

## รายการอ้างอิง

### ภาษาไทย

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จุฬาลงกรณ์มหาวิทยาลัย



ภาคผนวก

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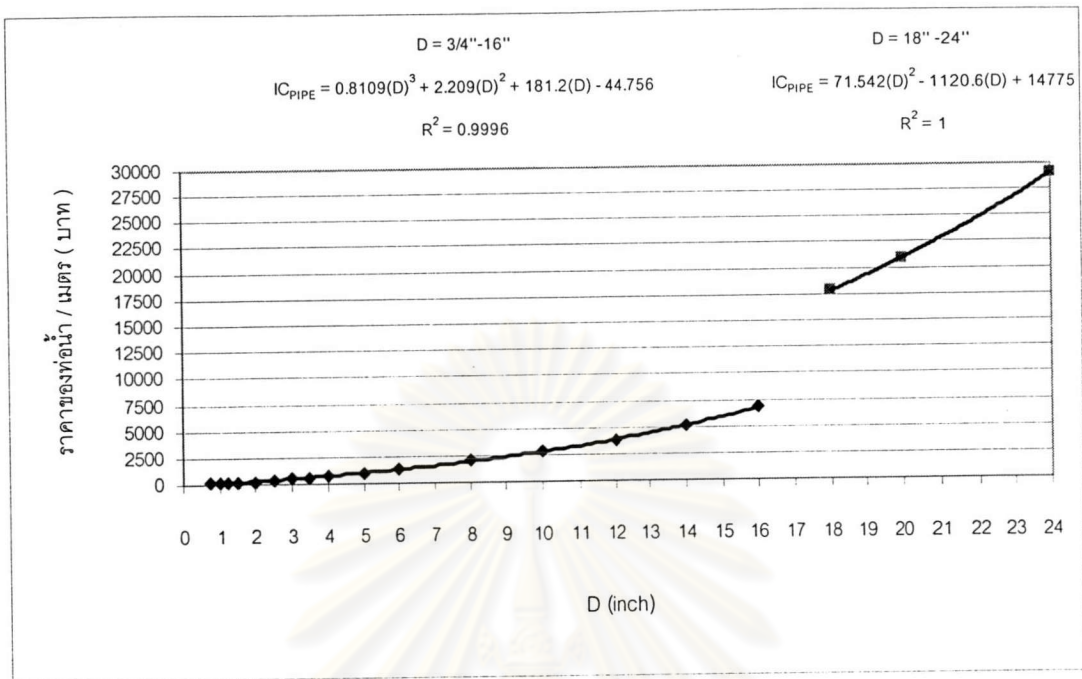
**ภาคผนวก ก.**

กราฟแสดงความสัมพันธ์ของราคาท่อน้ำเย็น และอุปกรณ์ประกอบระบบท่อ  
กับขนาดเส้นผ่านศูนย์กลาง ( D )

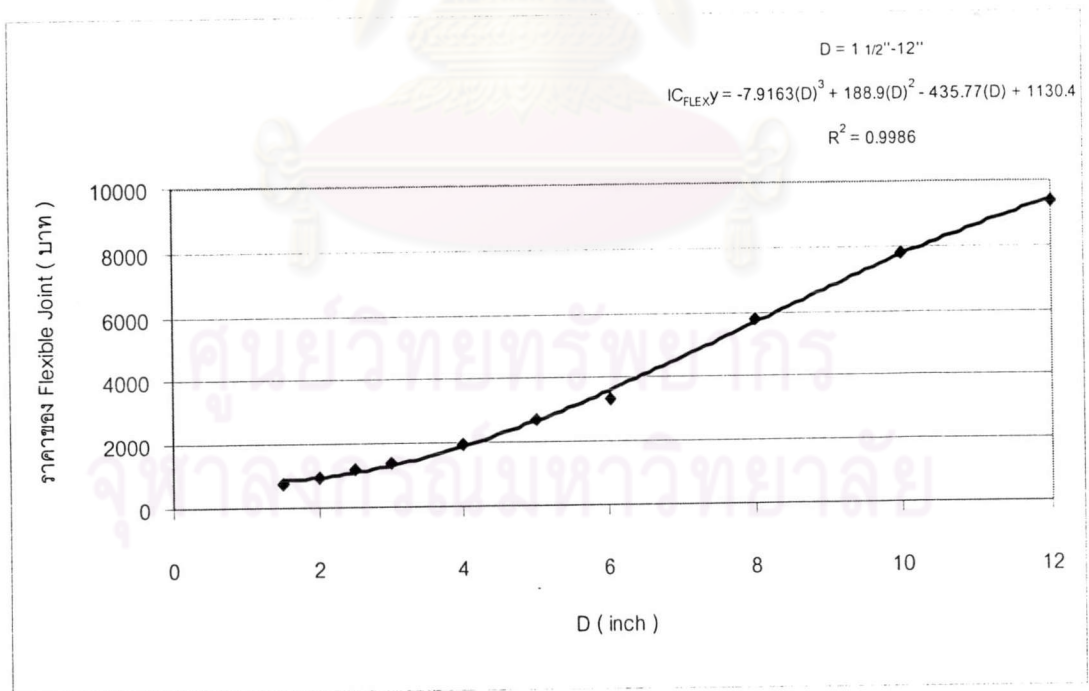
( ราคาทั้งหมดเป็นราคาที่นำเสนอโดยบริษัทเอกชนในเดือนกรกฎาคม 2545 )



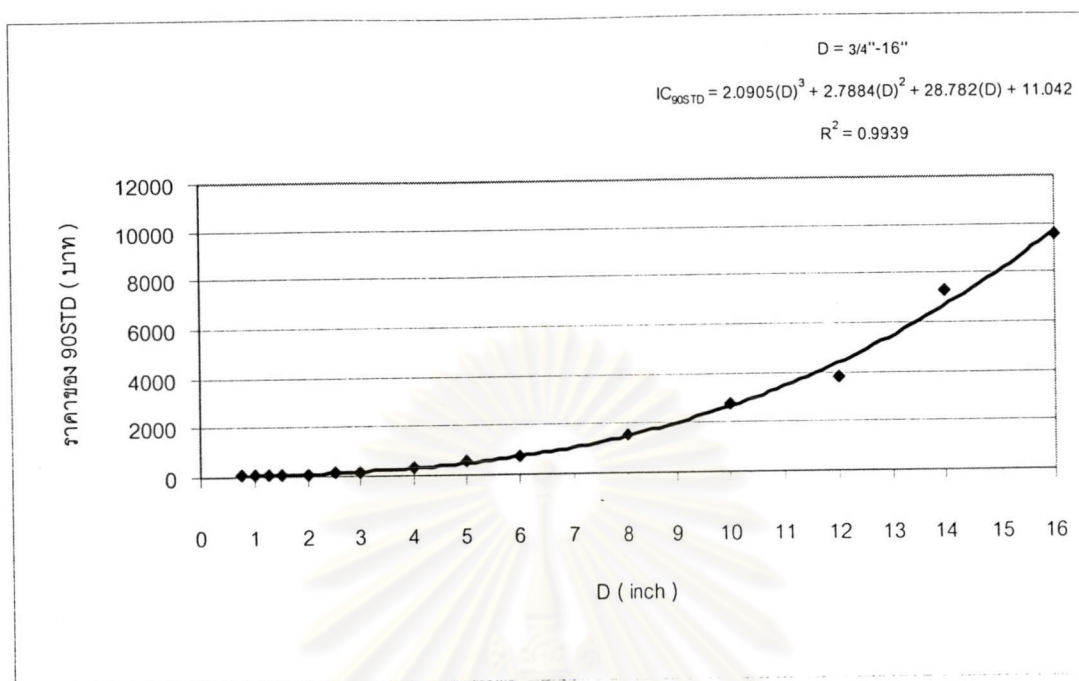
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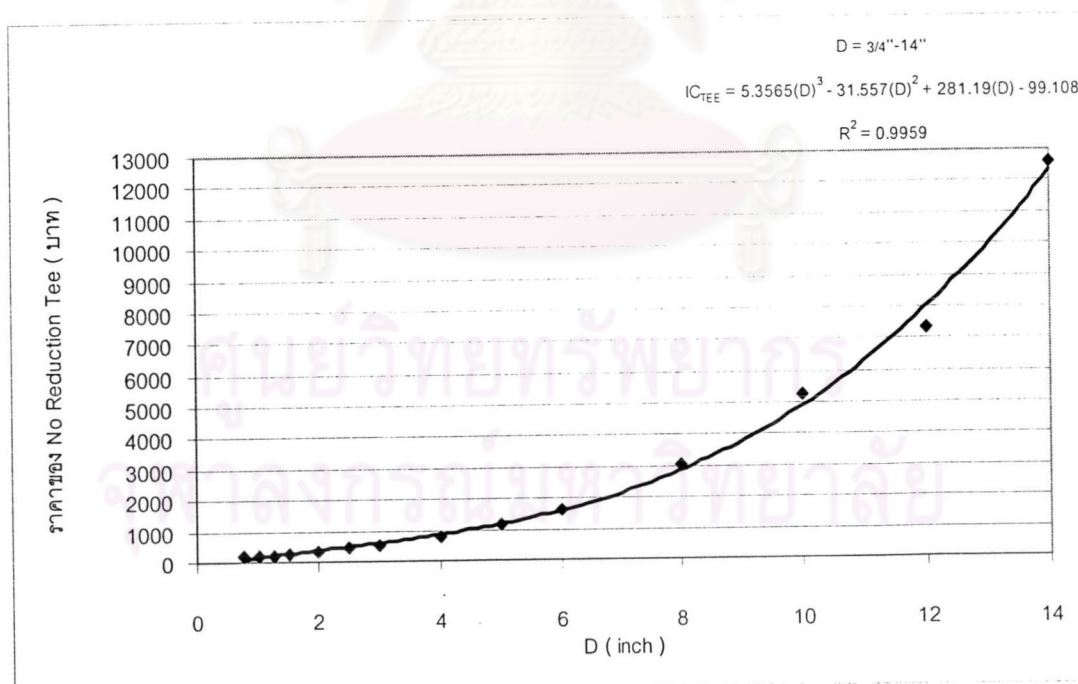
รูปที่ ก.1 แสดงเส้นแนวโน้มและสมการของราคาท่อต่อความยาว 1 เมตรพร้อมด้วยค่า  $R^2$



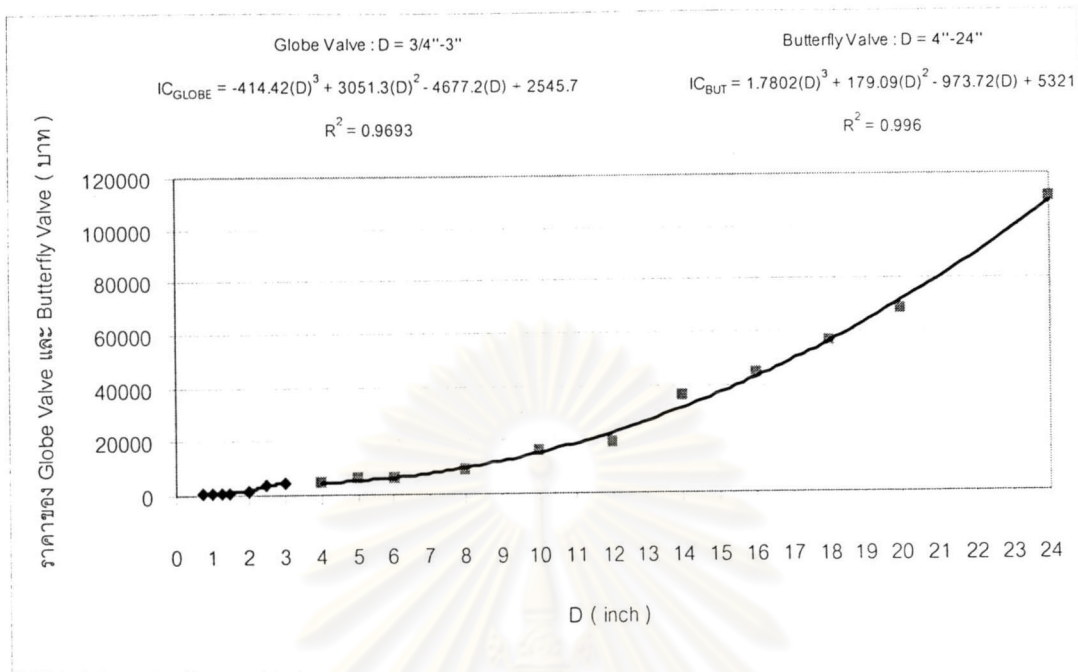
รูปที่ ก.2. แสดงเส้นแนวโน้มและสมการของราคาของ Flexible Joint พร้อมด้วยค่า  $R^2$



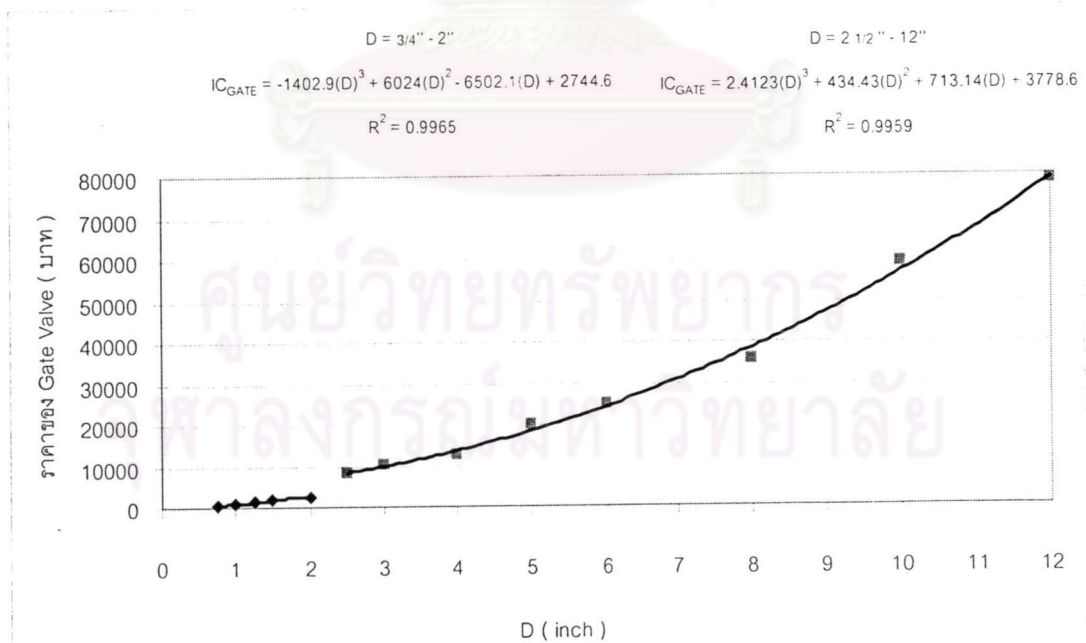
รูปที่ ก.3 แสดงเส้นแนวโน้มและสมการของราคาของ 90STD พร้อมด้วยค่า  $R^2$



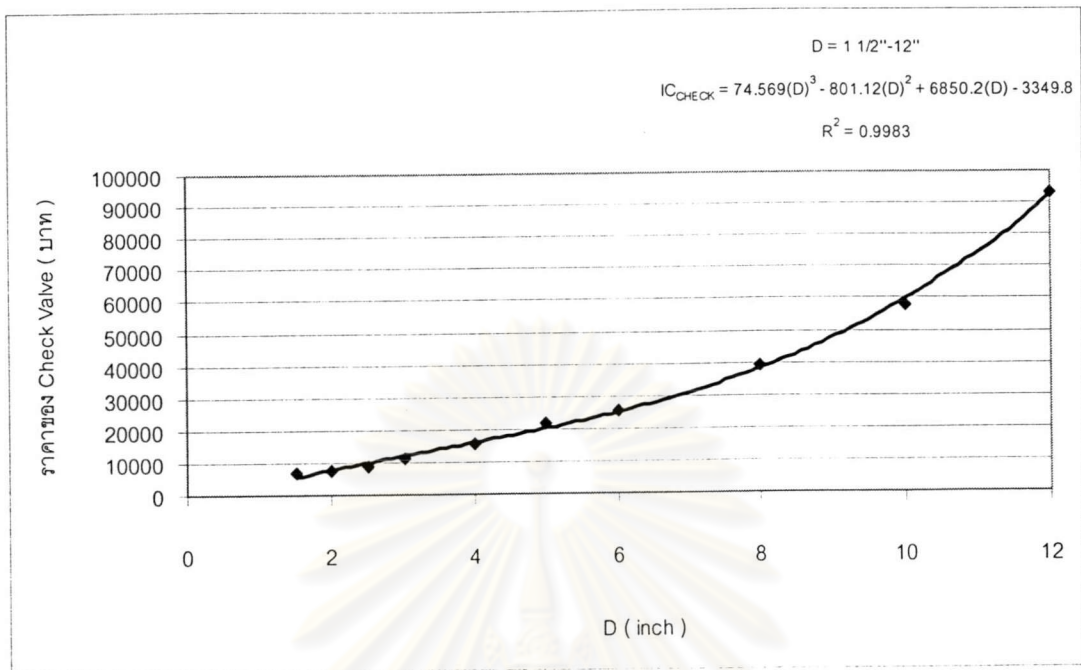
รูปที่ ก.4 แสดงเส้นแนวโน้มและสมการของราคาของ No Reduction Tee พร้อมด้วยค่า  $R^2$



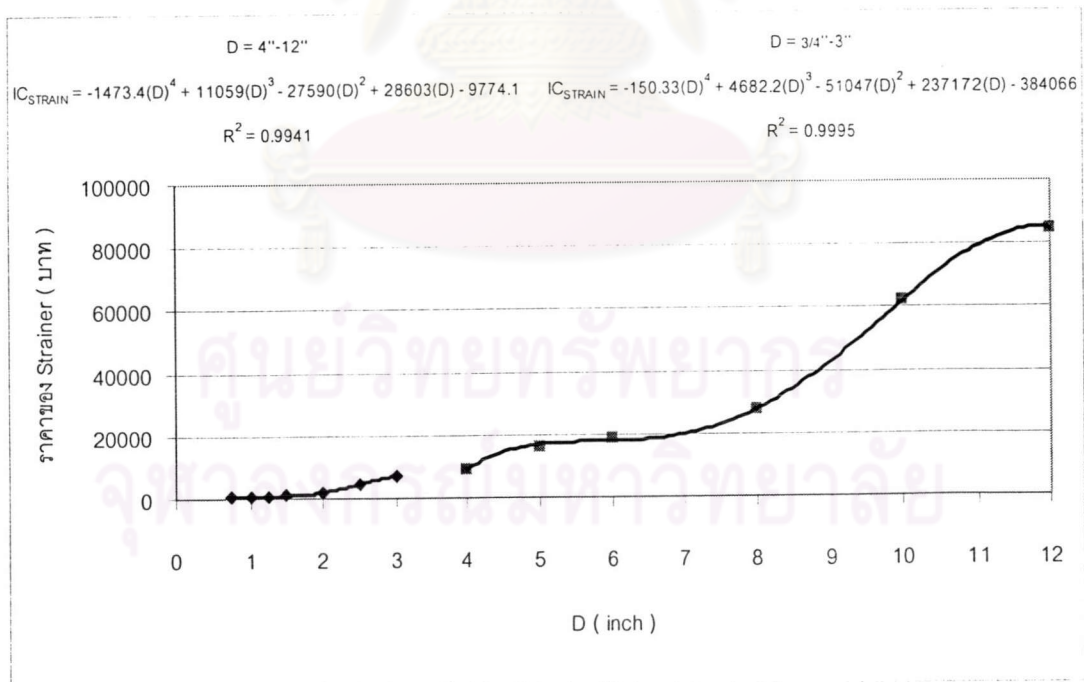
รูปที่ ก.5 แสดงเส้นแนวโน้มและสมการของราคาของ Globe Valve & Butterfly Valve พร้อมด้วยค่า  $R^2$



รูปที่ ก.6 แสดงเส้นแนวโน้มและสมการของราคา Gate Valve พร้อมด้วยค่า  $R^2$



รูปที่ ก.7 แสดงเส้นแนวโน้มและสมการของราคา Check Valve พร้อมด้วยค่า R<sup>2</sup>



รูปที่ ก.8 แสดงเส้นแนวโน้มและสมการของราคา Strainer พร้อมด้วยค่า R<sup>2</sup>

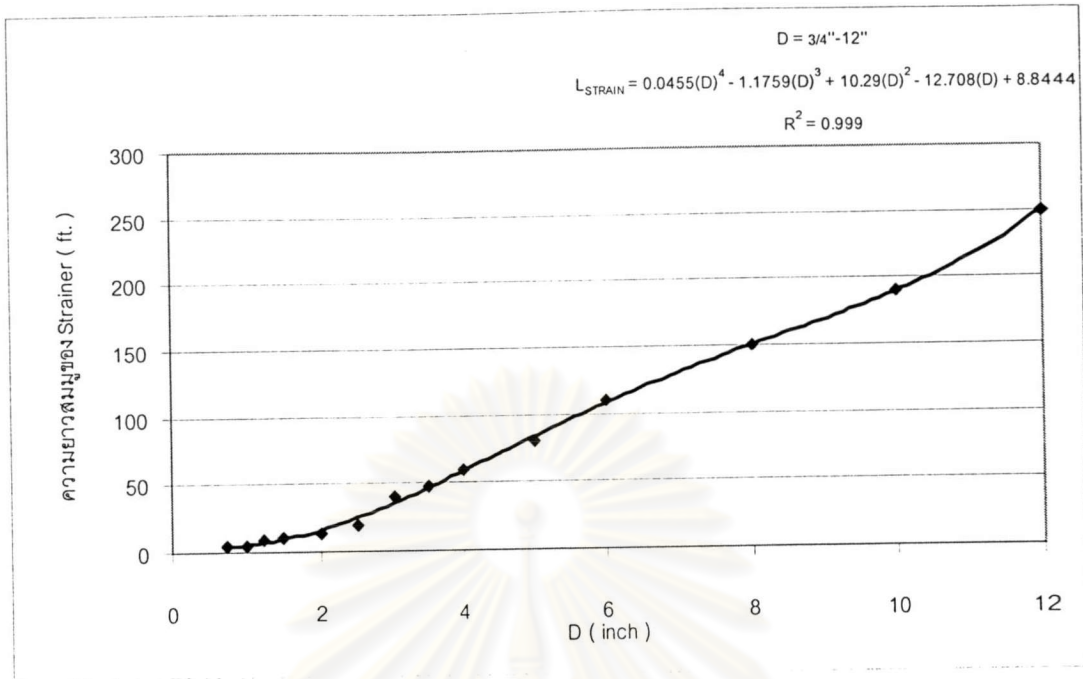


## ภาคผนวก ข

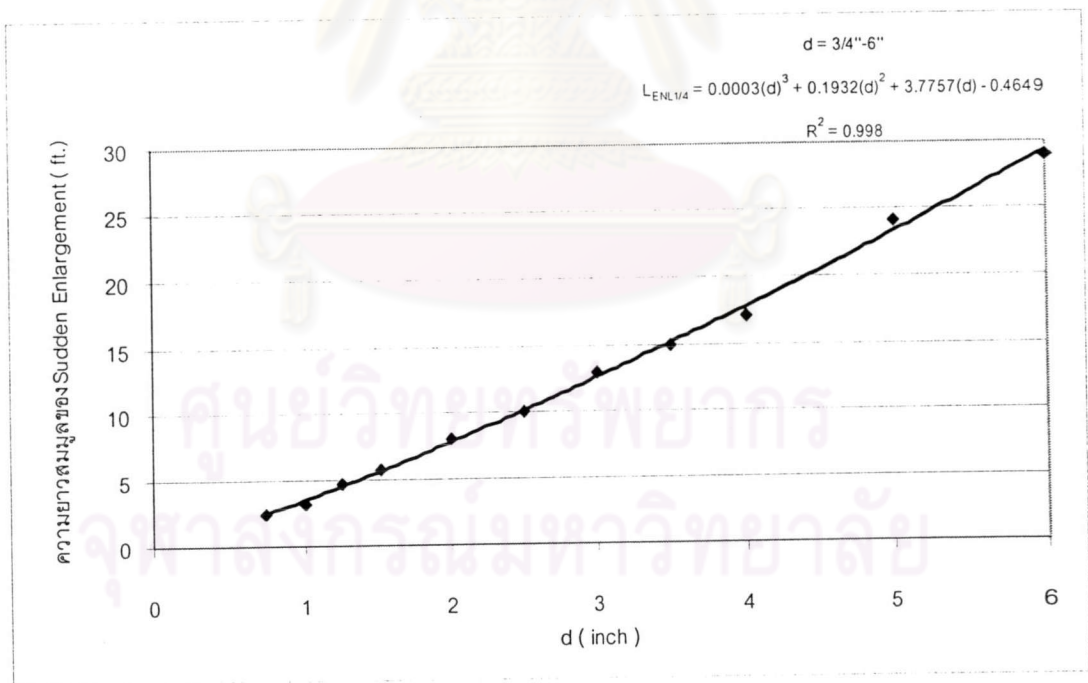
กราฟแสดงความสัมพันธ์ของค่าความยาวสมมูล ( Equivalent Length :  $L_E$  )  
ของ Y – Type Strainer Sudden Enlargement และ Sudden Contraction  
กับขนาดเส้นผ่านศูนย์กลาง ( D )



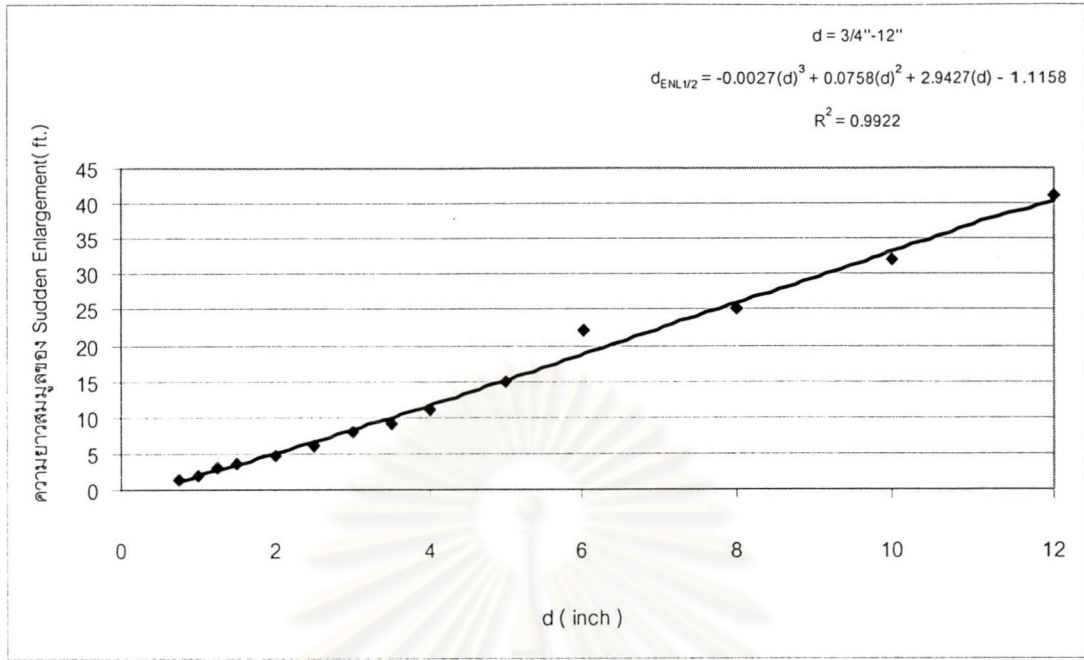
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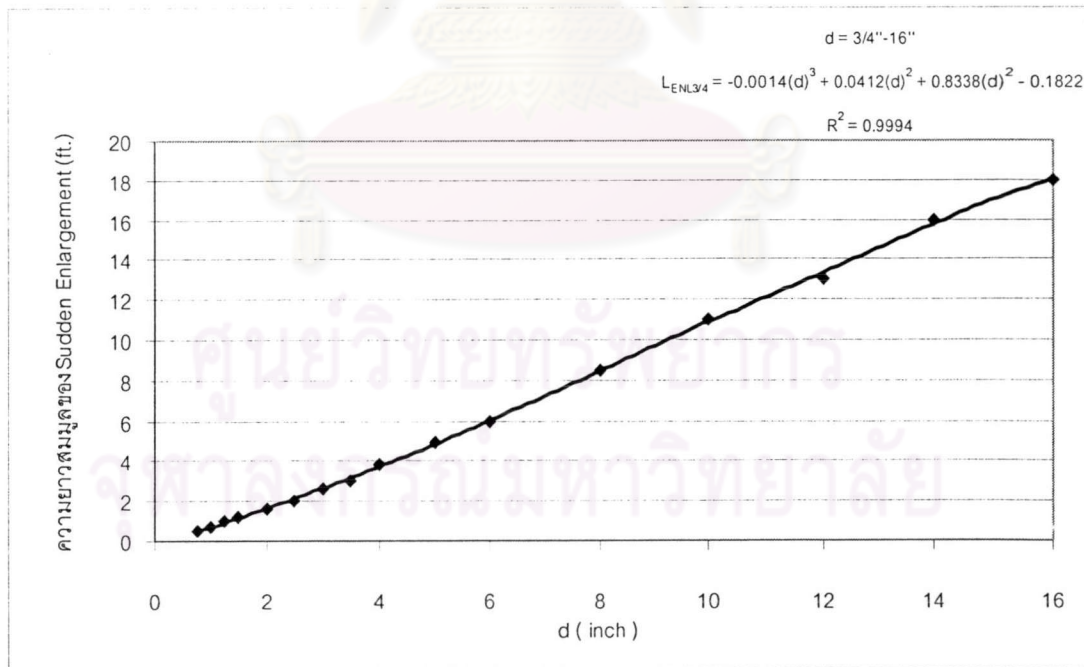
รูปที่ 1.1 แสดงเส้นแนวโน้มและสมการของค่า  $L_E$  ของ Y-Type Strainer พร้อมด้วยค่า  $R^2$



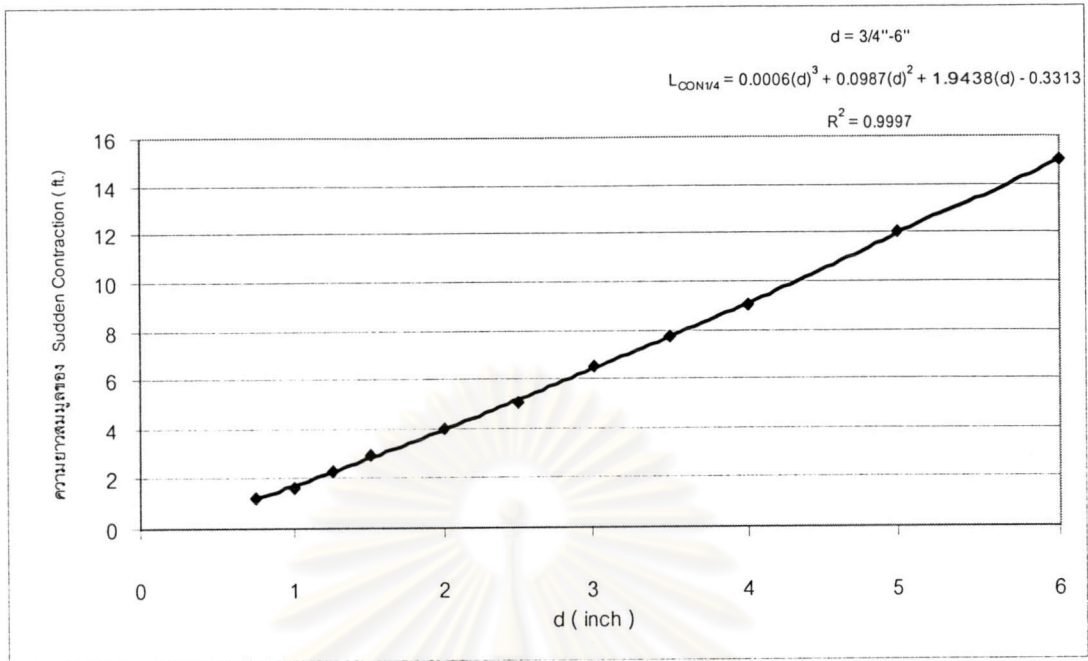
รูปที่ 1.2 แสดงเส้นแนวโน้มและสมการของค่า  $L_E$  ของ Sudden Enlargement ( $d/D = 1/4$ ) พร้อมด้วยค่า  $R^2$



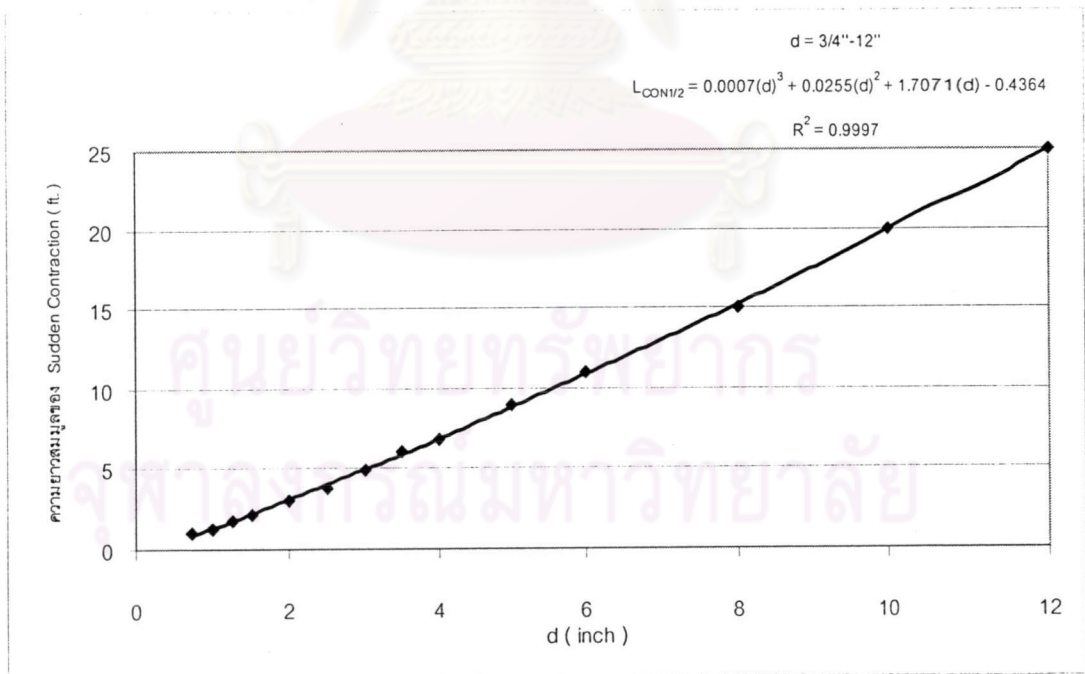
รูปที่ ๓.3 แสดงเส้นแนวโน้มและสมการของค่า  $L_E$  ของ Sudden Enlargement ( $d/D = 1/2$ ) พร้อมด้วยค่า  $R^2$



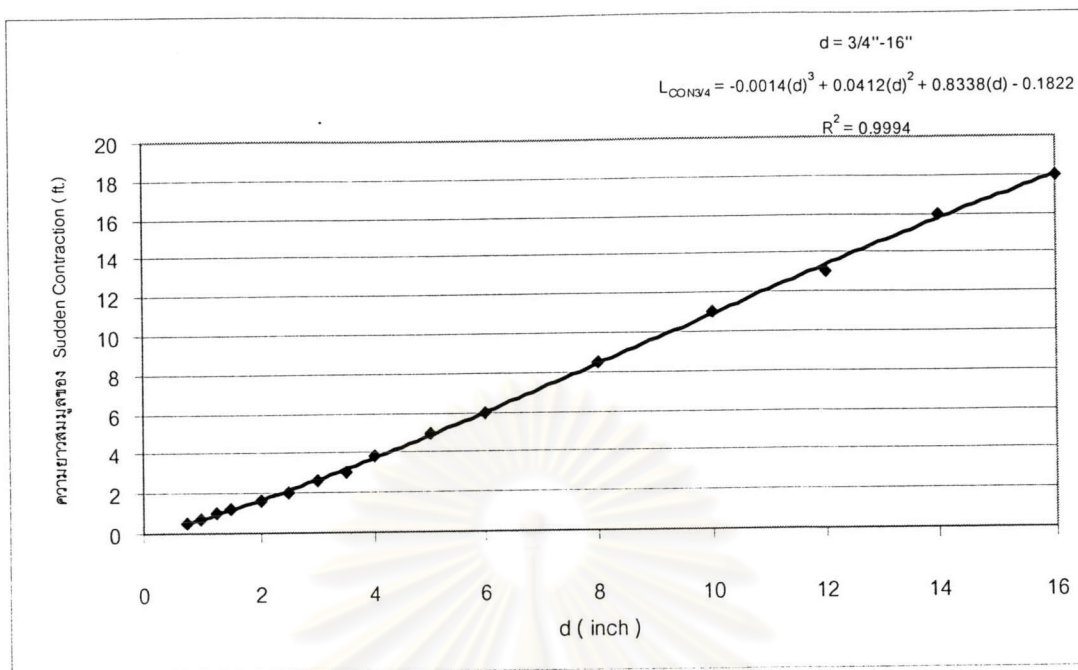
รูปที่ ๓.4 แสดงเส้นแนวโน้มและสมการของค่า  $L_E$  ของ Sudden Enlargement ( $d/D = 3/4$ ) พร้อมด้วยค่า  $R^2$



รูปที่ ข.5 แสดงเส้นแนวโน้มและสมการของค่า  $L_E$  ของ Sudden Contraction ( $d/D = 1/4$ ) พร้อมด้วยค่า  $R^2$



รูปที่ ข.6 แสดงเส้นแนวโน้มและสมการของค่า  $L_E$  ของ Sudden Contraction ( $d/D = 1/2$ ) พร้อมด้วยค่า  $R^2$



รูปที่ ๑.๗ แสดงเส้นแนวโน้มและสมการของค่า  $L_E$  ของ Sudden Contraction ( $d/D = 3/4$ )  
พร้อมด้วยค่า  $R^2$

ศูนย์วิทยทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย

## ภาคผนวก ค

ตารางแสดง

ผลการเลือก Control Valve ที่ใช้กับ AHU ในแต่ละ Loop

ของแบบจำลองระบบวงจรด้านน้ำเย็น

( ผลลัพธ์ทั้งหมดได้จากการวิเคราะห์ด้วยโปรแกรมที่ประดิษฐ์ขึ้นโดยผู้วิจัย )



ศูนย์วิทยทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย

ตารางที่ ค.1 แสดงผลการเลือก Control Valve : CWST40TD06

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	320	64.84	44.53	109.38	72.83	19.31	40.72	30.6
2	320	65.79	44.53	110.32	72.83	19.31	40.37	29.7
3	320	66.36	44.53	110.9	72.83	19.31	40.16	29.1
4	320	66.89	44.53	111.42	72.83	19.31	39.97	28.6
5	320	67.36	44.53	111.9	72.83	19.31	39.8	28.1
6	320	67.79	44.53	112.32	72.83	19.31	39.65	27.7
7	264	71.05	30.31	101.36	72.83	13.14	29.9	38.6
8	264	71.59	30.31	101.9	72.83	13.14	29.75	38.1
9	264	72.07	30.31	102.39	72.83	13.14	29.6	37.6
10	264	73.14	30.31	103.45	72.83	13.14	29.3	36.6
11	264	73.79	30.31	104.1	72.83	13.14	29.12	35.9
12	264	74.36	30.31	104.67	72.83	13.14	28.96	35.3
13	264	74.86	30.31	105.17	72.83	13.14	28.82	34.8
14	264	76	30.31	106.31	72.83	13.14	28.51	33.7
15	264	76.67	30.31	106.98	72.83	13.14	28.33	33.0
16	264	77.24	30.31	107.55	72.83	13.14	28.18	32.5
17	264	78.31	30.31	108.62	72.83	13.14	27.91	31.4
18	264	79.04	30.31	109.35	72.83	13.14	27.72	30.7
19	264	79.63	30.31	109.94	72.83	13.14	27.57	30.1
20	264	81.1	30.31	111.41	72.83	13.14	27.21	28.6
21	264	81.85	30.31	112.16	72.83	13.14	27.02	27.8
22	264	82.38	30.31	112.69	72.83	13.14	26.9	27.3
23	264	83.74	30.31	114.05	72.83	13.14	26.58	26.0
24	264	84.25	30.31	114.56	72.83	13.14	26.46	25.4
25	264	85.21	30.31	115.52	72.83	13.14	26.24	24.5
26	264	86.26	30.31	116.57	72.83	13.14	26	23.4

ตารางที่ ค.2 แสดงผลการเลือก Control Valve : CWST40TD08

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	240	51.14	62.14	113.29	46.24	26.94	54.86	26.7
2	240	51.71	62.14	113.86	46.24	26.94	54.58	26.1
3	240	52.23	62.14	114.38	46.24	26.94	54.33	25.6
4	240	52.71	62.14	114.85	46.24	26.94	54.11	25.2
5	240	53.75	62.14	115.9	46.24	26.94	53.62	24.1
6	240	54.39	62.14	116.54	46.24	26.94	53.33	23.5
7	198	48.64	42.3	90.93	46.24	18.34	46.51	49.1
8	198	49.16	42.3	91.46	46.24	18.34	46.25	48.5
9	198	49.63	42.3	91.93	46.24	18.34	46.01	48.1
10	198	50.74	42.3	93.03	46.24	18.34	45.46	47
11	198	51.41	42.3	93.71	46.24	18.34	45.14	46.3
12	198	52.01	42.3	94.31	46.24	18.34	44.85	45.7
13	198	53.31	42.3	95.6	46.24	18.34	44.24	44.4
14	198	54.17	42.3	96.47	46.24	18.34	43.84	43.5
15	198	54.92	42.3	97.22	46.24	18.34	43.51	42.8
16	198	55.55	42.3	97.85	46.24	18.34	43.23	42.2
17	198	56.08	42.3	98.38	46.24	18.34	42.99	41.6
18	198	57.46	42.3	99.76	46.24	18.34	42.4	40.2
19	198	58.23	42.3	100.53	46.24	18.34	42.08	39.5
20	198	58.82	42.3	101.12	46.24	18.34	41.83	38.9
21	198	60.53	42.3	102.82	46.24	18.34	41.13	37.2
22	198	61.36	42.3	103.66	46.24	18.34	40.8	36.3
23	198	61.9	42.3	104.19	46.24	18.34	40.59	35.8
24	198	63.32	42.3	105.62	46.24	18.34	40.05	34.4
25	198	64.97	42.3	107.27	46.24	18.34	39.43	32.7
26	198	65.52	42.3	107.82	46.24	18.34	39.23	32.2

ตารางที่ ค.3 แสดงผลการเลือก Control Valve : CWST40TD10

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	192	44.59	39.77	84.36	46.24	17.24	47.15	55.6
2	192	45.21	39.77	84.98	46.24	17.24	46.8	55
3	192	45.78	39.77	85.56	46.24	17.24	46.49	54.4
4	192	46.3	39.77	86.07	46.24	17.24	46.21	53.9
5	192	46.77	39.77	86.55	46.24	17.24	45.95	53.5
6	192	47.87	39.77	87.64	46.24	17.24	45.38	52.4
7	158	47.96	69.3	117.25	28.9	30.04	59.1	22.8
8	158	48.57	69.3	117.87	28.9	30.04	58.79	22.1
9	158	50.11	69.3	119.41	28.9	30.04	58.03	20.6
10	158	51.07	27.07	78.14	46.24	11.74	34.64	61.9
11	158	51.91	27.07	78.98	46.24	11.74	34.27	61
12	158	52.67	27.07	79.74	46.24	11.74	33.95	60.3
13	158	53.33	27.07	80.4	46.24	11.74	33.67	59.6
14	158	53.9	27.07	80.97	46.24	11.74	33.43	59
15	158	54.39	27.07	81.46	46.24	11.74	33.23	58.5
16	158	55.55	27.07	82.62	46.24	11.74	32.77	57.4
17	158	56.33	27.07	83.4	46.24	11.74	32.46	56.6
18	158	56.96	27.07	84.03	46.24	11.74	32.21	56
19	158	57.47	27.07	84.54	46.24	11.74	32.02	55.5
20	158	58.97	27.07	86.04	46.24	11.74	31.46	54
21	158	59.76	27.07	86.83	46.24	11.74	31.18	53.2
22	158	60.31	27.07	87.38	46.24	11.74	30.98	52.6
23	158	62.21	27.07	89.28	46.24	11.74	30.32	50.7
24	158	64.27	27.07	91.34	46.24	11.74	29.64	48.7
25	158	65.02	27.07	92.09	46.24	11.74	29.39	47.9
26	158	65.81	27.07	92.88	46.24	11.74	29.15	47.1

ตารางที่ ค.4 แสดงผลการเลือก Control Valve : CWST40TD12

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	160	39.03	70.71	109.73	28.9	30.65	64.43	30.3
2	160	40.17	70.71	110.88	28.9	30.65	63.77	29.1
3	160	40.9	70.71	111.6	28.9	30.65	63.36	28.4
4	160	41.56	70.71	112.26	28.9	30.65	62.98	27.7
5	160	42.16	70.71	112.86	28.9	30.65	62.65	27.1
6	160	43.65	70.71	114.35	28.9	30.65	61.83	25.7
7	132	39.35	48.12	87.47	28.9	20.86	55.01	52.5
8	132	40.19	48.12	88.31	28.9	20.86	54.49	51.7
9	132	40.94	48.12	89.07	28.9	20.86	54.03	50.9
10	132	41.62	48.12	89.75	28.9	20.86	53.62	50.3
11	132	42.23	48.12	90.35	28.9	20.86	53.26	49.7
12	132	42.76	48.12	90.89	28.9	20.86	52.95	49.1
13	132	44.11	48.12	92.24	28.9	20.86	52.17	47.8
14	132	45.03	48.12	93.15	28.9	20.86	51.66	46.9
15	132	45.81	48.12	93.94	28.9	20.86	51.23	46.1
16	132	46.48	48.12	94.61	28.9	20.86	50.87	45.4
17	132	47.04	48.12	95.16	28.9	20.86	50.57	44.8
18	132	48.74	48.12	96.86	28.9	20.86	49.68	43.1
19	132	49.72	48.12	97.84	28.9	20.86	49.19	42.2
20	132	50.48	48.12	98.6	28.9	20.86	48.81	41.4
21	132	51.04	48.12	99.17	28.9	20.86	48.53	40.8
22	132	53.09	48.12	101.21	28.9	20.86	47.55	38.8
23	132	54.02	48.12	102.14	28.9	20.86	47.12	37.9
24	132	55.49	48.12	103.61	28.9	20.86	46.45	36.4
25	132	57.6	48.12	105.73	28.9	20.86	45.52	34.3
26	132	58.1	48.12	106.22	28.9	20.86	45.31	33.8



ตารางที่ ค.5 แสดงผลการเลือก Control Valve : CWST40TD14

LOOP	GPM	H <sub>LOOP</sub>	H <sub>cV</sub>	H <sub>TOTAL</sub>	C <sub>v</sub>	H <sub>cV(Psi)</sub>	Authority (%)	Safety
1	137	35.24	51.95	87.19	28.9	22.52	59.58	52.8
2	137	35.84	51.95	87.78	28.9	22.52	59.18	52.2
3	137	37.34	51.95	89.28	28.9	22.52	58.18	50.7
4	137	38.28	51.95	90.23	28.9	22.52	57.57	49.8
5	137	39.14	51.95	91.08	28.9	22.52	57.03	48.9
6	137	39.91	51.95	91.85	28.9	22.52	56.55	48.2
7	113	40.57	35.36	75.93	28.9	15.33	46.56	64.1
8	113	41.2	35.36	76.56	28.9	15.33	46.18	63.4
9	113	41.77	35.36	77.13	28.9	15.33	45.84	62.9
10	113	42.29	35.36	77.64	28.9	15.33	45.54	62.4
11	113	43.71	35.36	79.06	28.9	15.33	44.72	60.9
12	113	44.61	35.36	79.96	28.9	15.33	44.22	60
13	113	45.4	35.36	80.75	28.9	15.33	43.78	59.3
14	113	46.08	35.36	81.44	28.9	15.33	43.41	58.6
15	113	46.67	35.36	82.03	28.9	15.33	43.1	58
16	113	48.36	35.36	83.71	28.9	15.33	42.24	56.3
17	113	49.49	35.36	84.84	28.9	15.33	41.67	55.2
18	113	50.41	35.36	85.77	28.9	15.33	41.22	54.2
19	113	51.16	35.36	86.51	28.9	15.33	40.87	53.5
20	113	51.73	35.36	87.09	28.9	15.33	40.6	52.9
21	113	53.87	35.36	89.23	28.9	15.33	39.63	50.8
22	113	54.96	35.36	90.32	28.9	15.33	39.15	49.7
23	113	57.14	35.36	92.49	28.9	15.33	38.23	47.5
24	113	58.04	35.36	93.39	28.9	15.33	37.86	46.6
25	113	59.38	35.36	94.74	28.9	15.33	37.32	45.3
26	113	60.3	35.36	95.65	28.9	15.33	36.96	44.4

ตารางที่ ค.6 แสดงผลการเลือก Control Valve : CWST40TD16

LOOP	GPM	H <sub>LOOP</sub>	H <sub>cV</sub>	H <sub>TOTAL</sub>	C <sub>v</sub>	H <sub>cV(Psi)</sub>	Authority (%)	Safety
1	120	49.32	39.77	89.09	28.9	17.24	44.64	50.9
2	120	50.21	39.77	89.98	28.9	17.24	44.2	50
3	120	51.02	39.77	90.79	28.9	17.24	43.81	49.2
4	120	51.76	39.77	91.53	28.9	17.24	43.45	48.5
5	120	52.43	39.77	92.2	28.9	17.24	43.14	47.8
6	120	53.03	39.77	92.8	28.9	17.24	42.86	47.2
7	99	49.2	66.06	115.26	18.5	28.64	57.31	24.7
8	99	50.73	66.06	116.79	18.5	28.64	56.56	23.2
9	99	51.72	66.06	117.78	18.5	28.64	56.09	22.2
10	99	52.61	66.06	118.67	18.5	28.64	55.67	21.3
11	99	53.4	66.06	119.46	18.5	28.64	55.3	20.5
12	99	54.1	27.07	81.17	28.9	11.74	33.35	58.8
13	99	54.72	27.07	81.79	28.9	11.74	33.1	58.2
14	99	55.26	27.07	82.33	28.9	11.74	32.88	57.7
15	99	56.82	27.07	83.89	28.9	11.74	32.27	56.1
16	99	57.88	27.07	84.95	28.9	11.74	31.87	55.1
17	99	58.76	27.07	85.83	28.9	11.74	31.54	54.2
18	99	59.49	27.07	86.56	28.9	11.74	31.27	53.4
19	99	60.07	27.07	87.14	28.9	11.74	31.07	52.9
20	99	62.29	27.07	89.36	28.9	11.74	30.29	50.6
21	99	63.51	27.07	90.58	28.9	11.74	29.89	49.4
22	99	64.36	27.07	91.43	28.9	11.74	29.61	48.6
23	99	66.06	27.07	93.13	28.9	11.74	29.07	46.9
24	99	66.76	27.07	93.83	28.9	11.74	28.85	46.2
25	99	67.81	27.07	94.88	28.9	11.74	28.53	45.1
26	99	68.53	27.07	95.6	28.9	11.74	28.32	44.4

ตารางที่ ค.7 แสดงผลการเลือก Control Valve : CWST41TD06

LOOP	GPM	H <sub>LOOP</sub>	H <sub>CV</sub>	H <sub>TOTAL</sub>	Cv	H <sub>CV</sub> (Psi)	Authority (%)	Safety
1	320	64.58	44.53	109.12	72.83	19.31	40.81	30.9
2	320	65.53	44.53	110.06	72.83	19.31	40.46	29.9
3	320	66.1	44.53	110.64	72.83	19.31	40.25	29.4
4	320	66.63	44.53	111.16	72.83	19.31	40.06	28.8
5	320	67.1	44.53	111.64	72.83	19.31	39.89	28.4
6	320	67.53	44.53	112.06	72.83	19.31	39.74	27.9
7	264	69.25	30.31	99.56	72.83	13.14	30.44	40.4
8	264	69.79	30.31	100.1	72.83	13.14	30.28	39.9
9	264	70.27	30.31	100.59	72.83	13.14	30.13	39.4
10	264	71.34	30.31	101.65	72.83	13.14	29.82	38.4
11	264	71.99	30.31	102.3	72.83	13.14	29.63	37.7
12	264	72.56	30.31	102.87	72.83	13.14	29.47	37.1
13	264	73.06	30.31	103.37	72.83	13.14	29.32	36.6
14	264	74.2	30.31	104.51	72.83	13.14	29	35.5
15	264	74.87	30.31	105.18	72.83	13.14	28.82	34.8
16	264	75.44	30.31	105.75	72.83	13.14	28.66	34.3
17	264	76.51	30.31	106.82	72.83	13.14	28.38	33.2
18	264	77.24	30.31	107.55	72.83	13.14	28.18	32.5
19	264	77.83	30.31	108.14	72.83	13.14	28.03	31.9
20	264	79.3	30.31	109.61	72.83	13.14	27.65	30.4
21	264	80.05	30.31	110.36	72.83	13.14	27.46	29.6
22	264	80.58	30.31	110.89	72.83	13.14	27.33	29.1
23	264	81.94	30.31	112.25	72.83	13.14	27	27.8
24	264	82.45	30.31	112.76	72.83	13.14	26.88	27.2
25	264	83.41	30.31	113.72	72.83	13.14	26.65	26.3
26	264	84.46	30.31	114.77	72.83	13.14	26.41	25.2

ตารางที่ ค.8 แสดงผลการเลือก Control Valve : CWST41TD08

LOOP	GPM	H <sub>LOOP</sub>	H <sub>CV</sub>	H <sub>TOTAL</sub>	Cv	H <sub>CV</sub> (Psi)	Authority (%)	Safety
1	240	51.06	62.14	113.21	46.24	26.94	54.89	26.8
2	240	51.63	62.14	113.78	46.24	26.94	54.62	26.2
3	240	52.15	62.14	114.3	46.24	26.94	54.37	25.7
4	240	52.63	62.14	114.77	46.24	26.94	54.15	25.2
5	240	53.67	62.14	115.82	46.24	26.94	53.66	24.2
6	240	54.31	62.14	116.46	46.24	26.94	53.36	23.5
7	198	48.55	42.3	90.84	46.24	18.34	46.56	49.2
8	198	49.07	42.3	91.37	46.24	18.34	46.29	48.6
9	198	49.54	42.3	91.84	46.24	18.34	46.05	48.2
10	198	50.65	42.3	92.94	46.24	18.34	45.51	47.1
11	198	51.32	42.3	93.62	46.24	18.34	45.18	46.4
12	198	51.92	42.3	94.22	46.24	18.34	44.89	45.8
13	198	53.22	42.3	95.51	46.24	18.34	44.28	44.5
14	198	54.08	42.3	96.38	46.24	18.34	43.88	43.6
15	198	54.83	42.3	97.13	46.24	18.34	43.55	42.9
16	198	55.46	42.3	97.76	46.24	18.34	43.27	42.2
17	198	55.99	42.3	98.29	46.24	18.34	43.03	41.7
18	198	57.37	42.3	99.67	46.24	18.34	42.44	40.3
19	198	58.14	42.3	100.44	46.24	18.34	42.11	39.6
20	198	58.73	42.3	101.03	46.24	18.34	41.87	39
21	198	60.44	42.3	102.73	46.24	18.34	41.17	37.3
22	198	61.27	42.3	103.57	46.24	18.34	40.84	36.4
23	198	61.81	42.3	104.1	46.24	18.34	40.63	35.9
24	198	63.23	42.3	105.53	46.24	18.34	40.08	34.5
25	198	64.88	42.3	107.18	46.24	18.34	39.46	32.8
26	198	65.43	42.3	107.73	46.24	18.34	39.26	32.3

ตารางที่ ค.10 แสดงผลการเลือก Control Valve : CWST41TD12

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	160	38.97	70.71	109.67	28.9	30.65	64.47	30.3
2	160	40.11	70.71	110.82	28.9	30.65	63.8	29.2
3	160	40.84	70.71	111.54	28.9	30.65	63.39	28.5
4	160	41.5	70.71	112.2	28.9	30.65	63.02	27.8
5	160	42.1	70.71	112.8	28.9	30.65	62.68	27.2
6	160	43.59	70.71	114.29	28.9	30.65	61.86	25.7
7	132	39.3	48.12	87.42	28.9	20.86	55.05	52.6
8	132	40.14	48.12	88.26	28.9	20.86	54.52	51.7
9	132	40.89	48.12	89.02	28.9	20.86	54.06	51
10	132	41.57	48.12	89.7	28.9	20.86	53.65	50.3
11	132	42.18	48.12	90.3	28.9	20.86	53.29	49.7
12	132	42.71	48.12	90.84	28.9	20.86	52.98	49.2
13	132	44.06	48.12	92.19	28.9	20.86	52.2	47.8
14	132	44.98	48.12	93.1	28.9	20.86	51.69	46.9
15	132	45.76	48.12	93.89	28.9	20.86	51.26	46.1
16	132	46.43	48.12	94.56	28.9	20.86	50.89	45.4
17	132	46.99	48.12	95.11	28.9	20.86	50.6	44.9
18	132	48.69	48.12	96.81	28.9	20.86	49.71	43.2
19	132	49.67	48.12	97.79	28.9	20.86	49.21	42.2
20	132	50.43	48.12	98.55	28.9	20.86	48.83	41.5
21	132	50.99	48.12	99.12	28.9	20.86	48.55	40.9
22	132	53.04	48.12	101.16	28.9	20.86	47.57	38.8
23	132	53.97	48.12	102.09	28.9	20.86	47.14	37.9
24	132	55.44	48.12	103.56	28.9	20.86	46.47	36.4
25	132	57.55	48.12	105.68	28.9	20.86	45.54	34.3
26	132	58.05	48.12	106.17	28.9	20.86	45.33	33.8

ตารางที่ ค.9 แสดงผลการเลือก Control Valve : CWST41TD10

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	192	44.53	39.77	84.3	46.24	17.24	47.18	55.7
2	192	45.15	39.77	84.92	46.24	17.24	46.83	55.1
3	192	45.72	39.77	85.5	46.24	17.24	46.52	54.5
4	192	46.24	39.77	86.01	46.24	17.24	46.24	54
5	192	46.71	39.77	86.49	46.24	17.24	45.99	53.5
6	192	47.81	39.77	87.58	46.24	17.24	45.41	52.4
7	158	47.9	69.3	117.19	28.9	30.04	59.13	22.8
8	158	48.51	69.3	117.81	28.9	30.04	58.82	22.2
9	158	50.05	69.3	119.35	28.9	30.04	58.06	20.7
10	158	51.01	27.07	78.08	46.24	11.74	34.67	61.9
11	158	51.85	27.07	78.92	46.24	11.74	34.3	61.1
12	158	52.61	27.07	79.68	46.24	11.74	33.97	60.3
13	158	53.27	27.07	80.34	46.24	11.74	33.7	59.7
14	158	53.84	27.07	80.91	46.24	11.74	33.46	59.1
15	158	54.33	27.07	81.4	46.24	11.74	33.25	58.6
16	158	55.49	27.07	82.56	46.24	11.74	32.79	57.4
17	158	56.27	27.07	83.34	46.24	11.74	32.48	56.7
18	158	56.9	27.07	83.97	46.24	11.74	32.24	56
19	158	57.41	27.07	84.48	46.24	11.74	32.04	55.5
20	158	58.91	27.07	85.98	46.24	11.74	31.49	54
21	158	59.7	27.07	86.77	46.24	11.74	31.2	53.2
22	158	60.25	27.07	87.32	46.24	11.74	31	52.7
23	158	62.15	27.07	89.22	46.24	11.74	30.34	50.8
24	158	64.21	27.07	91.28	46.24	11.74	29.66	48.7
25	158	64.96	27.07	92.03	46.24	11.74	29.41	48
26	158	65.75	27.07	92.82	46.24	11.74	29.16	47.2

ตารางที่ ค.11 แสดงผลการเลือก Control Valve : CWST41TD14

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	137	33.39	51.95	85.34	28.9	22.52	60.87	54.7
2	137	33.99	51.95	85.93	28.9	22.52	60.45	54.1
3	137	35.49	51.95	87.43	28.9	22.52	59.41	52.6
4	137	36.43	51.95	88.38	28.9	22.52	58.78	51.6
5	137	37.29	51.95	89.23	28.9	22.52	58.22	50.8
6	137	38.06	51.95	90	28.9	22.52	57.72	50
7	113	38.73	35.36	74.09	28.9	15.33	47.72	65.9
8	113	39.36	35.36	74.72	28.9	15.33	47.32	65.3
9	113	39.93	35.36	75.29	28.9	15.33	46.96	64.7
10	113	40.45	35.36	75.8	28.9	15.33	46.64	64.2
11	113	41.87	35.36	77.22	28.9	15.33	45.78	62.8
12	113	42.77	35.36	78.12	28.9	15.33	45.26	61.9
13	113	43.56	35.36	78.91	28.9	15.33	44.8	61.1
14	113	44.24	35.36	79.6	28.9	15.33	44.42	60.4
15	113	44.83	35.36	80.19	28.9	15.33	44.09	59.8
16	113	46.52	35.36	81.87	28.9	15.33	43.18	58.1
17	113	47.65	35.36	83	28.9	15.33	42.6	57
18	113	48.57	35.36	83.93	28.9	15.33	42.13	56.1
19	113	49.32	35.36	84.67	28.9	15.33	41.76	55.3
20	113	49.89	35.36	85.25	28.9	15.33	41.48	54.8
21	113	52.03	35.36	87.39	28.9	15.33	40.46	52.6
22	113	53.12	35.36	88.48	28.9	15.33	39.96	51.5
23	113	55.3	35.36	90.65	28.9	15.33	39	49.4
24	113	56.2	35.36	91.55	28.9	15.33	38.62	48.5
25	113	57.54	35.36	92.9	28.9	15.33	38.06	47.1
26	113	58.46	35.36	93.81	28.9	15.33	37.69	46.2

ตารางที่ ค.12 แสดงผลการเลือก Control Valve : CWST41TD16

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	120	47.73	39.77	87.5	28.9	17.24	45.45	52.5
2	120	48.62	39.77	88.39	28.9	17.24	45	51.6
3	120	49.43	39.77	89.2	28.9	17.24	44.59	50.8
4	120	50.17	39.77	89.94	28.9	17.24	44.22	50.1
5	120	50.84	39.77	90.61	28.9	17.24	43.9	49.4
6	120	51.44	39.77	91.21	28.9	17.24	43.61	48.8
7	99	47.73	66.06	113.79	18.5	28.64	58.05	26.2
8	99	49.26	66.06	115.32	18.5	28.64	57.28	24.7
9	99	50.25	66.06	116.31	18.5	28.64	56.8	23.7
10	99	51.14	66.06	117.2	18.5	28.64	56.37	22.8
11	99	51.93	66.06	117.99	18.5	28.64	55.99	22
12	99	52.63	66.06	118.69	18.5	28.64	55.66	21.3
13	99	53.25	66.06	119.31	18.5	28.64	55.37	20.7
14	99	53.79	66.06	119.85	18.5	28.64	55.12	20.2
15	99	55.35	27.07	82.42	28.9	11.74	32.84	57.6
16	99	56.41	27.07	83.48	28.9	11.74	32.43	56.5
17	99	57.29	27.07	84.36	28.9	11.74	32.09	55.6
18	99	58.02	27.07	85.09	28.9	11.74	31.81	54.9
19	99	58.6	27.07	85.67	28.9	11.74	31.6	54.3
20	99	60.82	27.07	87.89	28.9	11.74	30.8	52.1
21	99	62.04	27.07	89.11	28.9	11.74	30.38	50.9
22	99	62.89	27.07	89.96	28.9	11.74	30.09	50
23	99	64.59	27.07	91.66	28.9	11.74	29.53	48.3
24	99	65.29	27.07	92.36	28.9	11.74	29.31	47.6
25	99	66.34	27.07	93.41	28.9	11.74	28.98	46.6
26	99	67.06	27.07	94.13	28.9	11.74	28.76	45.9

ตารางที่ ค.13 แสดงผลการเลือก Control Valve : CWST42TD06

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	320	64.44	44.53	108.98	72.83	19.31	40.87	31
2	320	65.39	44.53	109.92	72.83	19.31	40.51	30.1
3	320	65.96	44.53	110.5	72.83	19.31	40.3	29.5
4	320	66.49	44.53	111.02	72.83	19.31	40.11	29
5	320	66.96	44.53	111.5	72.83	19.31	39.94	28.5
6	320	67.39	44.53	111.92	72.83	19.31	39.79	28.1
7	264	68.91	30.31	99.22	72.83	13.14	30.55	40.8
8	264	69.45	30.31	99.76	72.83	13.14	30.38	40.2
9	264	69.93	30.31	100.25	72.83	13.14	30.24	39.8
10	264	71	30.31	101.31	72.83	13.14	29.92	38.7
11	264	71.65	30.31	101.96	72.83	13.14	29.73	38
12	264	72.22	30.31	102.53	72.83	13.14	29.56	37.5
13	264	72.72	30.31	103.03	72.83	13.14	29.42	37
14	264	73.86	30.31	104.17	72.83	13.14	29.1	35.8
15	264	74.53	30.31	104.84	72.83	13.14	28.91	35.2
16	264	75.1	30.31	105.41	72.83	13.14	28.76	34.6
17	264	76.17	30.31	106.48	72.83	13.14	28.47	33.5
18	264	76.9	30.31	107.21	72.83	13.14	28.27	32.8
19	264	77.49	30.31	107.8	72.83	13.14	28.12	32.2
20	264	78.96	30.31	109.27	72.83	13.14	27.74	30.7
21	264	79.71	30.31	110.02	72.83	13.14	27.55	30
22	264	80.24	30.31	110.55	72.83	13.14	27.42	29.5
23	264	81.6	30.31	111.91	72.83	13.14	27.08	28.1
24	264	82.11	30.31	112.42	72.83	13.14	26.96	27.6
25	264	83.07	30.31	113.38	72.83	13.14	26.73	26.6
26	264	84.12	30.31	114.43	72.83	13.14	26.49	25.6

ตารางที่ ค.14 แสดงผลการเลือก Control Valve : CWST42TD08

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	240	50.97	62.14	113.12	46.24	26.94	54.94	26.9
2	240	51.54	62.14	113.69	46.24	26.94	54.66	26.3
3	240	52.06	62.14	114.21	46.24	26.94	54.41	25.8
4	240	52.54	62.14	114.68	46.24	26.94	54.19	25.3
5	240	53.58	62.14	115.73	46.24	26.94	53.7	24.3
6	240	54.22	62.14	116.37	46.24	26.94	53.4	23.6
7	198	48.47	42.3	90.76	46.24	18.34	46.6	49.2
8	198	48.99	42.3	91.29	46.24	18.34	46.33	48.7
9	198	49.46	42.3	91.76	46.24	18.34	46.09	48.2
10	198	50.57	42.3	92.86	46.24	18.34	45.55	47.1
11	198	51.24	42.3	93.54	46.24	18.34	45.22	46.5
12	198	51.84	42.3	94.14	46.24	18.34	44.93	45.9
13	198	53.14	42.3	95.43	46.24	18.34	44.32	44.6
14	198	54	42.3	96.3	46.24	18.34	43.92	43.7
15	198	54.75	42.3	97.05	46.24	18.34	43.58	43
16	198	55.38	42.3	97.68	46.24	18.34	43.3	42.3
17	198	55.91	42.3	98.21	46.24	18.34	43.07	41.8
18	198	57.29	42.3	99.59	46.24	18.34	42.47	40.4
19	198	58.06	42.3	100.36	46.24	18.34	42.15	39.6
20	198	58.65	42.3	100.95	46.24	18.34	41.9	39.1
21	198	60.36	42.3	102.65	46.24	18.34	41.2	37.4
22	198	61.19	42.3	103.49	46.24	18.34	40.87	36.5
23	198	61.73	42.3	104.02	46.24	18.34	40.66	36
24	198	63.15	42.3	105.45	46.24	18.34	40.11	34.6
25	198	64.8	42.3	107.1	46.24	18.34	39.49	32.9
26	198	65.35	42.3	107.65	46.24	18.34	39.29	32.4

ตารางที่ ค.16 แสดงผลการเลือก Control Valve : CWST42TD12

LOOP	GPM	H <sub>LOOP</sub>	H <sub>CV</sub>	H <sub>TOTAL</sub>	Cv	H <sub>CV</sub> (Psi)	Authority (%)	Safety
1	160	38.92	70.71	109.62	28.9	30.65	64.5	30.4
2	160	40.06	70.71	110.77	28.9	30.65	63.83	29.2
3	160	40.79	70.71	111.49	28.9	30.65	63.42	28.5
4	160	41.45	70.71	112.15	28.9	30.65	63.04	27.9
5	160	42.05	70.71	112.75	28.9	30.65	62.71	27.3
6	160	43.54	70.71	114.24	28.9	30.65	61.89	25.8
7	132	39.25	48.12	87.37	28.9	20.86	55.08	52.6
8	132	40.09	48.12	88.21	28.9	20.86	54.56	51.8
9	132	40.84	48.12	88.97	28.9	20.86	54.09	51
10	132	41.52	48.12	89.65	28.9	20.86	53.68	50.4
11	132	42.13	48.12	90.25	28.9	20.86	53.32	49.8
12	132	42.66	48.12	90.79	28.9	20.86	53.01	49.2
13	132	44.01	48.12	92.14	28.9	20.86	52.23	47.9
14	132	44.93	48.12	93.05	28.9	20.86	51.72	47
15	132	45.71	48.12	93.84	28.9	20.86	51.28	46.2
16	132	46.38	48.12	94.51	28.9	20.86	50.92	45.5
17	132	46.94	48.12	95.06	28.9	20.86	50.62	44.9
18	132	48.64	48.12	96.76	28.9	20.86	49.74	43.2
19	132	49.62	48.12	97.74	28.9	20.86	49.24	42.3
20	132	50.38	48.12	98.5	28.9	20.86	48.86	41.5
21	132	50.94	48.12	99.07	28.9	20.86	48.58	40.9
22	132	52.99	48.12	101.11	28.9	20.86	47.59	38.9
23	132	53.92	48.12	102.04	28.9	20.86	47.16	38
24	132	55.39	48.12	103.51	28.9	20.86	46.49	36.5
25	132	57.5	48.12	105.63	28.9	20.86	45.56	34.4
26	132	58	48.12	106.12	28.9	20.86	45.35	33.9

ตารางที่ ค.15 แสดงผลการเลือก Control Valve : CWST42TD10

LOOP	GPM	H <sub>LOOP</sub>	H <sub>CV</sub>	H <sub>TOTAL</sub>	Cv	H <sub>CV</sub> (Psi)	Authority (%)	Safety
1	192	49.03	39.77	88.8	46.24	17.24	44.79	51.2
2	192	49.65	39.77	89.42	46.24	17.24	44.48	50.6
3	192	50.22	39.77	90	46.24	17.24	44.19	50
4	192	50.74	39.77	90.51	46.24	17.24	43.94	49.5
5	192	51.21	39.77	90.99	46.24	17.24	43.71	49
6	192	52.31	39.77	92.08	46.24	17.24	43.19	47.9
7	158	47.84	69.3	117.13	28.9	30.04	59.16	22.9
8	158	48.45	69.3	117.75	28.9	30.04	58.85	22.3
9	158	49.99	69.3	119.29	28.9	30.04	58.09	20.7
10	158	50.95	27.07	78.02	46.24	11.74	34.7	62
11	158	51.79	27.07	78.86	46.24	11.74	34.32	61.1
12	158	52.55	27.07	79.62	46.24	11.74	34	60.4
13	158	53.21	27.07	80.28	46.24	11.74	33.72	59.7
14	158	53.78	27.07	80.85	46.24	11.74	33.48	59.2
15	158	54.27	27.07	81.34	46.24	11.74	33.28	58.7
16	158	55.43	27.07	82.5	46.24	11.74	32.81	57.5
17	158	56.21	27.07	83.28	46.24	11.74	32.51	56.7
18	158	56.84	27.07	83.91	46.24	11.74	32.26	56.1
19	158	57.35	27.07	84.42	46.24	11.74	32.06	55.6
20	158	58.85	27.07	85.92	46.24	11.74	31.51	54.1
21	158	59.64	27.07	86.71	46.24	11.74	31.22	53.3
22	158	60.19	27.07	87.26	46.24	11.74	31.02	52.7
23	158	62.09	27.07	89.16	46.24	11.74	30.36	50.8
24	158	64.15	27.07	91.22	46.24	11.74	29.68	48.8
25	158	64.9	27.07	91.97	46.24	11.74	29.43	48
26	158	65.69	27.07	92.76	46.24	11.74	29.18	47.2

ตารางที่ ค.18 แสดงผลการเลือก Control Valve : CWST42TD16

LOOP	GPM	HLOOP	HcV	H <sub>TOTAL</sub>	Cv	H <sub>CV</sub> (Psi)	Authority (%)	Safety
1	120	47.7	39.77	87.47	28.9	17.24	45.47	52.5
2	120	48.59	39.77	88.36	28.9	17.24	45.01	51.6
3	120	49.4	39.77	89.17	28.9	17.24	44.6	50.8
4	120	50.14	39.77	89.91	28.9	17.24	44.24	50.1
5	120	50.81	39.77	90.58	28.9	17.24	43.91	49.4
6	120	51.41	39.77	91.18	28.9	17.24	43.62	48.8
7	99	47.7	66.06	113.76	18.5	28.64	58.07	26.2
8	99	49.23	66.06	115.29	18.5	28.64	57.3	24.7
9	99	50.22	66.06	116.28	18.5	28.64	56.81	23.7
10	99	51.11	66.06	117.17	18.5	28.64	56.38	22.8
11	99	51.9	66.06	117.96	18.5	28.64	56	22
12	99	52.6	66.06	118.66	18.5	28.64	55.67	21.3
13	99	53.22	66.06	119.28	18.5	28.64	55.38	20.7
14	99	53.76	66.06	119.82	18.5	28.64	55.13	20.2
15	99	55.32	27.07	82.39	28.9	11.74	32.86	57.6
16	99	56.38	27.07	83.45	28.9	11.74	32.44	56.6
17	99	57.26	27.07	84.33	28.9	11.74	32.1	55.7
18	99	57.99	27.07	85.06	28.9	11.74	31.83	54.9
19	99	58.57	27.07	85.64	28.9	11.74	31.61	54.4
20	99	60.79	27.07	87.86	28.9	11.74	30.81	52.1
21	99	62.01	27.07	89.08	28.9	11.74	30.39	50.9
22	99	62.86	27.07	89.93	28.9	11.74	30.1	50.1
23	99	64.56	27.07	91.63	28.9	11.74	29.54	48.4
24	99	65.26	27.07	92.33	28.9	11.74	29.32	47.7
25	99	66.31	27.07	93.38	28.9	11.74	28.99	46.6
26	99	67.03	27.07	94.1	28.9	11.74	28.77	45.9

ตารางที่ ค.17 แสดงผลการเลือก Control Valve : CWST42TD14

LOOP	GPM	HLOOP	HcV	H <sub>TOTAL</sub>	Cv	H <sub>CV</sub> (Psi)	Authority (%)	Safety
1	137	33.35	51.95	85.3	28.9	22.52	60.9	54.7
2	137	33.95	51.95	85.89	28.9	22.52	60.48	54.1
3	137	35.45	51.95	87.39	28.9	22.52	59.44	52.6
4	137	36.39	51.95	88.34	28.9	22.52	58.8	51.7
5	137	37.25	51.95	89.19	28.9	22.52	58.24	50.8
6	137	38.02	51.95	89.96	28.9	22.52	57.74	50
7	113	38.69	35.36	74.05	28.9	15.33	47.75	66
8	113	39.32	35.36	74.68	28.9	15.33	47.34	65.3
9	113	39.89	35.36	75.25	28.9	15.33	46.98	64.8
10	113	40.41	35.36	75.76	28.9	15.33	46.67	64.2
11	113	41.83	35.36	77.18	28.9	15.33	45.81	62.8
12	113	42.73	35.36	78.08	28.9	15.33	45.28	61.9
13	113	43.52	35.36	78.87	28.9	15.33	44.83	61.1
14	113	44.2	35.36	79.56	28.9	15.33	44.44	60.4
15	113	44.79	35.36	80.15	28.9	15.33	44.11	59.9
16	113	46.48	35.36	81.83	28.9	15.33	43.21	58.2
17	113	47.61	35.36	82.96	28.9	15.33	42.62	57
18	113	48.53	35.36	83.89	28.9	15.33	42.15	56.1
19	113	49.28	35.36	84.63	28.9	15.33	41.78	55.4
20	113	49.85	35.36	85.21	28.9	15.33	41.5	54.8
21	113	51.99	35.36	87.35	28.9	15.33	40.48	52.7
22	113	53.08	35.36	88.44	28.9	15.33	39.98	51.6
23	113	55.26	35.36	90.61	28.9	15.33	39.02	49.4
24	113	56.16	35.36	91.51	28.9	15.33	38.64	48.5
25	113	57.5	35.36	92.86	28.9	15.33	38.08	47.1
26	113	58.42	35.36	93.77	28.9	15.33	37.7	46.2

ตารางที่ ค.20 แสดงผลการเลือก Control Valve : CWST43TD08

LOOP	GPM	H <sub>LOOP</sub>	H <sub>CV</sub>	H <sub>TOTAL</sub>	C <sub>v</sub>	H <sub>CV</sub> (Psi)	Authority (%)	Safety
1	240	50.89	62.14	113.04	46.24	26.94	54.98	27
2	240	51.46	62.14	113.61	46.24	26.94	54.7	26.4
3	240	51.98	62.14	114.13	46.24	26.94	54.45	25.9
4	240	52.46	62.14	114.6	46.24	26.94	54.23	25.4
5	240	53.5	62.14	115.65	46.24	26.94	53.74	24.4
6	240	54.14	62.14	116.29	46.24	26.94	53.44	23.7
7	198	48.39	42.3	90.68	46.24	18.34	46.64	49.3
8	198	48.91	42.3	91.21	46.24	18.34	46.37	48.8
9	198	49.38	42.3	91.68	46.24	18.34	46.13	48.3
10	198	50.49	42.3	92.78	46.24	18.34	45.59	47.2
11	198	51.16	42.3	93.46	46.24	18.34	45.26	46.5
12	198	51.76	42.3	94.06	46.24	18.34	44.97	45.9
13	198	53.06	42.3	95.35	46.24	18.34	44.36	44.7
14	198	53.92	42.3	96.22	46.24	18.34	43.96	43.8
15	198	54.67	42.3	96.97	46.24	18.34	43.62	43
16	198	55.3	42.3	97.6	46.24	18.34	43.34	42.4
17	198	55.83	42.3	98.13	46.24	18.34	43.1	41.9
18	198	57.21	42.3	99.51	46.24	18.34	42.51	40.5
19	198	57.98	42.3	100.28	46.24	18.34	42.18	39.7
20	198	58.57	42.3	100.87	46.24	18.34	41.93	39.1
21	198	60.28	42.3	102.57	46.24	18.34	41.24	37.4
22	198	61.11	42.3	103.41	46.24	18.34	40.9	36.6
23	198	61.65	42.3	103.94	46.24	18.34	40.69	36.1
24	198	63.07	42.3	105.37	46.24	18.34	40.14	34.6
25	198	64.72	42.3	107.02	46.24	18.34	39.52	33
26	198	65.27	42.3	107.57	46.24	18.34	39.32	32.4

ตารางที่ ค.19 แสดงผลการเลือก Control Valve : CWST43TD06

LOOP	GPM	H <sub>LOOP</sub>	H <sub>CV</sub>	H <sub>TOTAL</sub>	C <sub>v</sub>	H <sub>CV</sub> (Psi)	Authority (%)	Safety
1	320	64.32	44.53	108.86	72.83	19.31	40.91	31.1
2	320	65.27	44.53	109.8	72.83	19.31	40.56	30.2
3	320	65.84	44.53	110.38	72.83	19.31	40.35	29.6
4	320	66.37	44.53	110.9	72.83	19.31	40.16	29.1
5	320	66.84	44.53	111.38	72.83	19.31	39.98	28.6
6	320	67.27	44.53	111.8	72.83	19.31	39.83	28.2
7	264	68.78	30.31	99.09	72.83	13.14	30.59	40.9
8	264	69.32	30.31	99.63	72.83	13.14	30.42	40.4
9	264	69.8	30.31	100.12	72.83	13.14	30.28	39.9
10	264	70.87	30.31	101.18	72.83	13.14	29.96	38.8
11	264	71.52	30.31	101.83	72.83	13.14	29.77	38.2
12	264	72.09	30.31	102.4	72.83	13.14	29.6	37.6
13	264	72.59	30.31	102.9	72.83	13.14	29.46	37.1
14	264	73.73	30.31	104.04	72.83	13.14	29.13	36
15	264	74.4	30.31	104.71	72.83	13.14	28.95	35.3
16	264	74.97	30.31	105.28	72.83	13.14	28.79	34.7
17	264	76.04	30.31	106.35	72.83	13.14	28.5	33.7
18	264	76.77	30.31	107.08	72.83	13.14	28.31	32.9
19	264	77.36	30.31	107.67	72.83	13.14	28.15	32.3
20	264	78.83	30.31	109.14	72.83	13.14	27.77	30.9
21	264	79.58	30.31	109.89	72.83	13.14	27.58	30.1
22	264	80.11	30.31	110.42	72.83	13.14	27.45	29.6
23	264	81.47	30.31	111.78	72.83	13.14	27.12	28.2
24	264	81.98	30.31	112.29	72.83	13.14	26.99	27.7
25	264	82.94	30.31	113.25	72.83	13.14	26.76	26.8
26	264	83.99	30.31	114.3	72.83	13.14	26.52	25.7



ตารางที่ ค.22 แสดงผลการเลือก Control Valve : CWST43TD12

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	160	38.86	70.71	109.56	28.9	30.65	64.53	30.4
2	160	40	70.71	110.71	28.9	30.65	63.87	29.3
3	160	40.73	70.71	111.43	28.9	30.65	63.45	28.6
4	160	41.39	70.71	112.09	28.9	30.65	63.08	27.9
5	160	41.99	70.71	112.69	28.9	30.65	62.74	27.3
6	160	43.48	70.71	114.18	28.9	30.65	61.92	25.8
7	132	39.2	48.12	87.32	28.9	20.86	55.11	52.7
8	132	40.04	48.12	88.16	28.9	20.86	54.59	51.8
9	132	40.79	48.12	88.92	28.9	20.86	54.12	51.1
10	132	41.47	48.12	89.6	28.9	20.86	53.71	50.4
11	132	42.08	48.12	90.2	28.9	20.86	53.35	49.8
12	132	42.61	48.12	90.74	28.9	20.86	53.04	49.3
13	132	43.96	48.12	92.09	28.9	20.86	52.26	47.9
14	132	44.88	48.12	93	28.9	20.86	51.74	47
15	132	45.66	48.12	93.79	28.9	20.86	51.31	46.2
16	132	46.33	48.12	94.46	28.9	20.86	50.95	45.5
17	132	46.89	48.12	95.01	28.9	20.86	50.65	45
18	132	48.59	48.12	96.71	28.9	20.86	49.76	43.3
19	132	49.57	48.12	97.69	28.9	20.86	49.26	42.3
20	132	50.33	48.12	98.45	28.9	20.86	48.88	41.6
21	132	50.89	48.12	99.02	28.9	20.86	48.6	41
22	132	52.94	48.12	101.06	28.9	20.86	47.62	38.9
23	132	53.87	48.12	101.99	28.9	20.86	47.18	38
24	132	55.34	48.12	103.46	28.9	20.86	46.51	36.5
25	132	57.45	48.12	105.58	28.9	20.86	45.58	34.4
26	132	57.95	48.12	106.07	28.9	20.86	45.37	33.9

ตารางที่ ค.21 แสดงผลการเลือก Control Valve : CWST43TD10

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	192	48.96	39.77	88.73	46.24	17.24	44.82	51.3
2	192	49.58	39.77	89.35	46.24	17.24	44.51	50.7
3	192	50.15	39.77	89.93	46.24	17.24	44.23	50.1
4	192	50.67	39.77	90.44	46.24	17.24	43.97	49.6
5	192	51.14	39.77	90.92	46.24	17.24	43.75	49.1
6	192	52.24	39.77	92.01	46.24	17.24	43.22	48
7	158	50.77	27.07	77.84	46.24	11.74	34.78	62.2
8	158	51.38	27.07	78.45	46.24	11.74	34.5	61.6
9	158	52.92	27.07	79.99	46.24	11.74	33.84	60
10	158	53.88	27.07	80.95	46.24	11.74	33.44	59.1
11	158	54.72	27.07	81.79	46.24	11.74	33.09	58.2
12	158	55.48	27.07	82.55	46.24	11.74	32.79	57.5
13	158	56.14	27.07	83.21	46.24	11.74	32.53	56.8
14	158	56.71	27.07	83.78	46.24	11.74	32.31	56.2
15	158	57.2	27.07	84.27	46.24	11.74	32.12	55.7
16	158	58.36	27.07	85.43	46.24	11.74	31.69	54.6
17	158	59.14	27.07	86.21	46.24	11.74	31.4	53.8
18	158	59.77	27.07	86.84	46.24	11.74	31.17	53.2
19	158	60.28	27.07	87.35	46.24	11.74	30.99	52.7
20	158	61.78	27.07	88.85	46.24	11.74	30.47	51.2
21	158	62.57	27.07	89.64	46.24	11.74	30.2	50.4
22	158	63.12	27.07	90.19	46.24	11.74	30.01	49.8
23	158	65.02	27.07	92.09	46.24	11.74	29.4	47.9
24	158	67.08	27.07	94.15	46.24	11.74	28.75	45.9
25	158	67.83	27.07	94.9	46.24	11.74	28.52	45.1
26	158	68.62	27.07	95.69	46.24	11.74	28.29	44.3

ตารางที่ ค.23 แสดงผลการเลือก Control Valve : CWST43TD14

LOOP	GPM	H <sub>LOOP</sub>	H <sub>cV</sub>	H <sub>TOTAL</sub>	C <sub>v</sub>	H <sub>cV</sub> (Psi)	Authority (%)	Safety
1	137	31.65	51.95	83.6	28.9	22.52	62.14	56.4
2	137	32.25	51.95	84.19	28.9	22.52	61.7	55.8
3	137	33.75	51.95	85.69	28.9	22.52	60.62	54.3
4	137	34.69	51.95	86.64	28.9	22.52	59.96	53.4
5	137	35.55	51.95	87.49	28.9	22.52	59.37	52.5
6	137	36.32	51.95	88.26	28.9	22.52	58.86	51.7
7	113	38.66	35.36	74.02	28.9	15.33	47.77	66
8	113	39.29	35.36	74.65	28.9	15.33	47.36	65.4
9	113	39.86	35.36	75.22	28.9	15.33	47	64.8
10	113	40.38	35.36	75.73	28.9	15.33	46.69	64.3
11	113	41.8	35.36	77.15	28.9	15.33	45.83	62.9
12	113	42.7	35.36	78.05	28.9	15.33	45.3	62
13	113	43.49	35.36	78.84	28.9	15.33	44.84	61.2
14	113	44.17	35.36	79.53	28.9	15.33	44.46	60.5
15	113	44.76	35.36	80.12	28.9	15.33	44.13	59.9
16	113	46.45	35.36	81.8	28.9	15.33	43.22	58.2
17	113	47.58	35.36	82.93	28.9	15.33	42.63	57.1
18	113	48.5	35.36	83.86	28.9	15.33	42.16	56.1
19	113	49.25	35.36	84.6	28.9	15.33	41.79	55.4
20	113	49.82	35.36	85.18	28.9	15.33	41.51	54.8
21	113	51.96	35.36	87.32	28.9	15.33	40.49	52.7
22	113	53.05	35.36	88.41	28.9	15.33	39.99	51.6
23	113	55.23	35.36	90.58	28.9	15.33	39.03	49.4
24	113	56.13	35.36	91.48	28.9	15.33	38.65	48.5
25	113	57.47	35.36	92.83	28.9	15.33	38.09	47.2
26	113	58.39	35.36	93.74	28.9	15.33	37.72	46.3

ตารางที่ ค.24 แสดงผลการเลือก Control Valve : CWST43TD16

LOOP	GPM	H <sub>LOOP</sub>	H <sub>cV</sub>	H <sub>TOTAL</sub>	C <sub>v</sub>	H <sub>cV</sub> (Psi)	Authority (%)	Safety
1	120	47.66	39.77	87.43	28.9	17.24	45.49	52.6
2	120	48.55	39.77	88.32	28.9	17.24	45.03	51.7
3	120	49.36	39.77	89.13	28.9	17.24	44.62	50.9
4	120	50.1	39.77	89.87	28.9	17.24	44.26	50.1
5	120	50.77	39.77	90.54	28.9	17.24	43.93	49.5
6	120	51.37	39.77	91.14	28.9	17.24	43.64	48.9
7	99	52.4	66.06	118.46	18.5	28.64	55.76	21.5
8	99	53.93	66.06	119.99	18.5	28.64	55.05	20
9	99	54.92	27.07	81.99	28.9	11.74	33.02	58
10	99	55.81	27.07	82.88	28.9	11.74	32.66	57.1
11	99	56.6	27.07	83.67	28.9	11.74	32.35	56.3
12	99	57.3	27.07	84.37	28.9	11.74	32.08	55.6
13	99	57.92	27.07	84.99	28.9	11.74	31.85	55
14	99	58.46	27.07	85.53	28.9	11.74	31.65	54.5
15	99	60.02	27.07	87.09	28.9	11.74	31.08	52.9
16	99	61.08	27.07	88.15	28.9	11.74	30.71	51.9
17	99	61.96	27.07	89.03	28.9	11.74	30.4	51
18	99	62.69	27.07	89.76	28.9	11.74	30.16	50.2
19	99	63.27	27.07	90.34	28.9	11.74	29.97	49.7
20	99	65.49	27.07	92.56	28.9	11.74	29.24	47.4
21	99	66.71	27.07	93.78	28.9	11.74	28.87	46.2
22	99	67.56	27.07	94.63	28.9	11.74	28.61	45.4
23	99	69.26	27.07	96.33	28.9	11.74	28.1	43.7
24	99	69.96	27.07	97.03	28.9	11.74	27.9	43
25	99	71.01	27.07	98.08	28.9	11.74	27.6	41.9
26	99	71.73	27.07	98.8	28.9	11.74	27.4	41.2

ตารางที่ ค.25 แสดงผลการเลือก Control Valve : CWST44TD06

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	320	64.15	44.53	108.69	72.83	19.31	40.97	31.3
2	320	65.1	44.53	109.63	72.83	19.31	40.62	30.4
3	320	65.67	44.53	110.21	72.83	19.31	40.41	29.8
4	320	66.2	44.53	110.73	72.83	19.31	40.22	29.3
5	320	66.67	44.53	111.21	72.83	19.31	40.05	28.8
6	320	67.1	44.53	111.63	72.83	19.31	39.89	28.4
7	264	68.64	30.31	98.95	72.83	13.14	30.63	41.1
8	264	69.18	30.31	99.49	72.83	13.14	30.47	40.5
9	264	69.66	30.31	99.98	72.83	13.14	30.32	40
10	264	70.73	30.31	101.04	72.83	13.14	30	39
11	264	71.38	30.31	101.69	72.83	13.14	29.81	38.3
12	264	71.95	30.31	102.26	72.83	13.14	29.64	37.7
13	264	72.45	30.31	102.76	72.83	13.14	29.5	37.2
14	264	73.59	30.31	103.9	72.83	13.14	29.17	36.1
15	264	74.26	30.31	104.57	72.83	13.14	28.99	35.4
16	264	74.83	30.31	105.14	72.83	13.14	28.83	34.9
17	264	75.9	30.31	106.21	72.83	13.14	28.54	33.8
18	264	76.63	30.31	106.94	72.83	13.14	28.34	33.1
19	264	77.22	30.31	107.53	72.83	13.14	28.19	32.5
20	264	78.69	30.31	109	72.83	13.14	27.81	31
21	264	79.44	30.31	109.75	72.83	13.14	27.62	30.3
22	264	79.97	30.31	110.28	72.83	13.14	27.49	29.7
23	264	81.33	30.31	111.64	72.83	13.14	27.15	28.4
24	264	81.84	30.31	112.15	72.83	13.14	27.03	27.9
25	264	82.8	30.31	113.11	72.83	13.14	26.8	26.9
26	264	83.85	30.31	114.16	72.83	13.14	26.55	25.8

ตารางที่ ค.26 แสดงผลการเลือก Control Valve : CWST44TD08

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	240	57.4	62.14	119.55	46.24	26.94	51.98	20.5
2	240	57.97	62.14	120.12	46.24	26.94	51.74	19.9
3	240	58.49	62.14	120.64	46.24	26.94	51.51	19.4
4	240	58.97	62.14	121.11	46.24	26.94	51.31	18.9
5	240	60.01	62.14	122.16	46.24	26.94	50.87	17.8
6	240	60.65	62.14	122.8	46.24	26.94	50.61	17.2
7	198	48.31	42.3	90.6	46.24	18.34	46.68	49.4
8	198	48.83	42.3	91.13	46.24	18.34	46.41	48.9
9	198	49.3	42.3	91.6	46.24	18.34	46.17	48.4
10	198	50.41	42.3	92.7	46.24	18.34	45.63	47.3
11	198	51.08	42.3	93.38	46.24	18.34	45.3	46.6
12	198	51.68	42.3	93.98	46.24	18.34	45.01	46
13	198	52.98	42.3	95.27	46.24	18.34	44.4	44.7
14	198	53.84	42.3	96.14	46.24	18.34	43.99	43.9
15	198	54.59	42.3	96.89	46.24	18.34	43.66	43.1
16	198	55.22	42.3	97.52	46.24	18.34	43.37	42.5
17	198	55.75	42.3	98.05	46.24	18.34	43.14	42
18	198	57.13	42.3	99.43	46.24	18.34	42.54	40.6
19	198	57.9	42.3	100.2	46.24	18.34	42.21	39.8
20	198	58.49	42.3	100.79	46.24	18.34	41.97	39.2
21	198	60.2	42.3	102.49	46.24	18.34	41.27	37.5
22	198	61.03	42.3	103.33	46.24	18.34	40.93	36.7
23	198	61.57	42.3	103.86	46.24	18.34	40.72	36.1
24	198	62.99	42.3	105.29	46.24	18.34	40.17	34.7
25	198	64.64	42.3	106.94	46.24	18.34	39.55	33.1
26	198	65.19	42.3	107.49	46.24	18.34	39.35	32.5

ตารางที่ ค.28 แสดงผลการเลือก Control Valve : CWST44TD12

LOOP	GPM	H <sub>LOOP</sub>	H <sub>CV</sub>	H <sub>TOTAL</sub>	Cv	H <sub>CV(Psi)</sub>	Authority (%)	Safety
1	160	41.29	70.71	111.99	28.9	30.65	63.13	28
2	160	42.43	70.71	113.14	28.9	30.65	62.5	26.9
3	160	43.16	70.71	113.86	28.9	30.65	62.1	26.1
4	160	43.82	70.71	114.52	28.9	30.65	61.74	25.5
5	160	44.42	70.71	115.12	28.9	30.65	61.42	24.9
6	160	45.91	70.71	116.61	28.9	30.65	60.63	23.4
7	132	42.27	48.12	90.39	28.9	20.86	53.24	49.6
8	132	43.11	48.12	91.23	28.9	20.86	52.75	48.8
9	132	43.86	48.12	91.99	28.9	20.86	52.32	48
10	132	44.54	48.12	92.67	28.9	20.86	51.93	47.3
11	132	45.15	48.12	93.27	28.9	20.86	51.6	46.7
12	132	45.68	48.12	93.81	28.9	20.86	51.3	46.2
13	132	47.03	48.12	95.16	28.9	20.86	50.57	44.8
14	132	47.95	48.12	96.07	28.9	20.86	50.09	43.9
15	132	48.73	48.12	96.86	28.9	20.86	49.68	43.1
16	132	49.4	48.12	97.53	28.9	20.86	49.34	42.5
17	132	49.96	48.12	98.08	28.9	20.86	49.06	41.9
18	132	51.66	48.12	99.78	28.9	20.86	48.23	40.2
19	132	52.64	48.12	100.76	28.9	20.86	47.76	39.2
20	132	53.4	48.12	101.52	28.9	20.86	47.4	38.5
21	132	53.96	48.12	102.09	28.9	20.86	47.14	37.9
22	132	56.01	48.12	104.13	28.9	20.86	46.21	35.9
23	132	56.94	48.12	105.06	28.9	20.86	45.81	34.9
24	132	58.41	48.12	106.53	28.9	20.86	45.17	33.5
25	132	60.52	48.12	108.65	28.9	20.86	44.29	31.4
26	132	61.02	48.12	109.14	28.9	20.86	44.09	30.9

ตารางที่ ค.27 แสดงผลการเลือก Control Valve : CWST44TD10

LOOP	GPM	H <sub>LOOP</sub>	H <sub>CV</sub>	H <sub>TOTAL</sub>	Cv	H <sub>CV(Psi)</sub>	Authority (%)	Safety
1	192	52.02	39.77	91.79	46.24	17.24	43.33	48.2
2	192	52.64	39.77	92.41	46.24	17.24	43.04	47.6
3	192	53.21	39.77	92.99	46.24	17.24	42.77	47
4	192	53.73	39.77	93.51	46.24	17.24	42.53	46.5
5	192	54.2	39.77	93.98	46.24	17.24	42.32	46
6	192	55.3	39.77	95.07	46.24	17.24	41.83	44.9
7	158	53.84	27.07	80.91	46.24	11.74	33.46	59.1
8	158	54.45	27.07	81.52	46.24	11.74	33.2	58.5
9	158	55.99	27.07	83.06	46.24	11.74	32.59	56.9
10	158	56.95	27.07	84.02	46.24	11.74	32.22	56
11	158	57.79	27.07	84.86	46.24	11.74	31.9	55.1
12	158	58.55	27.07	85.62	46.24	11.74	31.62	54.4
13	158	59.21	27.07	86.28	46.24	11.74	31.38	53.7
14	158	59.78	27.07	86.85	46.24	11.74	31.17	53.2
15	158	60.27	27.07	87.34	46.24	11.74	30.99	52.7
16	158	61.43	27.07	88.5	46.24	11.74	30.59	51.5
17	158	62.21	27.07	89.28	46.24	11.74	30.32	50.7
18	158	62.84	27.07	89.91	46.24	11.74	30.11	50.1
19	158	63.35	27.07	90.42	46.24	11.74	29.94	49.6
20	158	64.85	27.07	91.92	46.24	11.74	29.45	48.1
21	158	65.64	27.07	92.71	46.24	11.74	29.2	47.3
22	158	66.19	27.07	93.26	46.24	11.74	29.03	46.7
23	158	68.09	27.07	95.16	46.24	11.74	28.45	44.8
24	158	70.15	27.07	97.22	46.24	11.74	27.84	42.8
25	158	70.9	27.07	97.97	46.24	11.74	27.63	42
26	158	71.69	27.07	98.76	46.24	11.74	27.41	41.2

ตารางที่ ค.30 แสดงผลการเลือก Control Valve : CWST44TD16

LOOP	GPM	H <sub>LOOP</sub>	H <sub>cV</sub>	H <sub>TOTAL</sub>	C <sub>v</sub>	H <sub>cV</sub> (Psi)	Authority (%)	Safety
1	120	55.21	39.77	94.98	28.9	17.24	41.87	45
2	120	56.1	39.77	95.87	28.9	17.24	41.49	44.1
3	120	56.91	39.77	96.68	28.9	17.24	41.14	43.3
4	120	57.65	39.77	97.42	28.9	17.24	40.83	42.6
5	120	58.32	39.77	98.09	28.9	17.24	40.55	41.9
6	120	58.92	39.77	98.69	28.9	17.24	40.3	41.3
7	99	52.36	66.06	118.42	18.5	28.64	55.78	21.6
8	99	53.89	66.06	119.95	18.5	28.64	55.07	20.1
9	99	54.88	27.07	81.95	28.9	11.74	33.03	58.1
10	99	55.77	27.07	82.84	28.9	11.74	32.68	57.2
11	99	56.56	27.07	83.63	28.9	11.74	32.37	56.4
12	99	57.26	27.07	84.33	28.9	11.74	32.1	55.7
13	99	57.88	27.07	84.95	28.9	11.74	31.87	55.1
14	99	58.42	27.07	85.49	28.9	11.74	31.67	54.5
15	99	59.98	27.07	87.05	28.9	11.74	31.1	53
16	99	61.04	27.07	88.11	28.9	11.74	30.72	51.9
17	99	61.92	27.07	88.99	28.9	11.74	30.42	51
18	99	62.65	27.07	89.72	28.9	11.74	30.17	50.3
19	99	63.23	27.07	90.3	28.9	11.74	29.98	49.7
20	99	65.45	27.07	92.52	28.9	11.74	29.26	47.5
21	99	66.67	27.07	93.74	28.9	11.74	28.88	46.3
22	99	67.52	27.07	94.59	28.9	11.74	28.62	45.4
23	99	69.22	27.07	96.29	28.9	11.74	28.11	43.7
24	99	69.92	27.07	96.99	28.9	11.74	27.91	43
25	99	70.97	27.07	98.04	28.9	11.74	27.61	42
26	99	71.69	27.07	98.76	28.9	11.74	27.41	41.2

ตารางที่ ค.29 แสดงผลการเลือก Control Valve : CWST44TD14

LOOP	GPM	H <sub>LOOP</sub>	H <sub>cV</sub>	H <sub>TOTAL</sub>	C <sub>v</sub>	H <sub>cV</sub> (Psi)	Authority (%)	Safety
1	137	34.89	51.95	86.84	28.9	22.52	59.82	53.2
2	137	35.49	51.95	87.43	28.9	22.52	59.41	52.6
3	137	36.99	51.95	88.93	28.9	22.52	58.41	51.1
4	137	37.93	51.95	89.88	28.9	22.52	57.8	50.1
5	137	38.79	51.95	90.73	28.9	22.52	57.25	49.3
6	137	39.56	51.95	91.5	28.9	22.52	56.77	48.5
7	113	40.28	35.36	75.64	28.9	15.33	46.74	64.4
8	113	40.91	35.36	76.27	28.9	15.33	46.36	63.7
9	113	41.48	35.36	76.84	28.9	15.33	46.01	63.2
10	113	42	35.36	77.35	28.9	15.33	45.71	62.7
11	113	43.42	35.36	78.77	28.9	15.33	44.88	61.2
12	113	44.32	35.36	79.67	28.9	15.33	44.38	60.3
13	113	45.11	35.36	80.46	28.9	15.33	43.94	59.5
14	113	45.79	35.36	81.15	28.9	15.33	43.57	58.9
15	113	46.38	35.36	81.74	28.9	15.33	43.25	58.3
16	113	48.07	35.36	83.42	28.9	15.33	42.38	56.6
17	113	49.2	35.36	84.55	28.9	15.33	41.82	55.5
18	113	50.12	35.36	85.48	28.9	15.33	41.36	54.5
19	113	50.87	35.36	86.22	28.9	15.33	41.01	53.8
20	113	51.44	35.36	86.8	28.9	15.33	40.74	53.2
21	113	53.58	35.36	88.94	28.9	15.33	39.75	51.1
22	113	54.67	35.36	90.03	28.9	15.33	39.27	50
23	113	56.85	35.36	92.2	28.9	15.33	38.35	47.8
24	113	57.75	35.36	93.1	28.9	15.33	37.98	46.9
25	113	59.09	35.36	94.45	28.9	15.33	37.43	45.6
26	113	60.01	35.36	95.36	28.9	15.33	37.08	44.6

ตารางที่ ค.31 แสดงผลการเลือก Control Valve : CWST45TD06

LOOP	GPM	H <sub>LOOP</sub>	H <sub>cV</sub>	H <sub>TOTAL</sub>	C <sub>v</sub>	H <sub>cV</sub> (Psi)	Authority (%)	Safety
1	320	64.02	44.53	108.56	72.83	19.31	41.02	31.4
2	320	64.97	44.53	109.5	72.83	19.31	40.67	30.5
3	320	65.54	44.53	110.08	72.83	19.31	40.46	29.9
4	320	66.07	44.53	110.6	72.83	19.31	40.26	29.4
5	320	66.54	44.53	111.08	72.83	19.31	40.09	28.9
6	320	66.97	44.53	111.5	72.83	19.31	39.94	28.5
7	264	68.52	30.31	98.83	72.83	13.14	30.67	41.2
8	264	69.06	30.31	99.37	72.83	13.14	30.5	40.6
9	264	69.54	30.31	99.86	72.83	13.14	30.35	40.1
10	264	70.61	30.31	100.92	72.83	13.14	30.03	39.1
11	264	71.26	30.31	101.57	72.83	13.14	29.84	38.4
12	264	71.83	30.31	102.14	72.83	13.14	29.68	37.9
13	264	72.33	30.31	102.64	72.83	13.14	29.53	37.4
14	264	73.47	30.31	103.78	72.83	13.14	29.21	36.2
15	264	74.14	30.31	104.45	72.83	13.14	29.02	35.6
16	264	74.71	30.31	105.02	72.83	13.14	28.86	35
17	264	75.78	30.31	106.09	72.83	13.14	28.57	33.9
18	264	76.51	30.31	106.82	72.83	13.14	28.37	33.2
19	264	77.1	30.31	107.41	72.83	13.14	28.22	32.6
20	264	78.57	30.31	108.88	72.83	13.14	27.84	31.1
21	264	79.32	30.31	109.63	72.83	13.14	27.65	30.4
22	264	79.85	30.31	110.16	72.83	13.14	27.52	29.8
23	264	81.21	30.31	111.52	72.83	13.14	27.18	28.5
24	264	81.72	30.31	112.03	72.83	13.14	27.06	28
25	264	82.68	30.31	112.99	72.83	13.14	26.83	27
26	264	83.73	30.31	114.04	72.83	13.14	26.58	26

ตารางที่ ค.32 แสดงผลการเลือก Control Valve : CWST45TD07

LOOP	GPM	H <sub>LOOP</sub>	H <sub>cV</sub>	H <sub>TOTAL</sub>	C <sub>v</sub>	H <sub>cV</sub> (Psi)	Authority (%)	Safety
1	240	53.33	62.14	115.48	46.24	26.94	53.82	24.5
2	240	53.9	62.14	116.05	46.24	26.94	53.55	24
3	240	54.42	62.14	116.57	46.24	26.94	53.31	23.4
4	240	54.9	62.14	117.04	46.24	26.94	53.1	23
5	240	55.94	62.14	118.09	46.24	26.94	52.63	21.9
6	240	56.58	62.14	118.73	46.24	26.94	52.34	21.3
7	198	48.23	42.3	90.52	46.24	18.34	46.72	49.5
8	198	48.75	42.3	91.05	46.24	18.34	46.46	49
9	198	49.22	42.3	91.52	46.24	18.34	46.22	48.5
10	198	50.33	42.3	92.62	46.24	18.34	45.67	47.4
11	198	51	42.3	93.3	46.24	18.34	45.34	46.7
12	198	51.6	42.3	93.9	46.24	18.34	45.05	46.1
13	198	52.9	42.3	95.19	46.24	18.34	44.43	44.8
14	198	53.76	42.3	96.06	46.24	18.34	44.03	43.9
15	198	54.51	42.3	96.81	46.24	18.34	43.69	43.2
16	198	55.14	42.3	97.44	46.24	18.34	43.41	42.6
17	198	55.67	42.3	97.97	46.24	18.34	43.17	42
18	198	57.05	42.3	99.35	46.24	18.34	42.57	40.7
19	198	57.82	42.3	100.12	46.24	18.34	42.25	39.9
20	198	58.41	42.3	100.71	46.24	18.34	42	39.3
21	198	60.12	42.3	102.41	46.24	18.34	41.3	37.6
22	198	60.95	42.3	103.25	46.24	18.34	40.97	36.8
23	198	61.49	42.3	103.78	46.24	18.34	40.76	36.2
24	198	62.91	42.3	105.21	46.24	18.34	40.2	34.8
25	198	64.56	42.3	106.86	46.24	18.34	39.58	33.1
26	198	65.11	42.3	107.41	46.24	18.34	39.38	32.6

ตารางที่ ค.33 แสดงผลการเลือก Control Valve : CWST45TD10

LOOP	GPM	HLOOP	HCV	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	192	46.06	39.77	85.83	46.24	17.24	46.34	54.2
2	192	46.68	39.77	86.45	46.24	17.24	46	53.6
3	192	47.25	39.77	87.03	46.24	17.24	45.7	53
4	192	47.77	39.77	87.55	46.24	17.24	45.43	52.5
5	192	48.24	39.77	88.02	46.24	17.24	45.19	52
6	192	49.34	39.77	89.11	46.24	17.24	44.63	50.9
7	158	50.64	69.3	119.93	28.9	30.04	57.78	20.1
8	158	51.25	27.07	78.32	46.24	11.74	34.56	61.7
9	158	52.79	27.07	79.86	46.24	11.74	33.89	60.1
10	158	53.75	27.07	80.82	46.24	11.74	33.5	59.2
11	158	54.59	27.07	81.66	46.24	11.74	33.15	58.3
12	158	55.35	27.07	82.42	46.24	11.74	32.85	57.6
13	158	56.01	27.07	83.08	46.24	11.74	32.58	56.9
14	158	56.58	27.07	83.65	46.24	11.74	32.36	56.4
15	158	57.07	27.07	84.14	46.24	11.74	32.17	55.9
16	158	58.23	27.07	85.3	46.24	11.74	31.74	54.7
17	158	59.01	27.07	86.08	46.24	11.74	31.45	53.9
18	158	59.64	27.07	86.71	46.24	11.74	31.22	53.3
19	158	60.15	27.07	87.22	46.24	11.74	31.03	52.8
20	158	61.65	27.07	88.72	46.24	11.74	30.51	51.3
21	158	62.44	27.07	89.51	46.24	11.74	30.24	50.5
22	158	62.99	27.07	90.06	46.24	11.74	30.06	49.9
23	158	64.89	27.07	91.96	46.24	11.74	29.44	48
24	158	66.95	27.07	94.02	46.24	11.74	28.79	46
25	158	67.7	27.07	94.77	46.24	11.74	28.56	45.2
26	158	68.49	27.07	95.56	46.24	11.74	28.33	44.4

ตารางที่ ค.34 แสดงผลการเลือก Control Valve : CWST45TD12

LOOP	GPM	HLOOP	HCV	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	160	36.68	70.71	107.38	28.9	30.65	65.84	32.6
2	160	37.82	70.71	108.53	28.9	30.65	65.15	31.5
3	160	38.55	70.71	109.25	28.9	30.65	64.72	30.8
4	160	39.21	70.71	109.91	28.9	30.65	64.33	30.1
5	160	39.81	70.71	110.51	28.9	30.65	63.98	29.5
6	160	41.3	70.71	112	28.9	30.65	63.13	28
7	132	39.11	48.12	87.23	28.9	20.86	55.17	52.8
8	132	39.95	48.12	88.07	28.9	20.86	54.64	51.9
9	132	40.7	48.12	88.83	28.9	20.86	54.18	51.2
10	132	41.38	48.12	89.51	28.9	20.86	53.77	50.5
11	132	41.99	48.12	90.11	28.9	20.86	53.4	49.9
12	132	42.52	48.12	90.65	28.9	20.86	53.09	49.4
13	132	43.87	48.12	92	28.9	20.86	52.31	48
14	132	44.79	48.12	92.91	28.9	20.86	51.8	47.1
15	132	45.57	48.12	93.7	28.9	20.86	51.36	46.3
16	132	46.24	48.12	94.37	28.9	20.86	51	45.6
17	132	46.8	48.12	94.92	28.9	20.86	50.7	45.1
18	132	48.5	48.12	96.62	28.9	20.86	49.81	43.4
19	132	49.48	48.12	97.6	28.9	20.86	49.31	42.4
20	132	50.24	48.12	98.36	28.9	20.86	48.93	41.6
21	132	50.8	48.12	98.93	28.9	20.86	48.65	41.1
22	132	52.85	48.12	100.97	28.9	20.86	47.66	39
23	132	53.78	48.12	101.9	28.9	20.86	47.23	38.1
24	132	55.25	48.12	103.37	28.9	20.86	46.55	36.6
25	132	57.36	48.12	105.49	28.9	20.86	45.62	34.5
26	132	57.86	48.12	105.98	28.9	20.86	45.41	34

ตารางที่ ค.35 แสดงผลการเลือก Control Valve : CWST45TD14

LOOP	GPM	H <sub>LOOP</sub>	H <sub>CV</sub>	H <sub>TOTAL</sub>	C <sub>v</sub>	H <sub>CV(Psi)</sub>	Authority (%)	Safety
1	137	31.69	51.95	83.64	28.9	22.52	62.11	56.4
2	137	32.29	51.95	84.23	28.9	22.52	61.67	55.8
3	137	33.79	51.95	85.73	28.9	22.52	60.59	54.3
4	137	34.73	51.95	86.68	28.9	22.52	59.93	53.3
5	137	35.59	51.95	87.53	28.9	22.52	59.35	52.5
6	137	36.36	51.95	88.3	28.9	22.52	58.83	51.7
7	113	38.48	35.36	73.84	28.9	15.33	47.88	66.2
8	113	39.11	35.36	74.47	28.9	15.33	47.48	65.5
9	113	39.68	35.36	75.04	28.9	15.33	47.12	65
10	113	40.2	35.36	75.55	28.9	15.33	46.8	64.5
11	113	41.62	35.36	76.97	28.9	15.33	45.93	63
12	113	42.52	35.36	77.87	28.9	15.33	45.4	62.1
13	113	43.31	35.36	78.66	28.9	15.33	44.95	61.3
14	113	43.99	35.36	79.35	28.9	15.33	44.56	60.7
15	113	44.58	35.36	79.94	28.9	15.33	44.23	60.1
16	113	46.27	35.36	81.62	28.9	15.33	43.32	58.4
17	113	47.4	35.36	82.75	28.9	15.33	42.72	57.3
18	113	48.32	35.36	83.68	28.9	15.33	42.25	56.3
19	113	49.07	35.36	84.42	28.9	15.33	41.88	55.6
20	113	49.64	35.36	85	28.9	15.33	41.6	55
21	113	51.78	35.36	87.14	28.9	15.33	40.58	52.9
22	113	52.87	35.36	88.23	28.9	15.33	40.07	51.8
23	113	55.05	35.36	90.4	28.9	15.33	39.11	49.6
24	113	55.95	35.36	91.3	28.9	15.33	38.72	48.7
25	113	57.29	35.36	92.65	28.9	15.33	38.16	47.4
26	113	58.21	35.36	93.56	28.9	15.33	37.79	46.4

ตารางที่ ค.36 แสดงผลการเลือก Control Valve : CWST45TD16

LOOP	GPM	H <sub>LOOP</sub>	H <sub>CV</sub>	H <sub>TOTAL</sub>	C <sub>v</sub>	H <sub>CV(Psi)</sub>	Authority (%)	Safety
1	120	58.12	39.77	97.89	28.9	17.24	40.63	42.1
2	120	59.01	39.77	98.78	28.9	17.24	40.26	41.2
3	120	59.82	39.77	99.59	28.9	17.24	39.94	40.4
4	120	60.56	39.77	100.33	28.9	17.24	39.64	39.7
5	120	61.23	39.77	101	28.9	17.24	39.38	39
6	120	61.83	39.77	101.6	28.9	17.24	39.15	38.4
7	99	53.72	66.06	119.78	18.5	28.64	55.15	20.2
8	99	55.25	27.07	82.32	28.9	11.74	32.88	57.7
9	99	56.24	27.07	83.31	28.9	11.74	32.49	56.7
10	99	57.13	27.07	84.2	28.9	11.74	32.15	55.8
11	99	57.92	27.07	84.99	28.9	11.74	31.85	55
12	99	58.62	27.07	85.69	28.9	11.74	31.59	54.3
13	99	59.24	27.07	86.31	28.9	11.74	31.36	53.7
14	99	59.78	27.07	86.85	28.9	11.74	31.17	53.2
15	99	61.34	27.07	88.41	28.9	11.74	30.62	51.6
16	99	62.4	27.07	89.47	28.9	11.74	30.26	50.5
17	99	63.28	27.07	90.35	28.9	11.74	29.96	49.7
18	99	64.01	27.07	91.08	28.9	11.74	29.72	48.9
19	99	64.59	27.07	91.66	28.9	11.74	29.53	48.3
20	99	66.81	27.07	93.88	28.9	11.74	28.83	46.1
21	99	68.03	27.07	95.1	28.9	11.74	28.47	44.9
22	99	68.88	27.07	95.95	28.9	11.74	28.21	44.1
23	99	70.58	27.07	97.65	28.9	11.74	27.72	42.4
24	99	71.28	27.07	98.35	28.9	11.74	27.52	41.7
25	99	72.33	27.07	99.4	28.9	11.74	27.23	40.6
26	99	73.05	27.07	100.12	28.9	11.74	27.04	39.9



ตารางที่ ค.37 แสดงผลการเลือก Control Valve : CWST46TD06

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	320	68.2	44.53	112.74	72.83	19.31	39.5	27.3
2	320	69.15	44.53	113.68	72.83	19.31	39.17	26.3
3	320	69.72	44.53	114.26	72.83	19.31	38.98	25.7
4	320	70.25	44.53	114.78	72.83	19.31	38.8	25.2
5	320	70.72	44.53	115.26	72.83	19.31	38.64	24.7
6	320	71.15	44.53	115.68	72.83	19.31	38.5	24.3
7	264	68.39	30.31	98.7	72.83	13.14	30.71	41.3
8	264	68.93	30.31	99.24	72.83	13.14	30.54	40.8
9	264	69.41	30.31	99.73	72.83	13.14	30.39	40.3
10	264	70.48	30.31	100.79	72.83	13.14	30.07	39.2
11	264	71.13	30.31	101.44	72.83	13.14	29.88	38.6
12	264	71.7	30.31	102.01	72.83	13.14	29.71	38
13	264	72.2	30.31	102.51	72.83	13.14	29.57	37.5
14	264	73.34	30.31	103.65	72.83	13.14	29.24	36.4
15	264	74.01	30.31	104.32	72.83	13.14	29.06	35.7
16	264	74.58	30.31	104.89	72.83	13.14	28.9	35.1
17	264	75.65	30.31	105.96	72.83	13.14	28.61	34
18	264	76.38	30.31	106.69	72.83	13.14	28.41	33.3
19	264	76.97	30.31	107.28	72.83	13.14	28.25	32.7
20	264	78.44	30.31	108.75	72.83	13.14	27.87	31.3
21	264	79.19	30.31	109.5	72.83	13.14	27.68	30.5
22	264	79.72	30.31	110.03	72.83	13.14	27.55	30
23	264	81.08	30.31	111.39	72.83	13.14	27.21	28.6
24	264	81.59	30.31	111.9	72.83	13.14	27.09	28.1
25	264	82.55	30.31	112.86	72.83	13.14	26.86	27.1
26	264	83.6	30.31	113.91	72.83	13.14	26.61	26.1

ตารางที่ ค.38 แสดงผลการเลือก Control Valve : CWST46TD08

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	240	53.23	62.14	115.38	46.24	26.94	53.86	24.6
2	240	53.8	62.14	115.95	46.24	26.94	53.6	24.1
3	240	54.32	62.14	116.47	46.24	26.94	53.36	23.5
4	240	54.8	62.14	116.94	46.24	26.94	53.14	23.1
5	240	55.84	62.14	117.99	46.24	26.94	52.67	22
6	240	56.48	62.14	118.63	46.24	26.94	52.39	21.4
7	198	52.38	42.3	94.67	46.24	18.34	44.68	45.3
8	198	52.9	42.3	95.2	46.24	18.34	44.43	44.8
9	198	53.37	42.3	95.67	46.24	18.34	44.21	44.3
10	198	54.48	42.3	96.77	46.24	18.34	43.71	43.2
11	198	55.15	42.3	97.45	46.24	18.34	43.4	42.6
12	198	55.75	42.3	98.05	46.24	18.34	43.14	42
13	198	57.05	42.3	99.34	46.24	18.34	42.58	40.7
14	198	57.91	42.3	100.21	46.24	18.34	42.21	39.8
15	198	58.66	42.3	100.96	46.24	18.34	41.9	39
16	198	59.29	42.3	101.59	46.24	18.34	41.63	38.4
17	198	59.82	42.3	102.12	46.24	18.34	41.42	37.9
18	198	61.2	42.3	103.5	46.24	18.34	40.87	36.5
19	198	61.97	42.3	104.27	46.24	18.34	40.57	35.7
20	198	62.56	42.3	104.86	46.24	18.34	40.34	35.1
21	198	64.27	42.3	106.56	46.24	18.34	39.69	33.4
22	198	65.1	42.3	107.4	46.24	18.34	39.38	32.6
23	198	65.64	42.3	107.93	46.24	18.34	39.19	32.1
24	198	67.06	42.3	109.36	46.24	18.34	38.68	30.6
25	198	68.71	42.3	111.01	46.24	18.34	38.1	29
26	198	69.26	42.3	111.56	46.24	18.34	37.92	28.4

ตารางที่ ค.39 แสดงผลการเลือก Control Valve : CWST46TD10

LOOP	GPM	HLOOP	Hcv	H <sub>TOTAL</sub>	Cv	H <sub>CV</sub> (Psi)	Authority (%)	Safety
1	192	45.99	39.77	85.76	46.24	17.24	46.38	54.2
2	192	46.61	39.77	86.38	46.24	17.24	46.04	53.6
3	192	47.18	39.77	86.96	46.24	17.24	45.74	53
4	192	47.7	39.77	87.48	46.24	17.24	45.47	52.5
5	192	48.17	39.77	87.95	46.24	17.24	45.22	52.1
6	192	49.27	39.77	89.04	46.24	17.24	44.67	51
7	158	50.58	69.3	119.87	28.9	30.04	57.81	20.1
8	158	51.19	27.07	78.26	46.24	11.74	34.59	61.7
9	158	52.73	27.07	79.8	46.24	11.74	33.92	60.2
10	158	53.69	27.07	80.76	46.24	11.74	33.52	59.2
11	158	54.53	27.07	81.6	46.24	11.74	33.17	58.4
12	158	55.29	27.07	82.36	46.24	11.74	32.87	57.6
13	158	55.95	27.07	83.02	46.24	11.74	32.61	57
14	158	56.52	27.07	83.59	46.24	11.74	32.38	56.4
15	158	57.01	27.07	84.08	46.24	11.74	32.19	55.9
6	158	58.17	27.07	85.24	46.24	11.74	31.76	54.8
17	158	58.95	27.07	86.02	46.24	11.74	31.47	54
18	158	59.58	27.07	86.65	46.24	11.74	31.24	53.4
19	158	60.09	27.07	87.16	46.24	11.74	31.06	52.8
20	158	61.59	27.07	88.66	46.24	11.74	30.53	51.3
21	158	62.38	27.07	89.45	46.24	11.74	30.26	50.6
22	158	62.93	27.07	90	46.24	11.74	30.08	50
23	158	64.83	27.07	91.9	46.24	11.74	29.46	48.1
24	158	66.89	27.07	93.96	46.24	11.74	28.81	46
25	158	67.64	27.07	94.71	46.24	11.74	28.58	45.3
26	158	68.43	27.07	95.5	46.24	11.74	28.35	44.5

ตารางที่ ค.40 แสดงผลการเลือก Control Valve : CWST46TD12

LOOP	GPM	HLOOP	Hcv	H <sub>TOTAL</sub>	Cv	H <sub>CV</sub> (Psi)	Authority (%)	Safety
1	160	38.5	70.71	109.2	28.9	30.65	64.75	30.8
2	160	39.64	70.71	110.35	28.9	30.65	64.08	29.7
3	160	40.37	70.71	111.07	28.9	30.65	63.66	28.9
4	160	41.03	70.71	111.73	28.9	30.65	63.28	28.3
5	160	41.63	70.71	112.33	28.9	30.65	62.94	27.7
6	160	43.12	70.71	113.82	28.9	30.65	62.12	26.2
7	132	37.63	48.12	85.75	28.9	20.86	56.12	54.3
8	132	38.47	48.12	86.59	28.9	20.86	55.58	53.4
9	132	39.22	48.12	87.35	28.9	20.86	55.09	52.7
10	132	39.9	48.12	88.03	28.9	20.86	54.67	52
11	132	40.51	48.12	88.63	28.9	20.86	54.3	51.4
12	132	41.04	48.12	89.17	28.9	20.86	53.97	50.8
13	132	42.39	48.12	90.52	28.9	20.86	53.17	49.5
14	132	43.31	48.12	91.43	28.9	20.86	52.63	48.6
15	132	44.09	48.12	92.22	28.9	20.86	52.18	47.8
16	132	44.76	48.12	92.89	28.9	20.86	51.81	47.1
17	132	45.32	48.12	93.44	28.9	20.86	51.5	46.6
18	132	47.02	48.12	95.14	28.9	20.86	50.58	44.9
19	132	48	48.12	96.12	28.9	20.86	50.07	43.9
20	132	48.76	48.12	96.88	28.9	20.86	49.67	43.1
21	132	49.32	48.12	97.45	28.9	20.86	49.38	42.6
22	132	51.37	48.12	99.49	28.9	20.86	48.37	40.5
23	132	52.3	48.12	100.42	28.9	20.86	47.92	39.6
24	132	53.77	48.12	101.89	28.9	20.86	47.23	38.1
25	132	55.88	48.12	104.01	28.9	20.86	46.27	36
26	132	56.38	48.12	104.5	28.9	20.86	46.05	35.5

ตารางที่ ค.42 แสดงผลการเลือก Control Valve : CWST46TD16

LOOP	GPM	H <sub>LOOP</sub>	H <sub>cv</sub>	H <sub>TOTAL</sub>	Cv	H <sub>CV(Psi)</sub>	Authority (%)	Safety
1	120	50.35	39.77	90.12	28.9	17.24	44.13	49.9
2	120	51.24	39.77	91.01	28.9	17.24	43.7	49
3	120	52.05	39.77	91.82	28.9	17.24	43.31	48.2
4	120	52.79	39.77	92.56	28.9	17.24	42.97	47.4
5	120	53.46	39.77	93.23	28.9	17.24	42.66	46.8
6	120	54.06	39.77	93.83	28.9	17.24	42.39	46.2
7	99	52.28	66.06	118.34	18.5	28.64	55.82	21.7
8	99	53.81	66.06	119.87	18.5	28.64	55.11	20.1
9	99	54.8	27.07	81.87	28.9	11.74	33.06	58.1
10	99	55.69	27.07	82.76	28.9	11.74	32.71	57.2
11	99	56.48	27.07	83.55	28.9	11.74	32.4	56.5
12	99	57.18	27.07	84.25	28.9	11.74	32.13	55.8
13	99	57.8	27.07	84.87	28.9	11.74	31.9	55.1
14	99	58.34	27.07	85.41	28.9	11.74	31.69	54.6
15	99	59.9	27.07	86.97	28.9	11.74	31.12	53
16	99	60.96	27.07	88.03	28.9	11.74	30.75	52
17	99	61.84	27.07	88.91	28.9	11.74	30.44	51.1
18	99	62.57	27.07	89.64	28.9	11.74	30.2	50.4
19	99	63.15	27.07	90.22	28.9	11.74	30.01	49.8
20	99	65.37	27.07	92.44	28.9	11.74	29.28	47.6
21	99	66.59	27.07	93.66	28.9	11.74	28.9	46.3
22	99	67.44	27.07	94.51	28.9	11.74	28.64	45.5
23	99	69.14	27.07	96.21	28.9	11.74	28.14	43.8
24	99	69.84	27.07	96.91	28.9	11.74	27.93	43.1
25	99	70.89	27.07	97.96	28.9	11.74	27.63	42
26	99	71.61	27.07	98.68	28.9	11.74	27.43	41.3

ตารางที่ ค.41 แสดงผลการเลือก Control Valve : CWST46TD14

LOOP	GPM	H <sub>LOOP</sub>	H <sub>cv</sub>	H <sub>TOTAL</sub>	Cv	H <sub>CV(Psi)</sub>	Authority (%)	Safety
1	137	31.65	51.95	83.6	28.9	22.52	62.14	56.4
2	137	32.25	51.95	84.19	28.9	22.52	61.7	55.8
3	137	33.75	51.95	85.69	28.9	22.52	60.62	54.3
4	137	34.69	51.95	86.64	28.9	22.52	59.96	53.4
5	137	35.55	51.95	87.49	28.9	22.52	59.37	52.5
6	137	36.32	51.95	88.26	28.9	22.52	58.86	51.7
7	113	38.44	35.36	73.8	28.9	15.33	47.91	66.2
8	113	39.07	35.36	74.43	28.9	15.33	47.5	65.6
9	113	39.64	35.36	75	28.9	15.33	47.14	65
10	113	40.16	35.36	75.51	28.9	15.33	46.82	64.5
11	113	41.58	35.36	76.93	28.9	15.33	45.96	63.1
12	113	42.48	35.36	77.83	28.9	15.33	45.43	62.2
13	113	43.27	35.36	78.62	28.9	15.33	44.97	61.4
14	113	43.95	35.36	79.31	28.9	15.33	44.58	60.7
15	113	44.54	35.36	79.9	28.9	15.33	44.25	60.1
16	113	46.23	35.36	81.58	28.9	15.33	43.34	58.4
17	113	47.36	35.36	82.71	28.9	15.33	42.75	57.3
18	113	48.28	35.36	83.64	28.9	15.33	42.27	56.4
19	113	49.03	35.36	84.38	28.9	15.33	41.9	55.6
20	113	49.6	35.36	84.96	28.9	15.33	41.62	55
21	113	51.74	35.36	87.1	28.9	15.33	40.59	52.9
22	113	52.83	35.36	88.19	28.9	15.33	40.09	51.8
23	113	55.01	35.36	90.36	28.9	15.33	39.13	49.6
24	113	55.91	35.36	91.26	28.9	15.33	38.74	48.7
25	113	57.25	35.36	92.61	28.9	15.33	38.18	47.4
26	113	58.17	35.36	93.52	28.9	15.33	37.8	46.5

ตารางที่ ค.43 แสดงผลการเลือก Control Valve : CWST47TD06

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	320	68.05	44.53	112.59	72.83	19.31	39.56	27.4
2	320	69	44.53	113.53	72.83	19.31	39.23	26.5
3	320	69.57	44.53	114.11	72.83	19.31	39.03	25.9
4	320	70.1	44.53	114.63	72.83	19.31	38.85	25.4
5	320	70.57	44.53	115.11	72.83	19.31	38.69	24.9
6	320	71	44.53	115.53	72.83	19.31	38.55	24.5
7	264	68.26	30.31	98.57	72.83	13.14	30.75	41.4
8	264	68.8	30.31	99.11	72.83	13.14	30.58	40.9
9	264	69.28	30.31	99.6	72.83	13.14	30.43	40.4
10	264	70.35	30.31	100.66	72.83	13.14	30.11	39.3
11	264	71	30.31	101.31	72.83	13.14	29.92	38.7
12	264	71.57	30.31	101.88	72.83	13.14	29.75	38.1
13	264	72.07	30.31	102.38	72.83	13.14	29.61	37.6
14	264	73.21	30.31	103.52	72.83	13.14	29.28	36.5
5	264	73.88	30.31	104.19	72.83	13.14	29.09	35.8
16	264	74.45	30.31	104.76	72.83	13.14	28.93	35.2
17	264	75.52	30.31	105.83	72.83	13.14	28.64	34.2
18	264	76.25	30.31	106.56	72.83	13.14	28.44	33.4
19	264	76.84	30.31	107.15	72.83	13.14	28.29	32.9
20	264	78.31	30.31	108.62	72.83	13.14	27.9	31.4
21	264	79.06	30.31	109.37	72.83	13.14	27.71	30.6
22	264	79.59	30.31	109.9	72.83	13.14	27.58	30.1
23	264	80.95	30.31	111.26	72.83	13.14	27.24	28.7
24	264	81.46	30.31	111.77	72.83	13.14	27.12	28.2
25	264	82.42	30.31	112.73	72.83	13.14	26.89	27.3
26	264	83.47	30.31	113.78	72.83	13.14	26.64	26.2

ตารางที่ ค.44 แสดงผลการเลือก Control Valve : CWST47TD08

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	240	53.15	62.14	115.3	46.24	26.94	53.9	24.7
2	240	53.72	62.14	115.87	46.24	26.94	53.63	24.1
3	240	54.24	62.14	116.39	46.24	26.94	53.39	23.6
4	240	54.72	62.14	116.86	46.24	26.94	53.18	23.1
5	240	55.76	62.14	117.91	46.24	26.94	52.71	22.1
6	240	56.4	62.14	118.55	46.24	26.94	52.42	21.5
7	198	49.69	42.3	91.98	46.24	18.34	45.98	48
8	198	50.21	42.3	92.51	46.24	18.34	45.72	47.5
9	198	50.68	42.3	92.98	46.24	18.34	45.49	47
10	198	51.79	42.3	94.08	46.24	18.34	44.96	45.9
11	198	52.46	42.3	94.76	46.24	18.34	44.64	45.2
12	198	53.06	42.3	95.36	46.24	18.34	44.36	44.6
13	198	54.36	42.3	96.65	46.24	18.34	43.76	43.4
14	198	55.22	42.3	97.52	46.24	18.34	43.37	42.5
15	198	55.97	42.3	98.27	46.24	18.34	43.04	41.7
16	198	56.6	42.3	98.9	46.24	18.34	42.77	41.1
17	198	57.13	42.3	99.43	46.24	18.34	42.54	40.6
18	198	58.51	42.3	100.81	46.24	18.34	41.96	39.2
19	198	59.28	42.3	101.58	46.24	18.34	41.64	38.4
20	198	59.87	42.3	102.17	46.24	18.34	41.4	37.8
21	198	61.58	42.3	103.87	46.24	18.34	40.72	36.1
22	198	62.41	42.3	104.71	46.24	18.34	40.4	35.3
23	198	62.95	42.3	105.24	46.24	18.34	40.19	34.8
24	198	64.37	42.3	106.67	46.24	18.34	39.65	33.3
25	198	66.02	42.3	108.32	46.24	18.34	39.05	31.7
26	198	66.57	42.3	108.87	46.24	18.34	38.85	31.1

ตารางที่ ค.45 แสดงผลการเลือก Control Valve : CWST47TD10

LOOP	GPM	HLOOP	HcV	H <sub>TOTAL</sub>	Cv	HcV(Psi)	Authority (%)	Safety
1	192	48.39	39.77	88.16	46.24	17.24	45.11	51.8
2	192	49.01	39.77	88.78	46.24	17.24	44.8	51.2
3	192	49.58	39.77	89.36	46.24	17.24	44.51	50.6
4	192	50.1	39.77	89.88	46.24	17.24	44.25	50.1
5	192	50.57	39.77	90.35	46.24	17.24	44.02	49.7
6	192	51.67	39.77	91.44	46.24	17.24	43.49	48.6
7	158	48.66	69.3	117.95	28.9	30.04	58.75	22.1
8	158	49.27	69.3	118.57	28.9	30.04	58.44	21.4
9	158	50.81	27.07	77.88	46.24	11.74	34.76	62.1
10	158	51.77	27.07	78.84	46.24	11.74	34.34	61.2
11	158	52.61	27.07	79.68	46.24	11.74	33.97	60.3
12	158	53.37	27.07	80.44	46.24	11.74	33.65	59.6
13	158	54.03	27.07	81.1	46.24	11.74	33.38	58.9
14	158	54.6	27.07	81.67	46.24	11.74	33.15	58.3
15	158	55.09	27.07	82.16	46.24	11.74	32.95	57.8
16	158	56.25	27.07	83.32	46.24	11.74	32.49	56.7
17	158	57.03	27.07	84.1	46.24	11.74	32.19	55.9
18	158	57.66	27.07	84.73	46.24	11.74	31.95	55.3
19	158	58.17	27.07	85.24	46.24	11.74	31.76	54.8
20	158	59.67	27.07	86.74	46.24	11.74	31.21	53.3
21	158	60.46	27.07	87.53	46.24	11.74	30.93	52.5
22	158	61.01	27.07	88.08	46.24	11.74	30.73	51.9
23	158	62.91	27.07	89.98	46.24	11.74	30.09	50
24	158	64.97	27.07	92.04	46.24	11.74	29.41	48
25	158	65.72	27.07	92.79	46.24	11.74	29.17	47.2
26	158	66.51	27.07	93.58	46.24	11.74	28.93	46.4

ตารางที่ ค.46 แสดงผลการเลือก Control Valve : CWST47TD12

LOOP	GPM	HLOOP	HcV	H <sub>TOTAL</sub>	Cv	HcV(Psi)	Authority (%)	Safety
1	160	39	70.71	109.7	28.9	30.65	64.45	30.3
2	160	40.14	70.71	110.85	28.9	30.65	63.79	29.2
3	160	40.87	70.71	111.57	28.9	30.65	63.37	28.4
4	160	41.53	70.71	112.23	28.9	30.65	63	27.8
5	160	42.13	70.71	112.83	28.9	30.65	62.66	27.2
6	160	43.62	70.71	114.32	28.9	30.65	61.85	25.7
7	132	41.15	48.12	89.27	28.9	20.86	53.91	50.7
8	132	41.99	48.12	90.11	28.9	20.86	53.4	49.9
9	132	42.74	48.12	90.87	28.9	20.86	52.96	49.1
10	132	43.42	48.12	91.55	28.9	20.86	52.57	48.5
11	132	44.03	48.12	92.15	28.9	20.86	52.22	47.9
12	132	44.56	48.12	92.69	28.9	20.86	51.92	47.3
13	132	45.91	48.12	94.04	28.9	20.86	51.18	46
14	132	46.83	48.12	94.95	28.9	20.86	50.68	45.1
15	132	47.61	48.12	95.74	28.9	20.86	50.27	44.3
16	132	48.28	48.12	96.41	28.9	20.86	49.92	43.6
17	132	48.84	48.12	96.96	28.9	20.86	49.63	43
18	132	50.54	48.12	98.66	28.9	20.86	48.78	41.3
19	132	51.52	48.12	99.64	28.9	20.86	48.3	40.4
20	132	52.28	48.12	100.4	28.9	20.86	47.93	39.6
21	132	52.84	48.12	100.97	28.9	20.86	47.66	39
22	132	54.89	48.12	103.01	28.9	20.86	46.72	37
23	132	55.82	48.12	103.94	28.9	20.86	46.3	36.1
24	132	57.29	48.12	105.41	28.9	20.86	45.65	34.6
25	132	59.4	48.12	107.53	28.9	20.86	44.76	32.5
26	132	59.9	48.12	108.02	28.9	20.86	44.55	32

ตารางที่ ค.48 แสดงผลการเลือก Control Valve : CWST47TD16

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	120	50.3	39.77	90.07	28.9	17.24	44.16	49.9
2	120	51.19	39.77	90.96	28.9	17.24	43.72	49
3	120	52	39.77	91.77	28.9	17.24	43.34	48.2
4	120	52.74	39.77	92.51	28.9	17.24	42.99	47.5
5	120	53.41	39.77	93.18	28.9	17.24	42.68	46.8
6	120	54.01	39.77	93.78	28.9	17.24	42.41	46.2
7	99	49.23	66.06	115.29	18.5	28.64	57.3	24.7
8	99	50.76	66.06	116.82	18.5	28.64	56.55	23.2
9	99	51.75	66.06	117.81	18.5	28.64	56.07	22.2
10	99	52.64	66.06	118.7	18.5	28.64	55.65	21.3
11	99	53.43	66.06	119.49	18.5	28.64	55.28	20.5
12	99	54.13	27.07	81.2	28.9	11.74	33.34	58.8
13	99	54.75	27.07	81.82	28.9	11.74	33.08	58.2
14	99	55.29	27.07	82.36	28.9	11.74	32.87	57.6
15	99	56.85	27.07	83.92	28.9	11.74	32.26	56.1
16	99	57.91	27.07	84.98	28.9	11.74	31.85	55
17	99	58.79	27.07	85.86	28.9	11.74	31.53	54.1
18	99	59.52	27.07	86.59	28.9	11.74	31.26	53.4
19	99	60.1	27.07	87.17	28.9	11.74	31.06	52.8
20	99	62.32	27.07	89.39	28.9	11.74	30.28	50.6
21	99	63.54	27.07	90.61	28.9	11.74	29.88	49.4
22	99	64.39	27.07	91.46	28.9	11.74	29.6	48.5
23	99	66.09	27.07	93.16	28.9	11.74	29.06	46.8
24	99	66.79	27.07	93.86	28.9	11.74	28.84	46.1
25	99	67.84	27.07	94.91	28.9	11.74	28.52	45.1
26	99	68.56	27.07	95.63	28.9	11.74	28.31	44.4

ตารางที่ ค.47 แสดงผลการเลือก Control Valve : CWST47TD14

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	137	38.25	51.95	90.2	28.9	22.52	57.59	49.8
2	137	38.85	51.95	90.79	28.9	22.52	57.21	49.2
3	137	40.35	51.95	92.29	28.9	22.52	56.28	47.7
4	137	41.29	51.95	93.24	28.9	22.52	55.71	46.8
5	137	42.15	51.95	94.09	28.9	22.52	55.21	45.9
6	137	42.92	51.95	94.86	28.9	22.52	54.76	45.1
7	113	46.32	35.36	81.68	28.9	15.33	43.29	58.3
8	113	46.95	35.36	82.31	28.9	15.33	42.95	57.7
9	113	47.52	35.36	82.88	28.9	15.33	42.66	57.1
10	113	48.04	35.36	83.39	28.9	15.33	42.4	56.6
11	113	49.46	35.36	84.81	28.9	15.33	41.69	55.2
12	113	50.36	35.36	85.71	28.9	15.33	41.25	54.3
13	113	51.15	35.36	86.5	28.9	15.33	40.87	53.5
14	113	51.83	35.36	87.19	28.9	15.33	40.55	52.8
15	113	52.42	35.36	87.78	28.9	15.33	40.28	52.2
16	113	54.11	35.36	89.46	28.9	15.33	39.52	50.5
17	113	55.24	35.36	90.59	28.9	15.33	39.03	49.4
18	113	56.16	35.36	91.52	28.9	15.33	38.63	48.5
19	113	56.91	35.36	92.26	28.9	15.33	38.32	47.7
20	113	57.48	35.36	92.84	28.9	15.33	38.08	47.2
21	113	59.62	35.36	94.98	28.9	15.33	37.23	45
22	113	60.71	35.36	96.07	28.9	15.33	36.8	43.9
23	113	62.89	35.36	98.24	28.9	15.33	35.99	41.8
24	113	63.79	35.36	99.14	28.9	15.33	35.66	40.9
25	113	65.13	35.36	100.49	28.9	15.33	35.18	39.5
26	113	66.05	35.36	101.4	28.9	15.33	34.87	38.6

ตารางที่ ค.50 แสดงผลการเลือก Control Valve : CWST48TD08

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	HCV(Psi)	Authority (%)	Safety
1	240	53.05	62.14	115.2	46.24	26.94	53.95	24.8
2	240	53.62	62.14	115.77	46.24	26.94	53.68	24.2
3	240	54.14	62.14	116.29	46.24	26.94	53.44	23.7
4	240	54.62	62.14	116.76	46.24	26.94	53.22	23.2
5	240	55.66	62.14	117.81	46.24	26.94	52.75	22.2
6	240	56.3	62.14	118.45	46.24	26.94	52.47	21.6
7	198	49.6	42.3	91.89	46.24	18.34	46.03	48.1
8	198	50.12	42.3	92.42	46.24	18.34	45.77	47.6
9	198	50.59	42.3	92.89	46.24	18.34	45.53	47.1
10	198	51.7	42.3	93.99	46.24	18.34	45	46
11	198	52.37	42.3	94.67	46.24	18.34	44.68	45.3
12	198	52.97	42.3	95.27	46.24	18.34	44.4	44.7
13	198	54.27	42.3	96.56	46.24	18.34	43.8	43.4
14	198	55.13	42.3	97.43	46.24	18.34	43.41	42.6
15	198	55.88	42.3	98.18	46.24	18.34	43.08	41.8
16	198	56.51	42.3	98.81	46.24	18.34	42.81	41.2
17	198	57.04	42.3	99.34	46.24	18.34	42.58	40.7
18	198	58.42	42.3	100.72	46.24	18.34	42	39.3
19	198	59.19	42.3	101.49	46.24	18.34	41.68	38.5
20	198	59.78	42.3	102.08	46.24	18.34	41.43	37.9
21	198	61.49	42.3	103.78	46.24	18.34	40.75	36.2
22	198	62.32	42.3	104.62	46.24	18.34	40.43	35.4
23	198	62.86	42.3	105.15	46.24	18.34	40.22	34.9
24	198	64.28	42.3	106.58	46.24	18.34	39.69	33.4
25	198	65.93	42.3	108.23	46.24	18.34	39.08	31.8
26	198	66.48	42.3	108.78	46.24	18.34	38.88	31.2

ตารางที่ ค.49 แสดงผลการเลือก Control Valve : CWST48TD06

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	HCV(Psi)	Authority (%)	Safety
1	320	67.9	44.53	112.44	72.83	19.31	39.61	27.6
2	320	68.85	44.53	113.38	72.83	19.31	39.28	26.6
3	320	69.42	44.53	113.96	72.83	19.31	39.08	26
4	320	69.95	44.53	114.48	72.83	19.31	38.9	25.5
5	320	70.42	44.53	114.96	72.83	19.31	38.74	25
6	320	70.85	44.53	115.38	72.83	19.31	38.6	24.6
7	264	70.79	30.31	101.1	72.83	13.14	29.98	38.9
8	264	71.33	30.31	101.64	72.83	13.14	29.82	38.4
9	264	71.81	30.31	102.13	72.83	13.14	29.68	37.9
10	264	72.88	30.31	103.19	72.83	13.14	29.37	36.8
11	264	73.53	30.31	103.84	72.83	13.14	29.19	36.2
12	264	74.1	30.31	104.41	72.83	13.14	29.03	35.6
13	264	74.6	30.31	104.91	72.83	13.14	28.89	35.1
14	264	75.74	30.31	106.05	72.83	13.14	28.58	34
15	264	76.41	30.31	106.72	72.83	13.14	28.4	33.3
16	264	76.98	30.31	107.29	72.83	13.14	28.25	32.7
17	264	78.05	30.31	108.36	72.83	13.14	27.97	31.6
18	264	78.78	30.31	109.09	72.83	13.14	27.78	30.9
19	264	79.37	30.31	109.68	72.83	13.14	27.64	30.3
20	264	80.84	30.31	111.15	72.83	13.14	27.27	28.9
21	264	81.59	30.31	111.9	72.83	13.14	27.09	28.1
22	264	82.12	30.31	112.43	72.83	13.14	26.96	27.6
23	264	83.48	30.31	113.79	72.83	13.14	26.64	26.2
24	264	83.99	30.31	114.3	72.83	13.14	26.52	25.7
25	264	84.95	30.31	115.26	72.83	13.14	26.3	24.7
26	264	86	30.31	116.31	72.83	13.14	26.06	23.7

ตารางที่ ค.51 แสดงผลการเลือก Control Valve : CWST48TD10

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	HCV(Psi)	Authority (%)	Safety
1	192	46.05	39.77	85.82	46.24	17.24	46.34	54.2
2	192	46.67	39.77	86.44	46.24	17.24	46.01	53.6
3	192	47.24	39.77	87.02	46.24	17.24	45.71	53
4	192	47.76	39.77	87.53	46.24	17.24	45.44	52.5
5	192	48.23	39.77	88.01	46.24	17.24	45.19	52
6	192	49.33	39.77	89.1	46.24	17.24	44.64	50.9
7	158	48.6	69.3	117.89	28.9	30.04	58.78	22.1
8	158	49.21	69.3	118.51	28.9	30.04	58.47	21.5
9	158	50.75	27.07	77.82	46.24	11.74	34.78	62.2
10	158	51.71	27.07	78.78	46.24	11.74	34.36	61.2
11	158	52.55	27.07	79.62	46.24	11.74	34	60.4
12	158	53.31	27.07	80.38	46.24	11.74	33.68	59.6
13	158	53.97	27.07	81.04	46.24	11.74	33.4	59
14	158	54.54	27.07	81.61	46.24	11.74	33.17	58.4
15	158	55.03	27.07	82.1	46.24	11.74	32.97	57.9
16	158	56.19	27.07	83.26	46.24	11.74	32.51	56.7
17	158	56.97	27.07	84.04	46.24	11.74	32.21	56
18	158	57.6	27.07	84.67	46.24	11.74	31.97	55.3
19	158	58.11	27.07	85.18	46.24	11.74	31.78	54.8
20	158	59.61	27.07	86.68	46.24	11.74	31.23	53.3
21	158	60.4	27.07	87.47	46.24	11.74	30.95	52.5
22	158	60.95	27.07	88.02	46.24	11.74	30.75	52
23	158	62.85	27.07	89.92	46.24	11.74	30.11	50.1
24	158	64.91	27.07	91.98	46.24	11.74	29.43	48
25	158	65.66	27.07	92.73	46.24	11.74	29.19	47.3
26	158	66.45	27.07	93.52	46.24	11.74	28.95	46.5

ตารางที่ ค.52 แสดงผลการเลือก Control Valve : CWST48TD12

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	HCV(Psi)	Authority (%)	Safety
1	160	43	70.71	113.7	28.9	30.65	62.18	26.3
2	160	44.14	70.71	114.85	28.9	30.65	61.57	25.2
3	160	44.87	70.71	115.57	28.9	30.65	61.18	24.4
4	160	45.53	70.71	116.23	28.9	30.65	60.83	23.8
5	160	46.13	70.71	116.83	28.9	30.65	60.52	23.2
6	160	47.62	70.71	118.32	28.9	30.65	59.76	21.7
7	132	37.65	48.12	85.77	28.9	20.86	56.11	54.2
8	132	38.49	48.12	86.61	28.9	20.86	55.56	53.4
9	132	39.24	48.12	87.37	28.9	20.86	55.08	52.6
10	132	39.92	48.12	88.05	28.9	20.86	54.66	52
11	132	40.53	48.12	88.65	28.9	20.86	54.28	51.4
12	132	41.06	48.12	89.19	28.9	20.86	53.96	50.8
13	132	42.41	48.12	90.54	28.9	20.86	53.15	49.5
14	132	43.33	48.12	91.45	28.9	20.86	52.62	48.6
15	132	44.11	48.12	92.24	28.9	20.86	52.17	47.8
16	132	44.78	48.12	92.91	28.9	20.86	51.8	47.1
17	132	45.34	48.12	93.46	28.9	20.86	51.49	46.5
18	132	47.04	48.12	95.16	28.9	20.86	50.57	44.8
19	132	48.02	48.12	96.14	28.9	20.86	50.05	43.9
20	132	48.78	48.12	96.9	28.9	20.86	49.66	43.1
21	132	49.34	48.12	97.47	28.9	20.86	49.37	42.5
22	132	51.39	48.12	99.51	28.9	20.86	48.36	40.5
23	132	52.32	48.12	100.44	28.9	20.86	47.91	39.6
24	132	53.79	48.12	101.91	28.9	20.86	47.22	38.1
25	132	55.9	48.12	104.03	28.9	20.86	46.26	36
26	132	56.4	48.12	104.52	28.9	20.86	46.04	35.5



ตารางที่ ค.53 แสดงผลการเลือก Control Valve : CWST48TD14

LOOP	GPM	H <sub>LOOP</sub>	H <sub>Cv</sub>	H <sub>TOTAL</sub>	Cv	H <sub>Cv</sub> (Psi)	Authority (%)	Safety
1	137	43.08	51.95	95.03	28.9	22.52	54.67	45
2	137	43.68	51.95	95.62	28.9	22.52	54.32	44.4
3	137	45.18	51.95	97.12	28.9	22.52	53.48	42.9
4	137	46.12	51.95	98.07	28.9	22.52	52.97	41.9
5	137	46.98	51.95	98.92	28.9	22.52	52.51	41.1
6	137	47.75	51.95	99.69	28.9	22.52	52.11	40.3
7	113	47.21	35.36	82.57	28.9	15.33	42.82	57.4
8	113	47.84	35.36	83.2	28.9	15.33	42.5	56.8
9	113	48.41	35.36	83.77	28.9	15.33	42.21	56.2
10	113	48.93	35.36	84.28	28.9	15.33	41.95	55.7
11	113	50.35	35.36	85.7	28.9	15.33	41.25	54.3
12	113	51.25	35.36	86.6	28.9	15.33	40.83	53.4
13	113	52.04	35.36	87.39	28.9	15.33	40.46	52.6
14	113	52.72	35.36	88.08	28.9	15.33	40.14	51.9
15	113	53.31	35.36	88.67	28.9	15.33	39.87	51.3
16	113	55	35.36	90.35	28.9	15.33	39.13	49.7
17	113	56.13	35.36	91.48	28.9	15.33	38.65	48.5
18	113	57.05	35.36	92.41	28.9	15.33	38.26	47.6
19	113	57.8	35.36	93.15	28.9	15.33	37.96	46.9
20	113	58.37	35.36	93.73	28.9	15.33	37.72	46.3
21	113	60.51	35.36	95.87	28.9	15.33	36.88	44.1
22	113	61.6	35.36	96.96	28.9	15.33	36.47	43
23	113	63.78	35.36	99.13	28.9	15.33	35.67	40.9
24	113	64.68	35.36	100.03	28.9	15.33	35.34	40
25	113	66.02	35.36	101.38	28.9	15.33	34.88	38.6
26	113	66.94	35.36	102.29	28.9	15.33	34.56	37.7

ตารางที่ ค.54 แสดงผลการเลือก Control Valve : CWST48TD16

LOOP	GPM	H <sub>LOOP</sub>	H <sub>Cv</sub>	H <sub>TOTAL</sub>	Cv	H <sub>Cv</sub> (Psi)	Authority (%)	Safety
1	120	55.59	39.77	95.36	28.9	17.24	41.71	44.6
2	120	56.48	39.77	96.25	28.9	17.24	41.32	43.8
3	120	57.29	39.77	97.06	28.9	17.24	40.98	42.9
4	120	58.03	39.77	97.8	28.9	17.24	40.67	42.2
5	120	58.7	39.77	98.47	28.9	17.24	40.39	41.5
6	120	59.3	39.77	99.07	28.9	17.24	40.15	40.9
7	99	54.47	27.07	81.54	28.9	11.74	33.2	58.5
8	99	56	27.07	83.07	28.9	11.74	32.59	56.9
9	99	56.99	27.07	84.06	28.9	11.74	32.2	55.9
10	99	57.88	27.07	84.95	28.9	11.74	31.87	55.1
11	99	58.67	27.07	85.74	28.9	11.74	31.57	54.3
12	99	59.37	27.07	86.44	28.9	11.74	31.31	53.6
13	99	59.99	27.07	87.06	28.9	11.74	31.09	52.9
14	99	60.53	27.07	87.6	28.9	11.74	30.9	52.4
15	99	62.09	27.07	89.16	28.9	11.74	30.36	50.8
16	99	63.15	27.07	90.22	28.9	11.74	30	49.8
17	99	64.03	27.07	91.1	28.9	11.74	29.71	48.9
18	99	64.76	27.07	91.83	28.9	11.74	29.48	48.2
19	99	65.34	27.07	92.41	28.9	11.74	29.29	47.6
20	99	67.56	27.07	94.63	28.9	11.74	28.6	45.4
21	99	68.78	27.07	95.85	28.9	11.74	28.24	44.2
22	99	69.63	27.07	96.7	28.9	11.74	27.99	43.3
23	99	71.33	27.07	98.4	28.9	11.74	27.51	41.6
24	99	72.03	27.07	99.1	28.9	11.74	27.32	40.9
25	99	73.08	27.07	100.15	28.9	11.74	27.03	39.9
26	99	73.8	27.07	100.87	28.9	11.74	26.84	39.1

ตารางที่ ค.55 แสดงผลการเลือก Control Valve : CWST49TD06

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	320	67.75	44.53	112.29	72.83	19.31	39.66	27.7
2	320	68.7	44.53	113.23	72.83	19.31	39.33	26.8
3	320	69.27	44.53	113.81	72.83	19.31	39.13	26.2
4	320	69.8	44.53	114.33	72.83	19.31	38.95	25.7
5	320	70.27	44.53	114.81	72.83	19.31	38.79	25.2
6	320	70.7	44.53	115.23	72.83	19.31	38.65	24.8
7	264	70.65	30.31	100.96	72.83	13.14	30.02	39
8	264	71.19	30.31	101.5	72.83	13.14	29.86	38.5
9	264	71.67	30.31	101.99	72.83	13.14	29.72	38
10	264	72.74	30.31	103.05	72.83	13.14	29.41	37
11	264	73.39	30.31	103.7	72.83	13.14	29.23	36.3
12	264	73.96	30.31	104.27	72.83	13.14	29.07	35.7
13	264	74.46	30.31	104.77	72.83	13.14	28.93	35.2
14	264	75.6	30.31	105.91	72.83	13.14	28.62	34.1
15	264	76.27	30.31	106.58	72.83	13.14	28.44	33.4
16	264	76.84	30.31	107.15	72.83	13.14	28.29	32.9
17	264	77.91	30.31	108.22	72.83	13.14	28.01	31.8
18	264	78.64	30.31	108.95	72.83	13.14	27.82	31.1
19	264	79.23	30.31	109.54	72.83	13.14	27.67	30.5
20	264	80.7	30.31	111.01	72.83	13.14	27.3	29
21	264	81.45	30.31	111.76	72.83	13.14	27.12	28.2
22	264	81.98	30.31	112.29	72.83	13.14	26.99	27.7
23	264	83.34	30.31	113.65	72.83	13.14	26.67	26.4
24	264	83.85	30.31	114.16	72.83	13.14	26.55	25.8
25	264	84.81	30.31	115.12	72.83	13.14	26.33	24.9
26	264	85.86	30.31	116.17	72.83	13.14	26.09	23.8

ตารางที่ ค.56 แสดงผลการเลือก Control Valve : CWST49TD08

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	240	53.24	62.14	115.39	46.24	26.94	53.86	24.6
2	240	53.81	62.14	115.96	46.24	26.94	53.59	24
3	240	54.33	62.14	116.48	46.24	26.94	53.35	23.5
4	240	54.81	62.14	116.95	46.24	26.94	53.14	23.1
5	240	55.85	62.14	118	46.24	26.94	52.67	22
6	240	56.49	62.14	118.64	46.24	26.94	52.38	21.4
7	198	50.15	42.3	92.44	46.24	18.34	45.75	47.6
8	198	50.67	42.3	92.97	46.24	18.34	45.5	47
9	198	51.14	42.3	93.44	46.24	18.34	45.27	46.6
10	198	52.25	42.3	94.54	46.24	18.34	44.74	45.5
11	198	52.92	42.3	95.22	46.24	18.34	44.42	44.8
12	198	53.52	42.3	95.82	46.24	18.34	44.14	44.2
13	198	54.82	42.3	97.11	46.24	18.34	43.55	42.9
14	198	55.68	42.3	97.98	46.24	18.34	43.17	42
15	198	56.43	42.3	98.73	46.24	18.34	42.84	41.3
16	198	57.06	42.3	99.36	46.24	18.34	42.57	40.6
17	198	57.59	42.3	99.89	46.24	18.34	42.34	40.1
18	198	58.97	42.3	101.27	46.24	18.34	41.77	38.7
19	198	59.74	42.3	102.04	46.24	18.34	41.45	38
20	198	60.33	42.3	102.63	46.24	18.34	41.21	37.4
21	198	62.04	42.3	104.33	46.24	18.34	40.54	35.7
22	198	62.87	42.3	105.17	46.24	18.34	40.22	34.8
23	198	63.41	42.3	105.7	46.24	18.34	40.01	34.3
24	198	64.83	42.3	107.13	46.24	18.34	39.48	32.9
25	198	66.48	42.3	108.78	46.24	18.34	38.88	31.2
26	198	67.03	42.3	109.33	46.24	18.34	38.69	30.7

ตารางที่ ค.57 แสดงผลการเลือก Control Valve : CWST49TD10

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	192	49.05	39.77	88.82	46.24	17.24	44.78	51.2
2	192	49.67	39.77	89.44	46.24	17.24	44.47	50.6
3	192	50.24	39.77	90.02	46.24	17.24	44.18	50
4	192	50.76	39.77	90.54	46.24	17.24	43.93	49.5
5	192	51.23	39.77	91.01	46.24	17.24	43.7	49
6	192	52.33	39.77	92.1	46.24	17.24	43.18	47.9
7	158	53.26	27.07	80.33	46.24	11.74	33.7	59.7
8	158	53.87	27.07	80.94	46.24	11.74	33.44	59.1
9	158	55.41	27.07	82.48	46.24	11.74	32.82	57.5
10	158	56.37	27.07	83.44	46.24	11.74	32.44	56.6
11	158	57.21	27.07	84.28	46.24	11.74	32.12	55.7
12	158	57.97	27.07	85.04	46.24	11.74	31.83	55
13	158	58.63	27.07	85.7	46.24	11.74	31.59	54.3
14	158	59.2	27.07	86.27	46.24	11.74	31.38	53.7
15	158	59.69	27.07	86.76	46.24	11.74	31.2	53.2
16	158	60.85	27.07	87.92	46.24	11.74	30.79	52.1
17	158	61.63	27.07	88.7	46.24	11.74	30.52	51.3
18	158	62.26	27.07	89.33	46.24	11.74	30.3	50.7
19	158	62.77	27.07	89.84	46.24	11.74	30.13	50.2
20	158	64.27	27.07	91.34	46.24	11.74	29.64	48.7
21	158	65.06	27.07	92.13	46.24	11.74	29.38	47.9
22	158	65.61	27.07	92.68	46.24	11.74	29.21	47.3
23	158	67.51	27.07	94.58	46.24	11.74	28.62	45.4
24	158	69.57	27.07	96.64	46.24	11.74	28.01	43.4
25	158	70.32	27.07	97.39	46.24	11.74	27.79	42.6
26	158	71.11	27.07	98.18	46.24	11.74	27.57	41.8

ตารางที่ ค.58 แสดงผลการเลือก Control Valve : CWST49TD12

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	160	47.39	70.71	118.09	28.9	30.65	59.87	21.9
2	160	48.53	70.71	119.24	28.9	30.65	59.3	20.8
3	160	49.26	70.71	119.96	28.9	30.65	58.94	20
4	160	49.92	27.62	77.54	46.24	11.97	35.62	62.5
5	160	50.52	27.62	78.14	46.24	11.97	35.35	61.9
6	160	52.01	27.62	79.62	46.24	11.97	34.69	60.4
7	132	42.06	48.12	90.18	28.9	20.86	53.36	49.8
8	132	42.9	48.12	91.02	28.9	20.86	52.87	49
9	132	43.65	48.12	91.78	28.9	20.86	52.44	48.2
10	132	44.33	48.12	92.46	28.9	20.86	52.05	47.5
11	132	44.94	48.12	93.06	28.9	20.86	51.71	46.9
12	132	45.47	48.12	93.6	28.9	20.86	51.42	46.4
13	132	46.82	48.12	94.95	28.9	20.86	50.68	45.1
14	132	47.74	48.12	95.86	28.9	20.86	50.2	44.1
15	132	48.52	48.12	96.65	28.9	20.86	49.79	43.4
16	132	49.19	48.12	97.32	28.9	20.86	49.45	42.7
17	132	49.75	48.12	97.87	28.9	20.86	49.17	42.1
18	132	51.45	48.12	99.57	28.9	20.86	48.33	40.4
19	132	52.43	48.12	100.55	28.9	20.86	47.86	39.5
20	132	53.19	48.12	101.31	28.9	20.86	47.5	38.7
21	132	53.75	48.12	101.88	28.9	20.86	47.24	38.1
22	132	55.8	48.12	103.92	28.9	20.86	46.31	36.1
23	132	56.73	48.12	104.85	28.9	20.86	45.9	35.2
24	132	58.2	48.12	106.32	28.9	20.86	45.26	33.7
25	132	60.31	48.12	108.44	28.9	20.86	44.38	31.6
26	132	60.81	48.12	108.93	28.9	20.86	44.18	31.1

ตารางที่ ค.59 แสดงผลการเลือก Control Valve : CWST49TD14

LOOP	GPM	H <sub>LOOP</sub>	H <sub>CV</sub>	H <sub>TOTAL</sub>	Cv	H <sub>CV</sub> (Psi)	Authority (%)	Safety
1	137	36.48	51.95	88.43	28.9	22.52	58.75	51.6
2	137	37.08	51.95	89.02	28.9	22.52	58.35	51
3	137	38.58	51.95	90.52	28.9	22.52	57.38	49.5
4	137	39.52	51.95	91.47	28.9	22.52	56.79	48.5
5	137	40.38	51.95	92.32	28.9	22.52	56.27	47.7
6	137	41.15	51.95	93.09	28.9	22.52	55.8	46.9
7	113	40.54	35.36	75.9	28.9	15.33	46.58	64.1
8	113	41.17	35.36	76.53	28.9	15.33	46.2	63.5
9	113	41.74	35.36	77.1	28.9	15.33	45.86	62.9
10	113	42.26	35.36	77.61	28.9	15.33	45.56	62.4
11	113	43.68	35.36	79.03	28.9	15.33	44.74	61
12	113	44.58	35.36	79.93	28.9	15.33	44.23	60.1
13	113	45.37	35.36	80.72	28.9	15.33	43.8	59.3
14	113	46.05	35.36	81.41	28.9	15.33	43.43	58.6
15	113	46.64	35.36	82	28.9	15.33	43.12	58
16	113	48.33	35.36	83.68	28.9	15.33	42.25	56.3
17	113	49.46	35.36	84.81	28.9	15.33	41.69	55.2
18	113	50.38	35.36	85.74	28.9	15.33	41.24	54.3
19	113	51.13	35.36	86.48	28.9	15.33	40.88	53.5
20	113	51.7	35.36	87.06	28.9	15.33	40.61	52.9
21	113	53.84	35.36	89.2	28.9	15.33	39.64	50.8
22	113	54.93	35.36	90.29	28.9	15.33	39.16	49.7
23	113	57.11	35.36	92.46	28.9	15.33	38.24	47.5
24	113	58.01	35.36	93.36	28.9	15.33	37.87	46.6
25	113	59.35	35.36	94.71	28.9	15.33	37.33	45.3
26	113	60.27	35.36	95.62	28.9	15.33	36.97	44.4

ตารางที่ ค.60 แสดงผลการเลือก Control Valve : CWST49TD16

LOOP	GPM	H <sub>LOOP</sub>	H <sub>CV</sub>	H <sub>TOTAL</sub>	Cv	H <sub>CV</sub> (Psi)	Authority (%)	Safety
1	120	54.41	39.77	94.18	28.9	17.24	42.23	45.8
2	120	55.3	39.77	95.07	28.9	17.24	41.83	44.9
3	120	56.11	39.77	95.88	28.9	17.24	41.48	44.1
4	120	56.85	39.77	96.62	28.9	17.24	41.16	43.4
5	120	57.52	39.77	97.29	28.9	17.24	40.88	42.7
6	120	58.12	39.77	97.89	28.9	17.24	40.63	42.1
7	99	50.54	66.06	116.6	18.5	28.64	56.65	23.4
8	99	52.07	66.06	118.13	18.5	28.64	55.92	21.9
9	99	53.06	66.06	119.12	18.5	28.64	55.46	20.9
10	99	53.95	27.07	81.02	28.9	11.74	33.41	59
11	99	54.74	27.07	81.81	28.9	11.74	33.09	58.2
12	99	55.44	27.07	82.51	28.9	11.74	32.81	57.5
13	99	56.06	27.07	83.13	28.9	11.74	32.56	56.9
14	99	56.6	27.07	83.67	28.9	11.74	32.35	56.3
15	99	58.16	27.07	85.23	28.9	11.74	31.76	54.8
16	99	59.22	27.07	86.29	28.9	11.74	31.37	53.7
17	99	60.1	27.07	87.17	28.9	11.74	31.05	52.8
18	99	60.83	27.07	87.9	28.9	11.74	30.8	52.1
19	99	61.41	27.07	88.48	28.9	11.74	30.6	51.5
20	99	63.63	27.07	90.7	28.9	11.74	29.84	49.3
21	99	64.85	27.07	91.92	28.9	11.74	29.45	48.1
22	99	65.7	27.07	92.77	28.9	11.74	29.18	47.2
23	99	67.4	27.07	94.47	28.9	11.74	28.66	45.5
24	99	68.1	27.07	95.17	28.9	11.74	28.44	44.8
25	99	69.15	27.07	96.22	28.9	11.74	28.13	43.8
26	99	69.87	27.07	96.94	28.9	11.74	27.93	43.1

ตารางที่ ค.61 แสดงผลการเลือก Control Valve : CWST50TD06

LOOP	GPM	H <sub>LOOP</sub>	H <sub>cV</sub>	H <sub>TOTAL</sub>	C <sub>v</sub>	H <sub>cV</sub> (Psi)	Authority (%)	Safety
1	320	68.05	44.53	112.59	72.83	19.31	39.56	27.4
2	320	69	44.53	113.53	72.83	19.31	39.23	26.5
3	320	69.57	44.53	114.11	72.83	19.31	39.03	25.9
4	320	70.1	44.53	114.63	72.83	19.31	38.85	25.4
5	320	70.57	44.53	115.11	72.83	19.31	38.69	24.9
6	320	71	44.53	115.53	72.83	19.31	38.55	24.5
7	264	70.48	30.31	100.79	72.83	13.14	30.07	39.2
8	264	71.02	30.31	101.33	72.83	13.14	29.91	38.7
9	264	71.5	30.31	101.82	72.83	13.14	29.77	38.2
10	264	72.57	30.31	102.88	72.83	13.14	29.46	37.1
11	264	73.22	30.31	103.53	72.83	13.14	29.28	36.5
12	264	73.79	30.31	104.1	72.83	13.14	29.12	35.9
13	264	74.29	30.31	104.6	72.83	13.14	28.98	35.4
14	264	75.43	30.31	105.74	72.83	13.14	28.66	34.3
15	264	76.1	30.31	106.41	72.83	13.14	28.48	33.6
16	264	76.67	30.31	106.98	72.83	13.14	28.33	33
17	264	77.74	30.31	108.05	72.83	13.14	28.05	32
18	264	78.47	30.31	108.78	72.83	13.14	27.86	31.2
19	264	79.06	30.31	109.37	72.83	13.14	27.71	30.6
20	264	80.53	30.31	110.84	72.83	13.14	27.35	29.2
21	264	81.28	30.31	111.59	72.83	13.14	27.16	28.4
22	264	81.81	30.31	112.12	72.83	13.14	27.03	27.9
23	264	83.17	30.31	113.48	72.83	13.14	26.71	26.5
24	264	83.68	30.31	113.99	72.83	13.14	26.59	26
25	264	84.64	30.31	114.95	72.83	13.14	26.37	25.1
26	264	85.69	30.31	116	72.83	13.14	26.13	24

ตารางที่ ค.62 แสดงผลการเลือก Control Valve : CWST50TD08

LOOP	GPM	H <sub>LOOP</sub>	H <sub>cV</sub>	H <sub>TOTAL</sub>	C <sub>v</sub>	H <sub>cV</sub> (Psi)	Authority (%)	Safety
1	240	53.15	62.14	115.3	46.24	26.94	53.9	24.7
2	240	53.72	62.14	115.87	46.24	26.94	53.63	24.1
3	240	54.24	62.14	116.39	46.24	26.94	53.39	23.6
4	240	54.72	62.14	116.86	46.24	26.94	53.18	23.1
5	240	55.76	62.14	117.91	46.24	26.94	52.71	22.1
6	240	56.4	62.14	118.55	46.24	26.94	52.42	21.5
7	198	51.75	42.3	94.04	46.24	18.34	44.98	46
8	198	52.27	42.3	94.57	46.24	18.34	44.73	45.4
9	198	52.74	42.3	95.04	46.24	18.34	44.5	45
10	198	53.85	42.3	96.14	46.24	18.34	43.99	43.9
11	198	54.52	42.3	96.82	46.24	18.34	43.69	43.2
12	198	55.12	42.3	97.42	46.24	18.34	43.42	42.6
13	198	56.42	42.3	98.71	46.24	18.34	42.85	41.3
14	198	57.28	42.3	99.58	46.24	18.34	42.47	40.4
15	198	58.03	42.3	100.33	46.24	18.34	42.16	39.7
16	198	58.66	42.3	100.96	46.24	18.34	41.89	39
17	198	59.19	42.3	101.49	46.24	18.34	41.68	38.5
18	198	60.57	42.3	102.87	46.24	18.34	41.12	37.1
19	198	61.34	42.3	103.64	46.24	18.34	40.81	36.4
20	198	61.93	42.3	104.23	46.24	18.34	40.58	35.8
21	198	63.64	42.3	105.93	46.24	18.34	39.93	34.1
22	198	64.47	42.3	106.77	46.24	18.34	39.62	33.2
23	198	65.01	42.3	107.3	46.24	18.34	39.42	32.7
24	198	66.43	42.3	108.73	46.24	18.34	38.9	31.3
25	198	68.08	42.3	110.38	46.24	18.34	38.32	29.6
26	198	68.63	42.3	110.93	46.24	18.34	38.13	29.1

ตารางที่ ค.63 แสดงผลการเลือก Control Valve : CWST50TD10

LOOP	GPM	H <sub>LOOP</sub>	H <sub>cV</sub>	H <sub>TOTAL</sub>	C <sub>v</sub>	H <sub>cV</sub> (Psi)	Authority (%)	Safety
1	192	54.51	39.77	94.28	46.24	17.24	42.18	45.7
2	192	55.13	39.77	94.9	46.24	17.24	41.91	45.1
3	192	55.7	39.77	95.48	46.24	17.24	41.66	44.5
4	192	56.22	39.77	96	46.24	17.24	41.43	44
5	192	56.69	39.77	96.47	46.24	17.24	41.23	43.5
6	192	57.79	39.77	97.56	46.24	17.24	40.76	42.4
7	158	48.63	69.3	117.92	28.9	30.04	58.77	22.1
8	158	49.24	69.3	118.54	28.9	30.04	58.46	21.5
9	158	50.78	27.07	77.85	46.24	11.74	34.77	62.2
10	158	51.74	27.07	78.81	46.24	11.74	34.35	61.2
11	158	52.58	27.07	79.65	46.24	11.74	33.98	60.4
12	158	53.34	27.07	80.41	46.24	11.74	33.67	59.6
13	158	54	27.07	81.07	46.24	11.74	33.39	58.9
14	158	54.57	27.07	81.64	46.24	11.74	33.16	58.4
15	158	55.06	27.07	82.13	46.24	11.74	32.96	57.9
16	158	56.22	27.07	83.29	46.24	11.74	32.5	56.7
17	158	57	27.07	84.07	46.24	11.74	32.2	55.9
18	158	57.63	27.07	84.7	46.24	11.74	31.96	55.3
19	158	58.14	27.07	85.21	46.24	11.74	31.77	54.8
20	158	59.64	27.07	86.71	46.24	11.74	31.22	53.3
21	158	60.43	27.07	87.5	46.24	11.74	30.94	52.5
22	158	60.98	27.07	88.05	46.24	11.74	30.74	52
23	158	62.88	27.07	89.95	46.24	11.74	30.1	50.1
24	158	64.94	27.07	92.01	46.24	11.74	29.42	48
25	158	65.69	27.07	92.76	46.24	11.74	29.18	47.2
26	158	66.48	27.07	93.55	46.24	11.74	28.94	46.5

ตารางที่ ค.64 แสดงผลการเลือก Control Valve : CWST50TD12

LOOP	GPM	H <sub>LOOP</sub>	H <sub>cV</sub>	H <sub>TOTAL</sub>	C <sub>v</sub>	H <sub>cV</sub> (Psi)	Authority (%)	Safety
1	160	47.4	70.71	118.1	28.9	30.65	59.87	21.9
2	160	48.54	70.71	119.25	28.9	30.65	59.29	20.8
3	160	49.27	70.71	119.97	28.9	30.65	58.94	20
4	160	49.93	27.62	77.55	46.24	11.97	35.62	62.5
5	160	50.53	27.62	78.15	46.24	11.97	35.34	61.9
6	160	52.02	27.62	79.63	46.24	11.97	34.68	60.4
7	132	46.07	48.12	94.19	28.9	20.86	51.09	45.8
8	132	46.91	48.12	95.03	28.9	20.86	50.64	45
9	132	47.66	48.12	95.79	28.9	20.86	50.24	44.2
10	132	48.34	48.12	96.47	28.9	20.86	49.89	43.5
11	132	48.95	48.12	97.07	28.9	20.86	49.58	42.9
12	132	49.48	48.12	97.61	28.9	20.86	49.3	42.4
13	132	50.83	48.12	98.96	28.9	20.86	48.63	41
14	132	51.75	48.12	99.87	28.9	20.86	48.19	40.1
15	132	52.53	48.12	100.66	28.9	20.86	47.81	39.3
16	132	53.2	48.12	101.33	28.9	20.86	47.49	38.7
17	132	53.76	48.12	101.88	28.9	20.86	47.23	38.1
18	132	55.46	48.12	103.58	28.9	20.86	46.46	36.4
19	132	56.44	48.12	104.56	28.9	20.86	46.02	35.4
20	132	57.2	48.12	105.32	28.9	20.86	45.69	34.7
21	132	57.76	48.12	105.89	28.9	20.86	45.45	34.1
22	132	59.81	48.12	107.93	28.9	20.86	44.59	32.1
23	132	60.74	48.12	108.86	28.9	20.86	44.21	31.1
24	132	62.21	48.12	110.33	28.9	20.86	43.62	29.7
25	132	64.32	48.12	112.45	28.9	20.86	42.8	27.6
26	132	64.82	48.12	112.94	28.9	20.86	42.61	27.1

ตารางที่ ค.65 แสดงผลการเลือก Control Valve : CWST50TD14

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	137	43.3	51.95	95.25	28.9	22.52	54.54	44.8
2	137	43.9	51.95	95.84	28.9	22.52	54.2	44.2
3	137	45.4	51.95	97.34	28.9	22.52	53.36	42.7
4	137	46.34	51.95	98.29	28.9	22.52	52.85	41.7
5	137	47.2	51.95	99.14	28.9	22.52	52.4	40.9
6	137	47.97	51.95	99.91	28.9	22.52	51.99	40.1
7	113	43.91	35.36	79.27	28.9	15.33	44.6	60.7
8	113	44.54	35.36	79.9	28.9	15.33	44.25	60.1
9	113	45.11	35.36	80.47	28.9	15.33	43.94	59.5
10	113	45.63	35.36	80.98	28.9	15.33	43.66	59
11	113	47.05	35.36	82.4	28.9	15.33	42.91	57.6
12	113	47.95	35.36	83.3	28.9	15.33	42.44	56.7
13	113	48.74	35.36	84.09	28.9	15.33	42.04	55.9
14	113	49.42	35.36	84.78	28.9	15.33	41.7	55.2
15	113	50.01	35.36	85.37	28.9	15.33	41.42	54.6
16	113	51.7	35.36	87.05	28.9	15.33	40.62	53
17	113	52.83	35.36	88.18	28.9	15.33	40.09	51.8
18	113	53.75	35.36	89.11	28.9	15.33	39.68	50.9
19	113	54.5	35.36	89.85	28.9	15.33	39.35	50.2
20	113	55.07	35.36	90.43	28.9	15.33	39.1	49.6
21	113	57.21	35.36	92.57	28.9	15.33	38.2	47.4
22	113	58.3	35.36	93.66	28.9	15.33	37.75	46.3
23	113	60.48	35.36	95.83	28.9	15.33	36.89	44.2
24	113	61.38	35.36	96.73	28.9	15.33	36.55	43.3
25	113	62.72	35.36	98.08	28.9	15.33	36.05	41.9
26	113	63.64	35.36	98.99	28.9	15.33	35.72	41

ตารางที่ ค.66 แสดงผลการเลือก Control Valve : CWST50TD16

LOOP	GPM	HLOOP	Hcv	HTOTAL	Cv	Hcv(Psi)	Authority (%)	Safety
1	120	104.69	15.54	120.23	46.24	6.74	12.92	19.8
2	120	105.58	15.54	121.11	46.24	6.74	12.83	18.9
3	120	106.39	15.54	121.92	46.24	6.74	12.74	18.1
4	120	107.13	15.54	122.66	46.24	6.74	12.67	17.3
5	120	107.8	15.54	123.33	46.24	6.74	12.6	16.7
6	120	108.4	15.54	123.93	46.24	6.74	12.54	16.1
7	99	50.91	66.06	116.97	18.5	28.64	56.47	23
8	99	52.44	66.06	118.5	18.5	28.64	55.75	21.5
9	99	53.43	66.06	119.49	18.5	28.64	55.29	20.5
10	99	54.32	27.07	81.39	28.9	11.74	33.26	58.6
11	99	55.11	27.07	82.18	28.9	11.74	32.94	57.8
12	99	55.81	27.07	82.88	28.9	11.74	32.66	57.1
13	99	56.43	27.07	83.5	28.9	11.74	32.42	56.5
14	99	56.97	27.07	84.04	28.9	11.74	32.21	56
15	99	58.53	27.07	85.6	28.9	11.74	31.62	54.4
16	99	59.59	27.07	86.66	28.9	11.74	31.24	53.3
17	99	60.47	27.07	87.54	28.9	11.74	30.92	52.5
18	99	61.2	27.07	88.27	28.9	11.74	30.67	51.7
19	99	61.78	27.07	88.85	28.9	11.74	30.47	51.2
20	99	64	27.07	91.07	28.9	11.74	29.72	48.9
21	99	65.22	27.07	92.29	28.9	11.74	29.33	47.7
22	99	66.07	27.07	93.14	28.9	11.74	29.06	46.9
23	99	67.77	27.07	94.84	28.9	11.74	28.54	45.2
24	99	68.47	27.07	95.54	28.9	11.74	28.33	44.5
25	99	69.52	27.07	96.59	28.9	11.74	28.03	43.4
26	99	70.24	27.07	97.31	28.9	11.74	27.82	42.7

ภาคผนวก ง.

ตารางแสดง

ค่าใช้จ่ายในส่วนต่างๆ ของแบบจำลองระบบวงจรด้านน้ำเย็น



ศูนย์วิทยทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย



ตารางที่ ง.1 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 40 °F : 6 °F ≤ TD ≤ 16 °F

CWST °F	TD °F	IC ( Baht )						IC <sub>TOTAL</sub> ( Baht )	OC ( Baht )			OC <sub>TOTAL</sub> ( Baht )	MC <sub>TOTAL</sub> ( Baht )	LCC ( Baht )
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION			CHILLER	AHU	PUMP			
40	6	28,078,230	5,770,275	1,374,400	9,887,667	793,557	45,904,129	129,776,000	68,899,680	35,333,170	234,008,850	29,491,712	309,404,691	
	8	27,408,200	6,352,942	1,052,000	6,767,821	643,264	42,224,227	131,670,500	68,899,680	26,499,870	227,070,050	27,127,511	296,421,787	
	10	28,168,960	6,482,407	716,000	4,258,243	588,220	40,213,830	131,196,900	68,899,680	21,199,900	221,296,480	25,835,905	287,346,214	
	12	28,168,960	6,464,240	716,000	3,891,813	565,483	39,806,496	131,196,900	68,899,680	21,199,900	221,296,480	25,574,207	286,677,183	
	14	29,717,130	6,529,102	716,000	3,457,893	527,412	40,947,537	129,776,000	68,899,680	21,199,900	219,875,580	26,307,284	287,130,401	
	16	29,717,130	6,612,023	690,000	2,903,924	459,745	40,382,822	129,776,000	68,899,680	17,666,580	216,342,260	25,944,476	282,669,558	

ตารางที่ ง.2 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 41 °F : 6 °F ≤ TD ≤ 16 °F

CWST °F	TD °F	IC ( Baht )						IC <sub>TOTAL</sub> ( Baht )	OC ( Baht )			OC <sub>TOTAL</sub> ( Baht )	MC <sub>TOTAL</sub> ( Baht )	LCC ( Baht )
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION			CHILLER	AHU	PUMP			
41	6	28,078,230	6,258,875	1,374,400	9,887,667	744,915	46,344,087	127,407,800	68,899,680	35,333,170	231,640,650	29,774,369	307,759,105	
	8	28,078,230	6,396,905	1,052,000	6,767,821	643,264	42,938,220	128,355,100	68,899,680	26,499,870	223,754,650	27,586,225	294,279,094	
	10	28,078,230	6,549,125	716,000	4,258,243	588,220	40,189,818	127,881,400	68,899,680	21,199,900	217,980,980	25,820,478	283,991,275	
	12	28,078,230	6,505,677	716,000	3,891,813	565,483	39,757,203	128,355,100	68,899,680	21,199,900	218,454,680	25,542,539	283,754,421	
	14	28,078,230	6,584,417	716,000	3,457,893	527,412	39,363,952	128,355,100	68,899,680	21,199,900	218,454,680	25,289,889	283,108,521	
	16	28,078,230	6,824,618	690,000	2,901,614	446,226	38,940,688	128,355,100	68,899,680	17,666,580	214,921,360	25,017,958	278,880,006	

ตารางที่ ง.3 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 42 °F : 6 °F ≤ TD ≤ 16 °F

CWST °F	TD °F	IC ( Baht )						IC <sub>TOTAL</sub> ( Baht )	OC ( Baht )			OC <sub>TOTAL</sub> ( Baht )	MC <sub>TOTAL</sub> ( Baht )	LCC ( Baht )
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION	PUMP		CHILLER	AHU	PUMP			
42	6	27,317,470	6,350,620	1,374,400	9,887,667	717,327	45,647,484	123,618,700	68,899,680	35,333,170	227,851,550	29,326,827	302,825,861	
	8	28,078,230	6,450,979	1,052,000	6,767,821	643,264	42,992,294	123,618,700	68,899,680	26,499,870	219,018,250	27,620,965	289,631,509	
	10	28,078,230	6,591,644	716,000	4,258,243	588,220	40,232,337	124,092,400	68,899,680	21,199,900	214,191,980	25,847,795	280,272,111	
	12	28,078,230	6,560,268	716,000	3,891,813	565,483	39,811,794	124,566,000	68,899,680	21,199,900	214,665,580	25,577,611	280,054,985	
	14	27,990,850	6,652,893	716,000	3,457,893	490,248	39,307,884	124,566,000	68,899,680	21,199,900	214,665,580	25,253,868	279,227,332	
	16	27,990,850	6,911,096	690,000	2,901,614	409,778	38,903,338	125,039,600	68,899,680	17,666,580	211,605,860	24,993,962	275,503,159	

ตารางที่ ง.4 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 43 °F : 6 °F ≤ TD ≤ 16 °F

CWST °F	TD °F	IC ( Baht )						IC <sub>TOTAL</sub> ( Baht )	OC ( Baht )			OC <sub>TOTAL</sub> ( Baht )	MC <sub>TOTAL</sub> ( Baht )	LCC ( Baht )
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION	PUMP		CHILLER	AHU	PUMP			
43	6	27,990,850	6,378,120	1,374,400	9,887,667	717,327	46,348,364	120,303,300	68,899,680	35,333,170	224,536,150	29,777,117	300,661,630	
	8	27,990,850	6,514,605	1,052,000	6,767,821	643,264	42,968,540	120,776,900	68,899,680	26,499,870	216,176,450	27,605,704	286,750,694	
	10	27,990,850	6,535,760	716,000	4,259,713	588,220	40,090,543	120,776,900	68,899,680	21,199,900	210,876,480	25,756,697	276,723,720	
	12	27,990,850	6,625,132	716,000	3,891,813	565,483	39,789,278	121,250,500	68,899,680	21,199,900	211,350,080	25,563,146	276,702,503	
	14	27,230,090	6,888,757	716,000	3,457,893	486,096	38,778,836	122,197,800	68,899,680	21,199,900	212,297,380	24,913,974	275,990,189	
	16	27,230,090	7,176,169	690,000	2,906,234	409,778	38,412,271	122,197,800	68,899,680	17,666,580	208,764,060	24,678,469	271,854,800	

ตารางที่ ง.5 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 44 °F : 6 °F ≤ TD ≤ 16 °F

CWST °F	TD °F	IC ( Baht )						IC <sub>TOTAL</sub> ( Baht )	OC ( Baht )			OC <sub>TOTAL</sub> ( Baht )	MC <sub>TOTAL</sub> ( Baht )	LCC ( Baht )
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION			CHILLER	AHU	PUMP			
44	6	27,990,850	6,436,328	1,374,400	9,887,667	706,277	46,395,522	117,461,500	68,899,680	35,333,170	221,694,350	29,807,414	297,897,286	
	8	27,990,850	6,566,514	1,052,000	6,767,821	628,980	43,006,165	118,408,700	68,899,680	26,499,870	213,808,250	27,629,877	284,444,292	
	10	29,629,750	6,597,009	716,000	4,259,713	572,583	41,775,055	116,987,800	68,899,680	21,199,900	207,087,380	26,838,934	275,701,369	
	12	29,123,730	7,226,531	716,000	3,891,813	509,537	41,467,611	116,987,800	68,899,680	21,199,900	207,087,380	26,641,413	275,196,403	
44	14	28,869,000	7,395,261	716,000	3,457,893	419,414	40,857,568	117,935,100	68,899,680	21,199,900	208,034,680	26,249,483	275,141,730	
	16	29,629,750	7,176,272	690,000	2,907,004	393,476	40,796,502	117,461,500	68,899,680	17,666,580	204,027,760	26,210,250	271,034,511	

ตารางที่ ง.6 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 45 °F : 6 °F ≤ TD ≤ 16 °F

CWST °F	TD °F	IC ( Baht )						IC <sub>TOTAL</sub> ( Baht )	OC ( Baht )			OC <sub>TOTAL</sub> ( Baht )	MC <sub>TOTAL</sub> ( Baht )	LCC ( Baht )
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION			CHILLER	AHU	PUMP			
45	6	27,990,850	6,500,670	1,374,400	9,887,667	703,307	46,456,894	114,619,700	68,899,680	35,333,170	218,852,550	29,846,844	295,156,288	
	8	27,230,090	6,748,611	1,052,000	6,767,821	627,946	42,426,468	116,040,600	68,899,680	26,499,870	211,440,150	27,257,443	281,124,061	
	10	27,230,090	6,783,957	716,000	4,259,223	571,373	39,560,643	116,514,200	68,899,680	21,199,900	206,613,780	25,416,256	271,590,679	
	12	27,990,850	6,935,300	716,000	3,891,813	504,427	40,038,390	116,040,600	68,899,680	21,199,900	206,140,180	25,723,191	271,901,761	
45	14	27,990,850	7,696,710	716,000	3,457,893	417,346	40,278,799	116,040,600	68,899,680	21,199,900	206,140,180	25,877,645	272,296,623	
	16	29,629,750	7,291,130	690,000	2,907,004	387,118	40,905,002	114,619,700	68,899,680	17,666,580	201,185,960	26,279,957	268,370,919	

ตารางที่ ง.7 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 46 °F : 6 °F ≤ TD ≤ 16 °F

CWST °F	TD °F	IC ( Baht )						IC <sub>TOTAL</sub> ( Baht )	OC ( Baht )			OC <sub>TOTAL</sub> ( Baht )	MC <sub>TOTAL</sub> ( Baht )	LCC ( Baht )
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION			CHILLER	AHU	PUMP			
46	6	27,990,850	6,669,353	1,374,400	9,887,667	703,307	46,625,577	112,725,100	68,899,680	35,333,170	216,957,950	29,955,216	293,538,743	
	8	27,990,850	6,745,670	1,052,000	6,767,821	627,946	43,184,287	112,725,100	68,899,680	26,499,870	208,124,650	27,744,314	279,053,251	
	10	27,990,850	6,881,172	716,000	4,259,223	540,705	40,387,950	113,198,800	68,899,680	21,199,900	203,298,380	25,947,771	269,634,101	
	12	27,990,850	7,553,929	716,000	3,891,813	449,323	40,601,915	113,198,800	68,899,680	21,199,900	203,298,380	26,085,235	269,985,529	
	14	27,990,850	7,874,059	716,000	3,457,893	417,346	40,456,148	113,198,800	68,899,680	21,199,900	203,298,380	25,991,585	269,746,112	
	16	27,990,850	7,678,388	690,000	2,906,234	387,118	39,652,590	113,198,800	68,899,680	17,666,580	199,765,060	25,475,329	264,892,978	

ตารางที่ ง.8 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 47 °F : 6 °F ≤ TD ≤ 16 °F

CWST °F	TD °F	IC ( Baht )						IC <sub>TOTAL</sub> ( Baht )	OC ( Baht )			OC <sub>TOTAL</sub> ( Baht )	MC <sub>TOTAL</sub> ( Baht )	LCC ( Baht )
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION			CHILLER	AHU	PUMP			
47	6	27,990,850	6,750,675	1,374,400	9,887,667	663,333	46,666,925	109,883,300	68,899,680	35,333,170	214,116,150	29,981,781	290,764,856	
	8	27,990,850	7,145,467	1,052,000	6,767,821	580,223	43,536,361	110,356,900	68,899,680	26,499,870	205,756,450	27,970,508	277,263,319	
	10	27,230,090	7,419,459	716,000	4,258,733	485,183	40,109,465	111,304,200	68,899,680	21,199,900	201,403,780	25,768,854	267,282,098	
	12	29,629,750	7,763,687	716,000	3,891,813	409,750	42,411,000	109,409,700	68,899,680	21,199,900	199,509,280	27,247,506	269,167,786	
	14	29,629,750	7,634,786	716,000	3,457,893	381,458	41,819,887	109,409,700	68,899,680	21,199,900	199,509,280	26,867,737	268,196,904	
	16	27,990,850	8,455,021	690,000	2,903,924	341,402	40,381,197	110,830,600	74,199,650	17,666,580	202,696,830	25,943,432	269,021,458	

ตารางที่ ง.9 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 48 °F : 6 °F ≤ TD ≤ 16 °F

CWST °F	TD °F	IC (Baht)						IC <sub>TOTAL</sub> (Baht)	OC (Baht)			OC <sub>TOTAL</sub> (Baht)	MC <sub>TOTAL</sub> (Baht)	LCC (Baht)
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION			CHILLER	AHU	PUMP			
48	6	27,230,090	7,138,140	1,374,400	9,887,667	647,240	46,277,537	107,988,800	68,899,680	35,333,170	212,221,650	29,731,613	288,230,800	
	8	27,990,850	7,323,590	1,052,000	6,767,821	580,223	43,714,484	107,988,800	68,899,680	26,499,870	203,388,350	28,084,946	275,187,779	
	10	27,230,090	7,806,408	716,000	4,258,733	426,844	40,438,075	108,936,000	74,199,650	21,199,900	204,335,550	25,979,974	270,753,599	
	12	27,230,090	8,400,839	716,000	3,891,813	409,750	40,648,492	109,409,700	74,199,650	21,199,900	204,809,250	26,115,159	271,572,901	
	14	26,527,730	8,441,091	716,000	3,457,893	381,458	39,524,172	109,883,300	74,199,650	21,199,900	205,282,850	25,392,825	270,199,847	
	16	26,527,730	8,973,186	690,000	2,907,774	341,402	39,440,092	109,883,300	74,199,650	17,666,580	201,749,530	25,338,806	266,528,428	

ตารางที่ ง.10 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 49 °F : 6 °F ≤ TD ≤ 16 °F

CWST °F	TD °F	IC (Baht)						IC <sub>TOTAL</sub> (Baht)	OC (Baht)			OC <sub>TOTAL</sub> (Baht)	MC <sub>TOTAL</sub> (Baht)	LCC (Baht)
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION			CHILLER	AHU	PUMP			
49	6	26,310,840	7,344,282	1,374,400	9,887,667	647,240	45,564,429	107,515,100	74,199,650	35,333,170	217,047,920	29,273,468	291,885,817	
	8	26,310,840	7,699,441	1,052,000	6,767,821	533,968	42,364,070	107,988,800	74,199,650	26,499,870	208,688,320	27,217,355	278,269,744	
	10	28,710,500	7,974,112	716,000	4,259,713	426,844	42,087,169	105,620,600	74,199,650	21,199,900	201,020,150	27,039,456	270,146,775	
	12	28,204,470	8,668,903	716,000	3,893,283	409,750	41,892,406	105,620,600	74,199,650	21,199,900	201,020,150	26,914,328	269,826,884	
	14	27,071,600	8,960,601	716,000	3,457,893	369,056	40,575,150	107,041,500	74,199,650	21,199,900	202,441,050	26,068,039	269,084,239	
	16	27,949,740	9,607,923	690,000	2,905,464	341,402	41,494,529	106,567,900	91,866,250	17,666,580	216,100,730	26,658,707	284,253,965	

ตารางที่ ง.11 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 50 °F : 6 °F ≤ TD ≤ 16 °F

CWST °F	TD °F	IC ( Baht )						IC <sub>TOTAL</sub> ( Baht )	OC ( Baht )			OC <sub>TOTAL</sub> ( Baht )	MC <sub>TOTAL</sub> ( Baht )	LCC ( Baht )
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION			CHILLER	AHU	PUMP			
50	6	26,310,840	7,625,240	1,374,400	9,887,667	647,240	45,845,387	104,673,300	74,199,650	35,333,170	214,206,120	29,453,973	289,505,480	
	8	26,310,840	7,913,585	1,052,000	6,767,821	468,512	42,512,758	105,147,000	74,199,650	26,499,870	205,846,520	27,312,881	275,672,159	
	10	26,310,840	8,565,447	716,000	4,258,733	426,844	40,277,864	105,620,600	74,199,650	21,199,900	201,020,150	25,877,044	267,175,058	
	12	26,692,510	9,271,953	716,000	3,893,283	409,750	40,983,496	105,620,600	91,866,250	21,199,900	218,686,750	26,330,387	286,000,633	
	14	27,453,260	9,625,570	716,000	3,457,893	369,056	41,621,779	105,147,000	91,866,250	21,199,900	218,213,150	26,740,460	286,575,388	
	16	26,122,240	10,541,160	690,000	2,908,404	341,402	40,603,206	106,567,900	91,866,250	17,666,580	216,100,730	26,086,064	282,790,000	



## ภาคผนวก จ.

### ตารางแสดง

ค่าใช้จ่ายในส่วนต่างๆ เปรียบเทียบกับค่าใช้จ่ายในกรณี CWST45TD10



ศูนย์วิทยทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย

ตารางที่ จ.1 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 40 °F เทียบกับ CWST45TD10

CWST °F	TD °F	IC ( Baht )						IC <sub>TOTAL</sub> ( Baht )	OC ( Baht )			OC <sub>TOTAL</sub> ( Baht )	MC <sub>TOTAL</sub> ( Baht )	LCC ( Baht )
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION			CHILLER	AHU	PUMP			
40	6	1.03115	0.95058	1.91955	2.32147	1.38886	1.16035	1.11382	1.00000	1.66667	1.13259	1.16035	1.13923	
	8	1.00654	0.93647	1.46927	1.58898	1.12582	1.06733	1.13008	1.00000	1.25000	1.09901	1.06733	1.09143	
	10	1.03448	0.95555	1.00000	0.99977	1.02948	1.01651	1.12602	1.00000	1.00000	1.07106	1.01651	1.05801	
	12	1.03448	0.95287	1.00000	0.91374	0.98969	1.00621	1.12602	1.00000	1.00000	1.07106	1.00621	1.05555	
	14	1.09133	0.96243	1.00000	0.81186	0.92306	1.03506	1.11382	1.00000	1.00000	1.06419	1.03506	1.05722	
	16	1.09133	0.97466	0.96369	0.68180	0.80463	1.02078	1.11382	1.00000	0.83333	1.04709	1.02078	1.04079	

ตารางที่ จ..2 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 41 °F เทียบกับ CWST45TD10

CWST °F	TD °F	IC ( Baht )						IC <sub>TOTAL</sub> ( Baht )	OC ( Baht )			OC <sub>TOTAL</sub> ( Baht )	MC <sub>TOTAL</sub> ( Baht )	LCC ( Baht )
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION			CHILLER	AHU	PUMP			
41	6	1.03115	0.92260	1.91955	2.32147	1.30373	1.17147	1.09350	1.00000	1.66667	1.12113	1.17147	1.13317	
	8	1.03115	0.94295	1.46927	1.58898	1.12582	1.08538	1.10163	1.00000	1.25000	1.08296	1.08538	1.08354	
	10	1.03115	0.96538	1.00000	0.99977	1.02948	1.01590	1.09756	1.00000	1.00000	1.05502	1.01590	1.04566	
	12	1.03115	0.95898	1.00000	0.91374	0.98969	1.00497	1.10163	1.00000	1.00000	1.05731	1.00497	1.04479	
	14	1.03115	0.97059	1.00000	0.81186	0.92306	0.99503	1.10163	1.00000	1.00000	1.05731	0.99503	1.04241	
	16	1.03115	1.00599	0.96369	0.68125	0.78097	0.98433	1.10163	1.00000	0.83333	1.04021	0.98433	1.02684	



ตารางที่ ๑.3 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 42 °F เทียบกับ CWST45TD10

CWST °F	TD °F	IC (Baht)					IC <sub>TOTAL</sub> (Baht)			OC (Baht)			OC <sub>TOTAL</sub> (Baht)	MC <sub>TOTAL</sub> (Baht)	LCC (Baht)
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION	CHILLER	AHU	PUMP	CHILLER	AHU	PUMP			
42	6	1.00321	0.93612	1.91955	2.32147	1.25544	1.15386	1.06098	1.00000	1.66667	1.10279	1.15386	1.11501		
	8	1.03115	0.95092	1.46927	1.58898	1.12582	1.08674	1.06098	1.00000	1.25000	1.06004	1.08674	1.06643		
42	10	1.03115	0.97165	1.00000	0.99977	1.02948	1.01698	1.06504	1.00000	1.00000	1.03668	1.01698	1.03197		
	12	1.03115	0.96703	1.00000	0.91374	0.98969	1.00635	1.06911	1.00000	1.00000	1.03897	1.00635	1.03117		
	14	1.02794	0.98068	1.00000	0.81186	0.85802	0.99361	1.06911	1.00000	1.00000	1.03897	0.99361	1.02812		
	16	1.02794	1.01874	0.96369	0.68125	0.71718	0.98338	1.07317	1.00000	0.83333	1.02416	0.98338	1.01441		

ตารางที่ ๑.4 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 43 °F เทียบกับ CWST45TD10

CWST °F	TD °F	IC (Baht)					IC <sub>TOTAL</sub> (Baht)			OC (Baht)			OC <sub>TOTAL</sub> (Baht)	MC <sub>TOTAL</sub> (Baht)	LCC (Baht)
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION	CHILLER	AHU	PUMP	CHILLER	AHU	PUMP			
43	6	1.02794	0.94018	1.91955	2.32147	1.25544	1.17158	1.03252	1.00000	1.66667	1.08674	1.17158	1.10704		
	8	1.02794	0.96030	1.46927	1.58898	1.12582	1.08614	1.03659	1.00000	1.25000	1.04628	1.08614	1.05582		
43	10	1.02794	0.96341	1.00000	1.00012	1.02948	1.01339	1.03659	1.00000	1.00000	1.02063	1.01339	1.01890		
	12	1.02794	0.97659	1.00000	0.91374	0.98969	1.00578	1.04065	1.00000	1.00000	1.02292	1.00578	1.01882		
	14	1.00000	1.01545	1.00000	0.81186	0.85075	0.98024	1.04878	1.00000	1.00000	1.02751	0.98024	1.01620		
	16	1.00000	1.05781	0.96369	0.68234	0.71718	0.97097	1.04878	1.00000	0.83333	1.01041	0.97097	1.00097		

ตารางที่ ๑.5 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 44 °F เทียบกับ CWST45TD10

CWST °F	TD °F	IC ( Baht )							IC <sub>TOTAL</sub> ( Baht )	OC ( Baht )			OC <sub>TOTAL</sub> ( Baht )	MC <sub>TOTAL</sub> ( Baht )	LCC ( Baht )	
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION	CHILLER	AHU		PUMP						
44	6	1.02794	0.94876	1.91955	2.32147	1.23610	1.00813	1.00000	1.66667	1.07299	1.00000	1.25000	1.03482	1.08709	1.04733	1.09686
	8	1.02794	0.96795	1.46927	1.58898	1.10082	1.01626	1.00000	1.25000	1.03482	1.00000	1.00000	1.00229	1.05598	1.01514	1.01328
	10	1.08813	0.97244	1.00000	1.00012	1.00212	1.00406	1.00000	1.00000	1.00000	1.00229	1.00000	1.00000	1.00229	1.04820	1.01308
	12	1.06954	1.06524	1.00000	0.91374	0.89178	1.00406	1.00000	1.00000	1.00000	1.00229	1.00000	1.00000	1.00688	1.03278	1.01308
	14	1.06019	1.09011	1.00000	0.81186	0.73405	1.01220	1.00000	1.00000	1.00000	1.00688	1.00000	0.83333	0.98748	1.03124	0.99795
	16	1.08813	1.05783	0.96369	0.68252	0.68865	1.00813	1.00000	0.83333	0.98748	1.03124	0.98748	0.83333	0.98748	1.03124	0.99795

ตารางที่ ๑.6 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 45 °F เทียบกับ CWST45TD10

CWST °F	TD °F	IC ( Baht )							IC <sub>TOTAL</sub> ( Baht )	OC ( Baht )			OC <sub>TOTAL</sub> ( Baht )	MC <sub>TOTAL</sub> ( Baht )	LCC ( Baht )	
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION	CHILLER	AHU		PUMP						
45	6	1.02794	0.95624	1.91955	2.32147	1.23091	0.98374	1.00000	1.66667	1.05924	1.00000	1.25000	1.02336	1.07244	1.03510	1.00000
	8	1.00000	0.99479	1.46927	1.58898	1.09901	0.99594	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.01208	1.00115	1.00260
	10	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99771	1.00000	1.01208	1.00115	1.00000	1.00260
	12	1.02794	1.02231	1.00000	0.91374	0.88283	0.99594	1.00000	1.00000	1.00000	0.99771	1.00000	1.01208	1.00115	1.00000	1.00260
	14	1.02794	1.13455	1.00000	0.81186	0.73043	0.99594	1.00000	1.00000	1.00000	0.99771	1.00000	1.01208	1.00115	1.00000	1.00260
	16	1.08813	1.07476	0.96369	0.68252	0.67752	0.98374	1.00000	0.83333	0.97373	1.03398	0.97373	0.83333	0.97373	1.03398	0.98814

ตารางที่ ๑.7 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 46 °F เทียบกับ CWST45TD10

CWST °F	TD °F	IC ( Baht )						IC <sub>TOTAL</sub> ( Baht )	OC ( Baht )			MC <sub>TOTAL</sub> ( Baht )	LCC ( Baht )
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION	PUMP		CHILLER	AHU	PUMP		
46	6	1.02794	0.98311	1.91955	2.32147	1.23091	1.17858	0.96748	1.00000	1.66667	1.05007	1.17858	1.08081
	8	1.02794	0.99436	1.46927	1.58898	1.09901	1.09160	0.96748	1.00000	1.25000	1.00731	1.09160	1.02748
	10	1.02794	1.01433	1.00000	1.00000	0.94633	1.02091	0.97155	1.00000	1.00000	0.98395	1.02091	0.99280
	12	1.02794	1.11350	1.00000	0.91374	0.78639	1.02632	0.97155	1.00000	1.00000	0.98395	1.02632	0.99409
	14	1.02794	1.16069	1.00000	0.81186	0.73043	1.02264	0.97155	1.00000	1.00000	0.98395	1.02264	0.98321
	16	1.02794	1.13185	0.96369	0.68234	0.67752	1.00232	0.97155	1.00000	0.83333	0.96685	1.00232	0.97534

ตารางที่ ๑.8 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 47 °F เทียบกับ CWST45TD10

CWST °F	TD °F	IC ( Baht )						IC <sub>TOTAL</sub> ( Baht )	OC ( Baht )			MC <sub>TOTAL</sub> ( Baht )	LCC ( Baht )
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION	PUMP		CHILLER	AHU	PUMP		
47	6	1.02794	0.99509	1.91955	2.32147	1.16095	1.17963	0.94309	1.00000	1.66667	1.03631	1.17963	1.07060
	8	1.02794	1.05329	1.46927	1.58898	1.01549	1.10050	0.94715	1.00000	1.25000	0.99585	1.10050	1.02089
	10	1.00000	1.09368	1.00000	0.99988	0.84915	1.01387	0.95528	1.00000	1.00000	0.97478	1.01387	0.98414
	12	1.08813	1.14442	1.00000	0.91374	0.71713	1.07205	0.93902	1.00000	1.00000	0.96561	1.07205	0.99108
	14	1.08813	1.12542	1.00000	0.81186	0.66762	1.05711	0.93902	1.00000	1.00000	0.96561	1.05711	0.98750
	16	1.02794	1.24633	0.96369	0.68180	0.59751	1.02074	0.95122	1.07692	0.83333	0.98104	1.02074	0.99054

ตารางที่ ๑.9 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 48 °F เทียบกับ CWST45TD10

CWST °F	TD °F	IC ( Baht )						IC <sub>TOTAL</sub> ( Baht )	OC ( Baht )			OC <sub>TOTAL</sub> ( Baht )	MC <sub>TOTAL</sub> ( Baht )	LCC ( Baht )
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION			CHILLER	AHU	PUMP			
48	6	1.00000	1.05221	1.91955	2.32147	1.13278	1.16979	0.92683	1.00000	1.66667	1.02714	1.16979	1.06127	
	8	1.02794	1.07955	1.46927	1.58898	1.01549	1.10500	0.92683	1.00000	1.25000	0.98439	1.10500	1.01324	
	10	1.00000	1.15072	1.00000	0.99988	0.74705	1.02218	0.93496	1.07692	1.00000	0.98897	1.02218	0.99692	
	12	1.00000	1.23834	1.00000	0.91374	0.71713	1.02750	0.93902	1.07692	1.00000	0.99127	1.02750	0.99993	
	14	0.97421	1.24427	1.00000	0.81186	0.66762	0.99908	0.94309	1.07692	1.00000	0.99356	0.99908	0.99488	
	16	0.97421	1.32271	0.96369	0.68270	0.59751	0.99695	0.94309	1.07692	0.83333	0.97646	0.99695	0.98136	

ตารางที่ ๑.10 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ CWST = 49 °F เทียบกับ CWST45TD10

CWST °F	TD °F	IC ( Baht )						IC <sub>TOTAL</sub> ( Baht )	OC ( Baht )			OC <sub>TOTAL</sub> ( Baht )	MC <sub>TOTAL</sub> ( Baht )	LCC ( Baht )
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION			CHILLER	AHU	PUMP			
49	6	0.96624	1.08260	1.91955	2.32147	1.13278	1.15176	0.92276	1.07692	1.66667	1.06050	1.15176	1.07473	
	8	0.96624	1.13495	1.46927	1.58898	0.93453	1.07086	0.92683	1.07692	1.25000	1.01004	1.07086	1.02459	
	10	1.05437	1.17544	1.00000	1.00012	0.74705	1.06386	0.90650	1.07692	1.00000	0.97293	1.06386	0.99468	
	12	1.03578	1.27785	1.00000	0.91408	0.71713	1.05894	0.90650	1.07692	1.00000	0.97293	1.05894	0.99351	
	14	0.99418	1.32085	1.00000	0.81186	0.64591	1.02564	0.91870	1.07692	1.00000	0.97980	1.02564	0.99077	
	16	1.02643	1.41627	0.96369	0.68216	0.59751	1.04888	0.91463	1.33333	0.83333	1.04592	1.04888	1.04663	

ตารางที่ ง.11 แสดงค่าใช้จ่ายในส่วนต่างๆ เมื่อ  $CWST = 50^{\circ}F : 6^{\circ}F \leq TD \leq 16^{\circ}F$

CWST °F	TD °F	IC ( Baht )						IC <sub>TOTAL</sub> ( Baht )	OC ( Baht )			OC <sub>TOTAL</sub> ( Baht )	MC <sub>TOTAL</sub> ( Baht )	LCC ( Baht )
		CHILLER	AHU	PUMP	PIPING&FITTING	INSULATION			CHILLER	AHU	PUMP			
50	6	26,310,840	7,625,240	1,374,400	9,887,667	647,240	45,845,387	104,673,300	74,199,650	35,333,170	214,206,120	29,453,973	289,505,480	
	8	26,310,840	7,913,585	1,052,000	6,767,821	468,512	42,512,758	105,147,000	74,199,650	26,499,870	205,846,520	27,312,881	275,672,159	
	10	26,310,840	8,565,447	716,000	4,258,733	426,844	40,277,864	105,620,600	74,199,650	21,199,900	201,020,150	25,877,044	267,175,058	
	12	26,692,510	9,271,953	716,000	3,893,283	409,750	40,983,496	105,620,600	91,866,250	21,199,900	218,686,750	26,330,387	286,000,633	
	14	27,453,260	9,625,570	716,000	3,457,893	369,056	41,621,779	105,147,000	91,866,250	21,199,900	218,213,150	26,740,460	286,575,388	
	16	26,122,240	10,541,160	690,000	2,908,404	341,402	40,603,206	106,567,900	91,866,250	17,666,580	216,100,730	26,086,064	282,790,000	



## ประวัติผู้เขียนวิทยานิพนธ์

นายศิษฐ์ภัณฑ์ แคนลา เกิดวันอังคารที่ 31 สิงหาคม พ.ศ. 2519 ที่อำเภอหนองกี่ จังหวัดบุรีรัมย์ สำเร็จการศึกษาหลักสูตรปริญญาวิศวกรรมศาสตรบัณฑิต สาขาวิศวกรรมเครื่องกล จากมหาวิทยาลัยขอนแก่น เมื่อปี พ.ศ. 2541 ต่อมาได้เข้าทำงานในตำแหน่งวิศวกรเครื่องกลที่สถานจัดการและอนุรักษ์พลังงาน คณะวิศวกรรมศาสตร์ มหาวิทยาลัยขอนแก่น ในปี พ.ศ. 2541 และในปีเดียวกันนี้ได้เข้าทำงานเป็นอาจารย์ประจำที่ภาควิชาวิศวกรรมเครื่องกล คณะวิศวกรรมศาสตร์ มหาวิทยาลัยนเรศวร จังหวัดพิษณุโลก หลังจากนั้นได้เข้าศึกษาต่อในหลักสูตรปริญญาวิศวกรรมศาสตรมหาบัณฑิต สาขาวิศวกรรมเครื่องกล ภาควิชาวิศวกรรมเครื่องกล คณะวิศวกรรมศาสตร์ ที่จุฬาลงกรณ์มหาวิทยาลัย ในปี พ.ศ. 2543



ศูนย์วิทยทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย