	21.53	43.60	49.43	52.73	29.84
20:00:00	20.34	22.38	16.86	20.05	19.23	18.74	43.88	47.22	52.58	30.47
21:00:00	17.83	19.96	14.55	17.88	16.99	16.75	43.30	47.18	52.44	27.44
22:00:00	16.04	18.35	13.25	16.51	15.62	15.54	42.31	45.08	52.26	26.78
23:00:00	14.95	17.24	12.38	15.57	14.67	14.72	41.63	44.87	52.06	24.51
0:00:00	14.18	16.37	11.75	14.88	13.94	13.93	39.95	42.69	51.86	24.33
1:00:00	13.73	15.79	11.45	14.37	13.55	13.69	39.14	41.71	51.66	25.33
2:00:00	13.40	15.39	11.21	14.11	13.26	13.36	38.59	40.81	51.44	24.46
3:00:00	13.04	15.03	10.67	13.81	12.93	13.03	38.22	40.38	51.23	22.51
4:00:00	12.67	14.70	10.42	13.49	12.62	12.77	37.42	38.39	50.77	25.25
5:00:00	21.10	21.08	19.21	19.57	19.73	20.42	35.59	38.00	43.14	28.76

ตารางที่ ก. 14 (ต่อ) ตารางบันทึกอุณหภูมิวันที่ 17 ธันวาคม 2556

Time Hr	12. Temp before heater	13. Temp after heater	14. User reach temp	15. Raw water temp	16. Ambient temp	solar w/m ²
6:00:00	35.66	40.50	39.67	30.59	20.53	5.94
7:00:00	36.55	42.11	39.38	30.54	20.85	161.53
8:00:00	34.65	39.16	38.81	30.44	22.83	471.34
9:00:00	30.55	36.30	39.00	30.18	24.24	698.40
10:00:00	29.13	36.24	42.27	30.46	25.73	850.62
11:00:00	29.28	36.27	43.46	30.32	27.14	932.56
12:00:00	31.37	36.10	45.46	30.28	27.78	940.65
13:00:00	34.07	35.66	48.49	30.38	28.34	876.07
14:00:00	36.54	33.83	50.68	30.39	28.27	696.97
15:00:00	37.75	32.74	51.15	30.42	27.83	494.33
16:00:00	36.51	31.86	50.69	30.46	26.58	202.58
17:00:00	32.57	30.73	50.68	30.49	24.90	20.78
18:00:00	29.72	29.34	49.79	30.56	23.62	0.00
19:00:00	27.43	27.98	48.57	30.51	22.43	0.00
20:00:00	25.52	26.74	48.75	30.49	20.99	0.00
21:00:00	23.88	25.57	46.12	30.44	19.99	0.00
22:00:00	22.55	24.56	49.16	30.46	18.90	0.00
23:00:00	21.31	23.60	46.42	30.44	17.91	0.00
0:00:00	20.33	22.83	49.20	30.42	17.71	0.00
1:00:00	19.53	22.20	48.15	30.36	17.11	0.00
2:00:00	18.86	21.65	46.86	30.35	16.92	0.00
3:00:00	18.35	21.21	45.59	30.30	16.73	0.00
4:00:00	17.89	20.77	46.99	30.28	16.34	0.00
5:00:00	36.06	41.24	41.45	30.70	21.03	0.00

