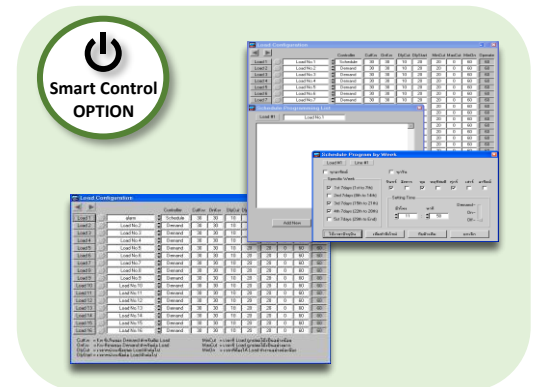
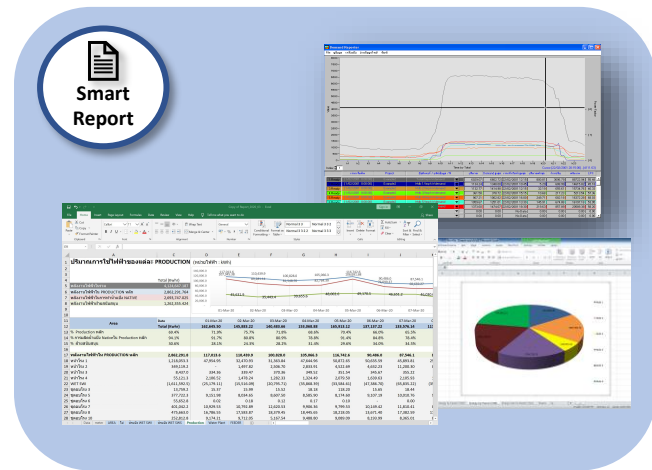
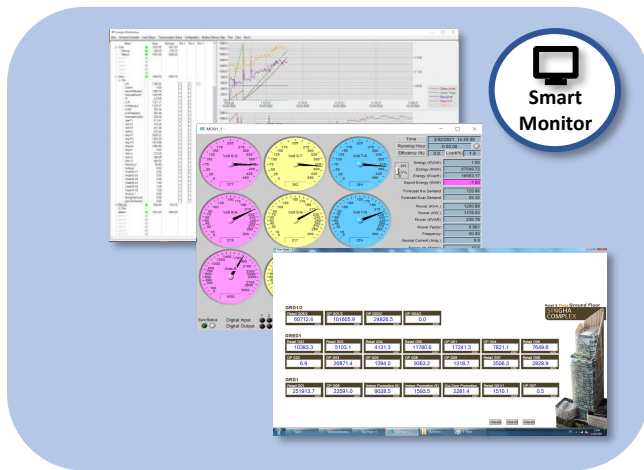


SERVICING YOU SINCE 2000





EE VERSION 5

Energy Management Software

SERVICING YOU SINCE 2000



Smart Monitor



Smart Report



**Smart Control
OPTIONAL**



**Smart OEE
OPTIONAL**



**Smart Notify
OPTIONAL**



**Energy On WEB
OPTION**

SmartEE

ประมาณการค่า Demand ล่วงหน้าก่อนครบ 15 นาที ช่วยให้ผู้ใช้งานรู้ค่า Demand ที่จะเกิดขึ้นล่วงหน้าและสามารถควบคุมการใช้งานให้เป็นไปตามที่ต้องการได้

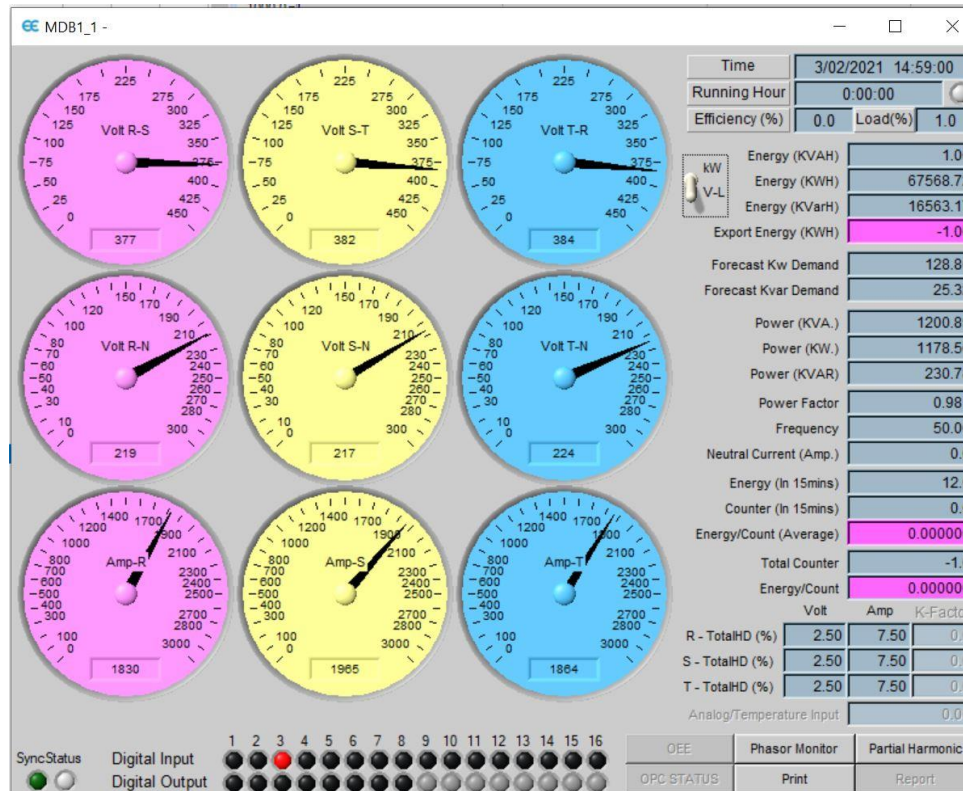


Data View

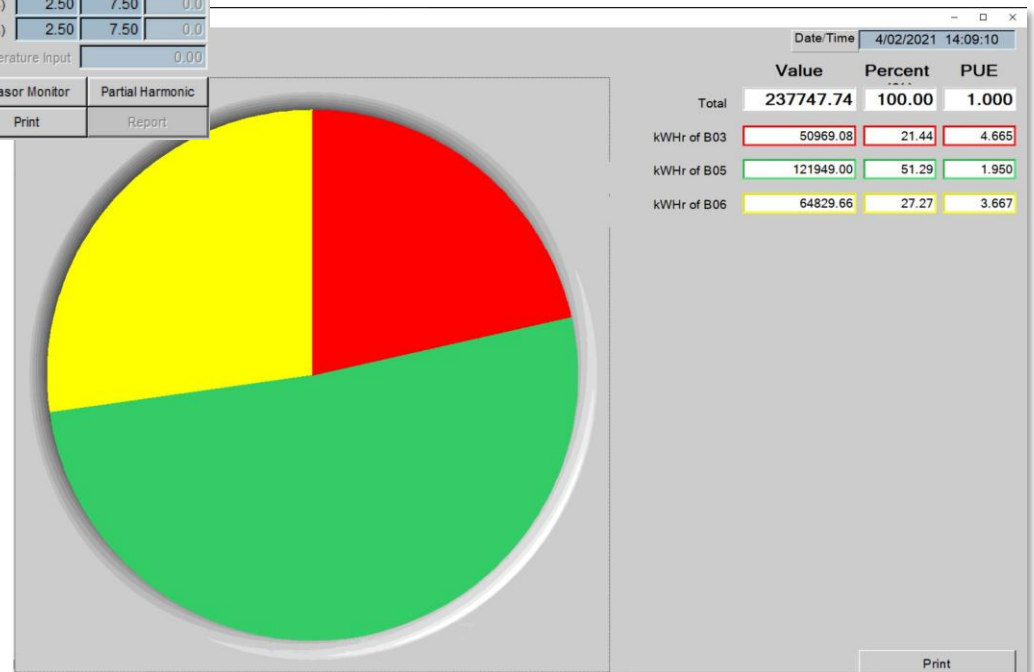
	MDR_TR1	MDR_TR1	MDR_TR2	ELLET_MILL_1	ELLET_MILL_2	ELLET_MILL_3	ELLET_MILL_4	ELLET_MILL_5	ELLET_MILL_6	S_Pulverizer_1	S_Pulverizer_2	S_Pulverizer_3	S_Pulverizer_4	S_Pulverizer_5	SF_Pulverizer_1	SF_Pulverizer_2	SF_Pulverizer_3	SF_Pulverizer_4	SF_Pulverizer_5	S_Pulverizer_O	SF_Pulverizer_C	MDR_TR3	MDR_TR4
kW	792.43	65.58	332.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.22	270.0
kVAR	84.17	17.82	-77.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.24	74.42
kVA	796.89	67.96	341.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.81	280.0
kW-Hr	2565403.72	518006.53	42209.44	38247.86	39111.31	38694.87	9165.95	63851.96	24214.40	54111.52	24514.92	75469.85	23858.46	54641.74	15292.38	65624.38	22511.67	50341.64	22781.43	53038.24	23339.47	444057.56	911869
kVAR-Hr	1475207.64	541756.11	181194.71	2934.64	3020.09	5648.77	1105.15	5623.04	9351.11	46937.54	11214.27	58869.10	11112.57	56540.70	9661.84	32351.03	10351.78	51926.58	10784.67	50060.00	10929.90	188887.99	273835
kVA-Hr	2995317.74	749576.81	416351.97	38360.28	39227.82	40384.39	9531.42	64099.07	28333.29	71632.46	26997.03	95714.87	26319.67	78629.84	18088.98	76563.99	24625.66	72323.46	25205.42	72932.09	25772.21	541842.62	952098
export kW-Hr	549723.76	33.61	332647.16	0.00	0.08	1292.51	301.18	0.00	2531.30	0.18	42.77	0.44	0.20	0.74	0.10	3769.10	52.78	0.32	0.23	0.30	0.29	63795.52	0.00
kW 1	262.53	11.28	114.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.80	93.76
kW 2	264.50	22.05	112.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.78	86.54
kW 3	265.40	32.25	105.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.65	89.77
kVAR 1	55.70	32.35	-25.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.83	26.92
kVAR 2	-1.58	-22.87	-26.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.35	22.75
kVAR 3	30.05	8.34	-25.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.06	24.75
kVA 1	268.38	34.42	117.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.95	97.55
kVA 2	264.50	31.90	115.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.53	89.51
kVA 3	267.10	33.46	108.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.01	93.16
Volt L(R-S)	407.37	415.86	405.48	415.93	415.89	415.89	416.09	416.01	415.60	406.02	405.83	405.79	405.84	415.25	415.51	414.78	415.33	415.23	415.06	415.64	415.61	405.53	404.8
Volt L(S-T)	406.91	415.07	405.31	415.95	416.04	416.00	416.11	415.99	415.57	405.66	405.48	405.43	405.37	415.56	415.68	415.43	415.55	415.35	415.28	415.84	415.76	404.83	404.1
Volt L(T-R)	407.08	415.85	405.05	415.19	415.26	415.12	415.32	415.22	414.77	405.14	404.93	404.88	404.88	414.80	414.74	415.56	414.70	414.55	414.54	415.06	414.90	405.43	404.6
Volt P(R-N)	235.24	240.29	234.38	240.05	240.05	240.02	239.08	239.08	238.84	234.64	234.61	234.52	234.54	239.68	239.71	238.92	239.70	239.65	239.55	239.88	239.81	234.27	233.7
Volt P(S-N)	235.01	239.75	233.64	240.94	240.91	240.91	241.01	240.89	240.66	234.55	234.49	234.41	234.42	240.51	240.67	239.77	240.55	240.39	240.27	240.65	240.64	233.88	233.6
Volt P(T-N)	234.91	239.78	233.95	239.01	239.11	239.03	240.20	240.12	239.86	233.34	233.21	233.18	233.14	238.98	238.91	240.56	238.89	238.84	238.82	239.17	239.08	233.79	233.3
Volt P(Avr)	235.05	239.94	233.99	240.00	240.02	239.99	240.10	240.03	239.78	234.18	234.10	234.04	234.04	239.73	239.76	239.75	239.71	239.63	239.55	239.90	239.84	233.98	233.5
Amp (R)	1275.32	143.25	501.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	417.4
Amp (S)	1228.19	133.07	496.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.13	383.1
Amp (T)	1195.97	139.53	462.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.36	399.2
Amp (Avr)	1233.16	138.62	486.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	54.83	399.9
Amp (N)	0.00	8.92	36.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.95	29.65
PF	0.994	0.965	-0.974	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.694	0.964
PF 1	0.978	0.328	-0.974	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.652	0.965
PF 2	-1.000	-0.691	-0.973	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.742	0.967
PF 3	0.994	0.964	-0.970	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.637	0.964
Frequency	0.00	49.98	49.99	49.99	50.00	50.01	50.01	50.01	50.01	50.01	50.02	50.02	50.02	50.02	50.02	50.02	50.02	50.02	50.02	50.02	49.98	49.98	50.00
THD-V1	0.00	1.57	1.57	1.46	1.48	1.48	1.56	1.60	1.60	1.69	1.72	1.65	1.63	1.63	1.56	1.62	1.60	1.58	1.61	1.46	1.45	1.45	1.56
THD-V2	0.00	1.45	1.56	1.56	1.59	1.58	1.59	1.62	1.64	1.68	1.66	1.66	1.67	1.58	1.67	1.55	1.68	1.68	1.71	1.57	1.61	1.37	1.42
THD-V3	0.00	1.58	1.55	1.53	1.55	1.55	1.48	1.49	1.55	1.60	1.62	1.57	1.57	1.64	1.64	1.66	1.66	1.66	1.72	1.53	1.55	1.47	1.55
THD-A1	0.00	8.69	4.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.02	3.14
THD-A2	0.00	8.23	3.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.38	2.52
THD-A3	0.00	9.88	5.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.00	2.53



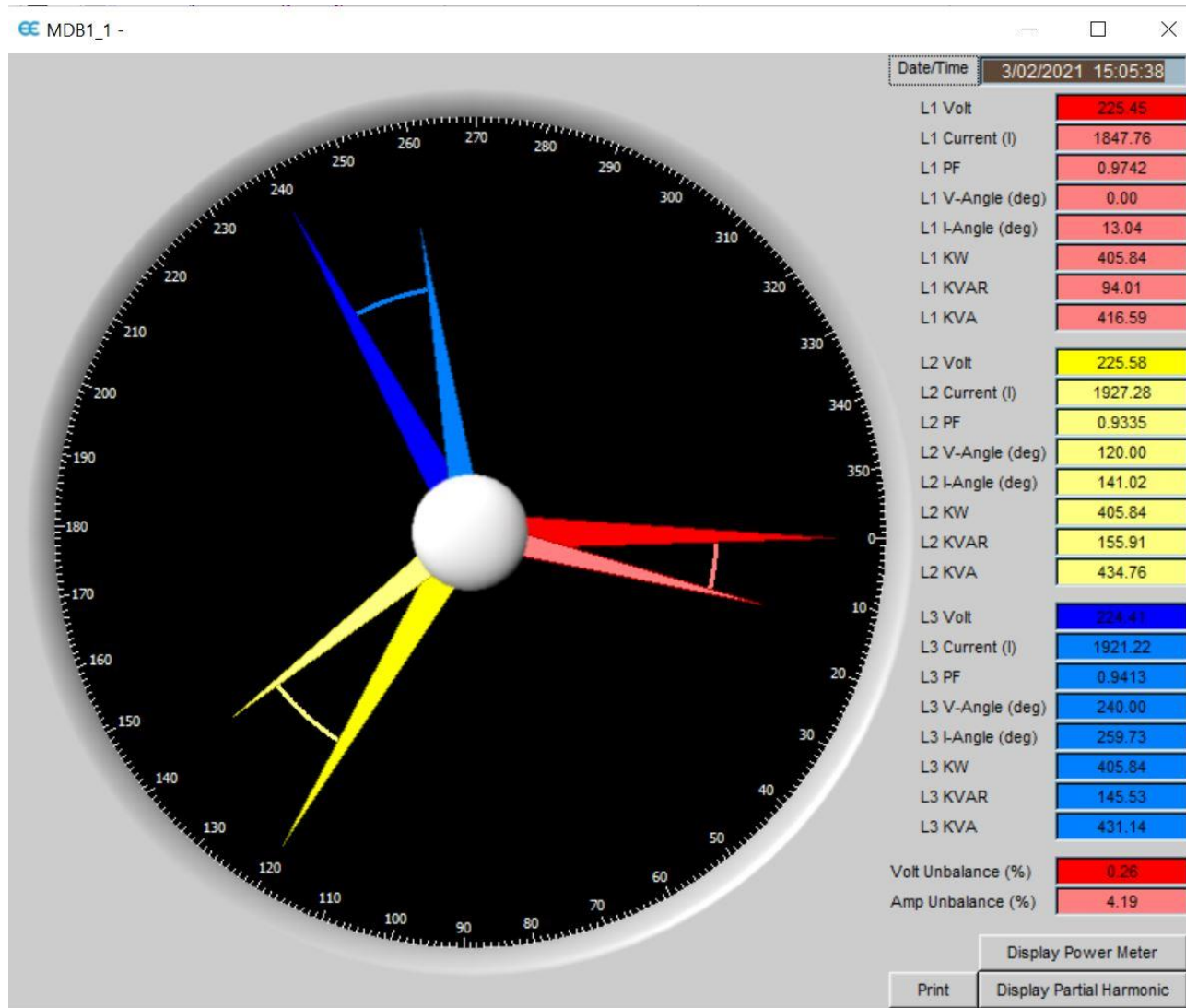
การแสดงผลในรูปแบบ Analog



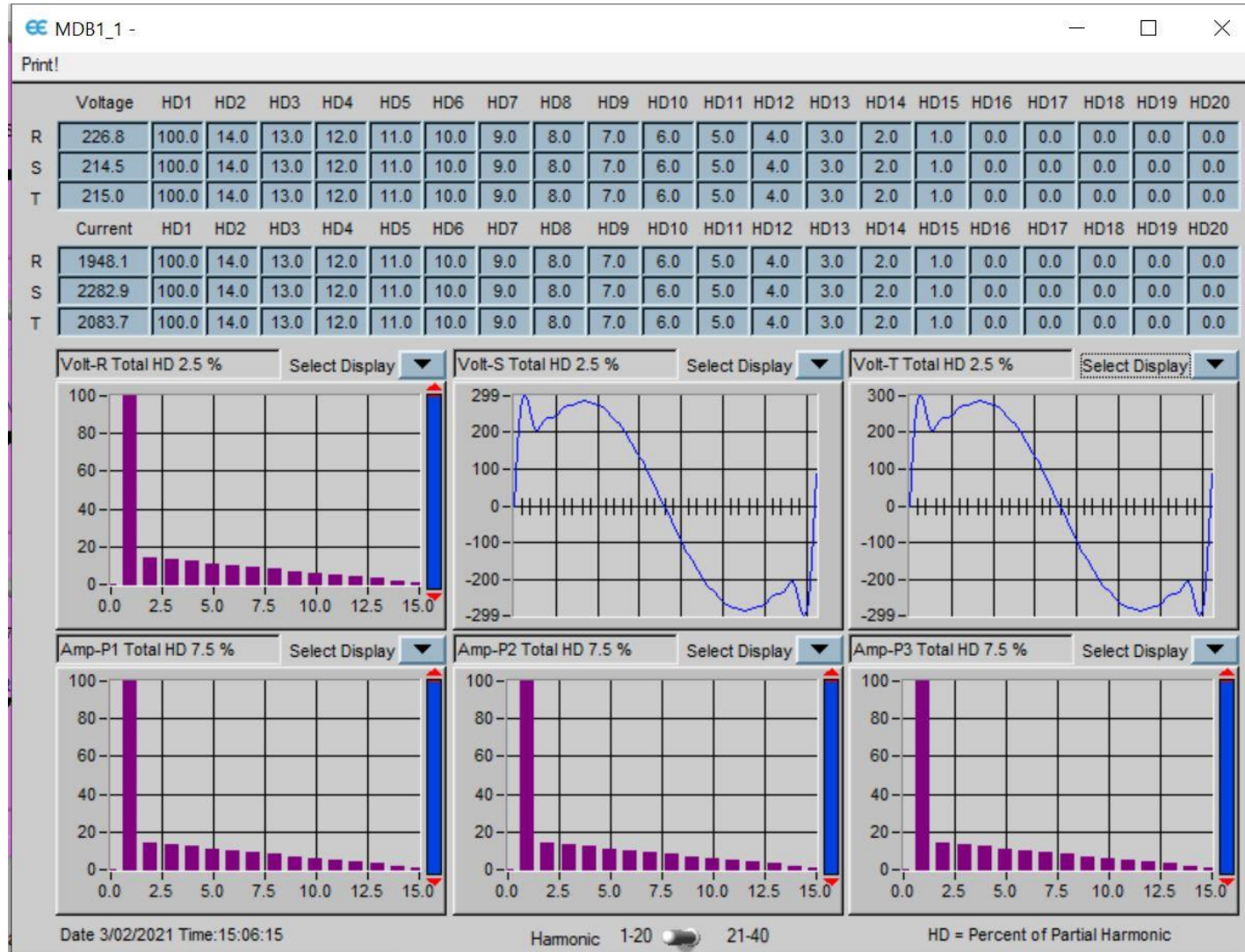
Power/Energy Ratio Monitoring

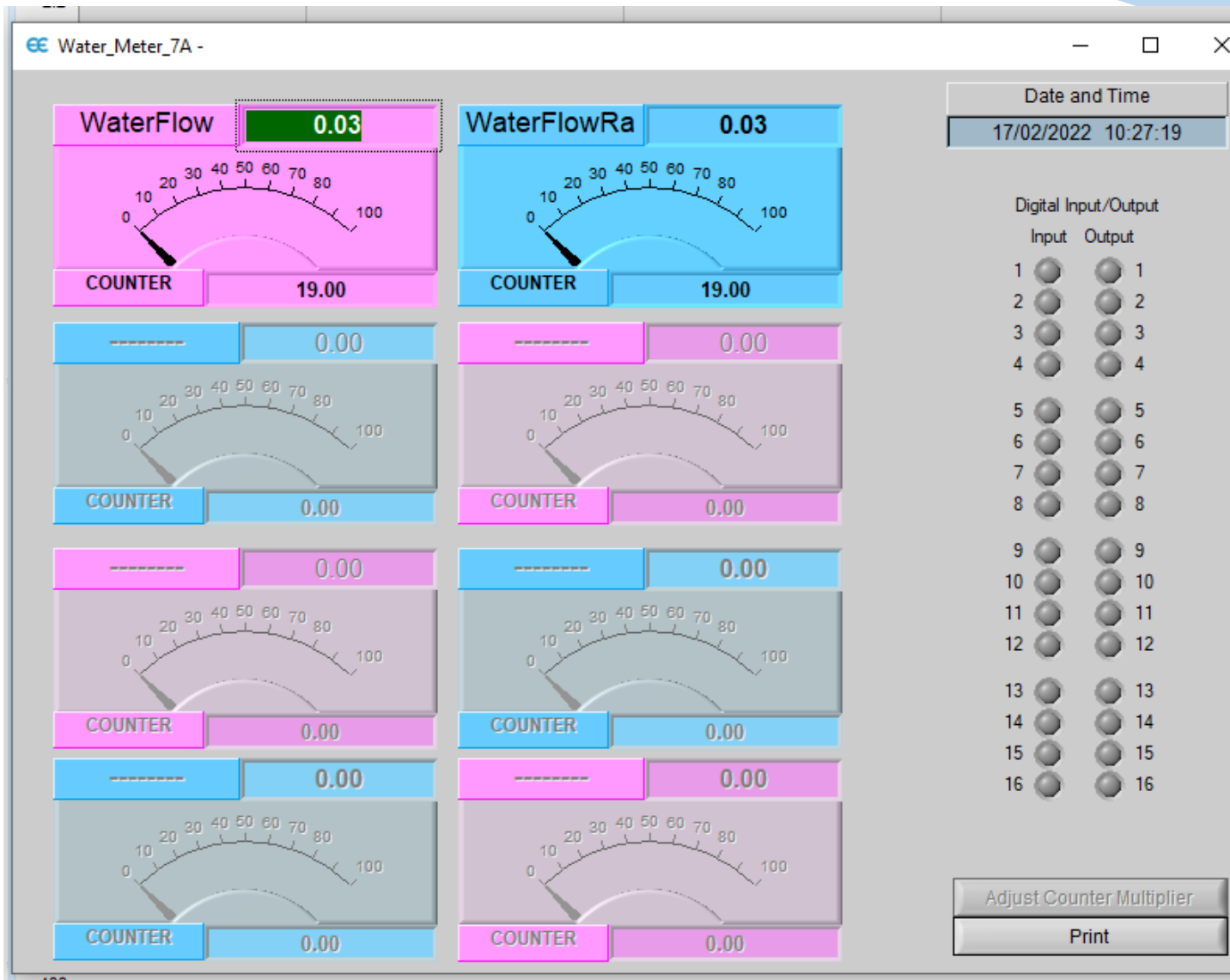


Phasor Monitoring

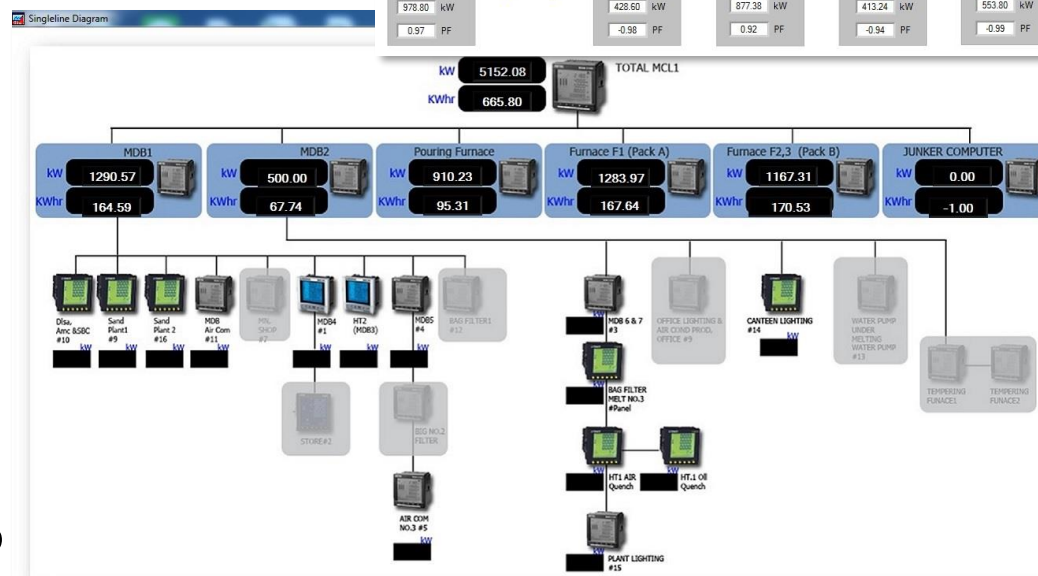
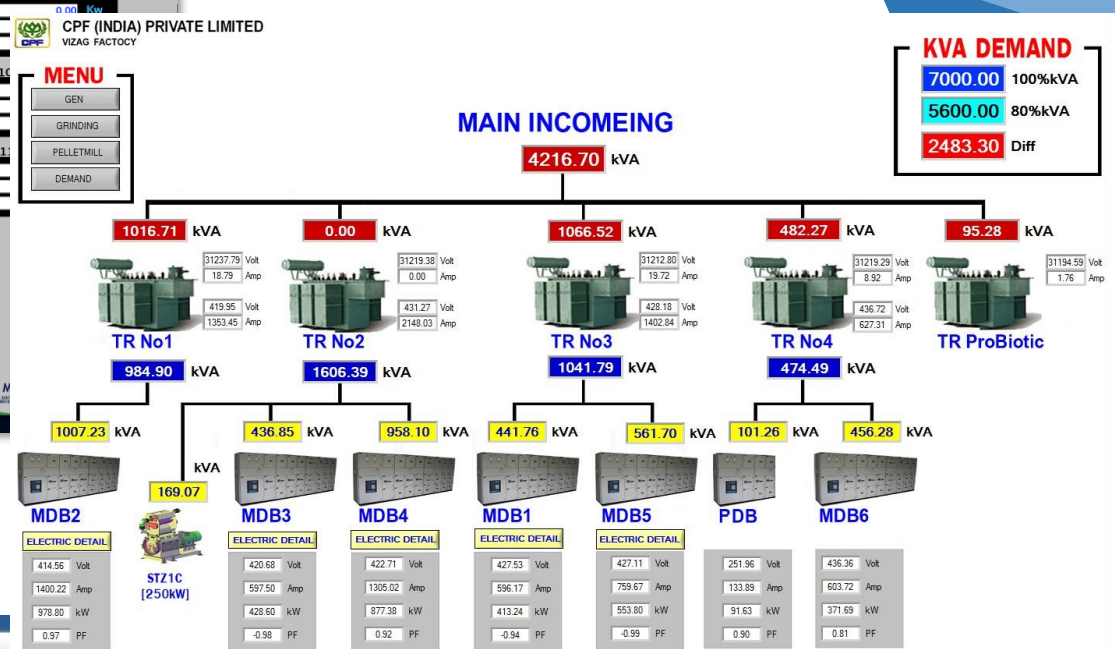


แสดงผลในรูปแบบ Harmonics

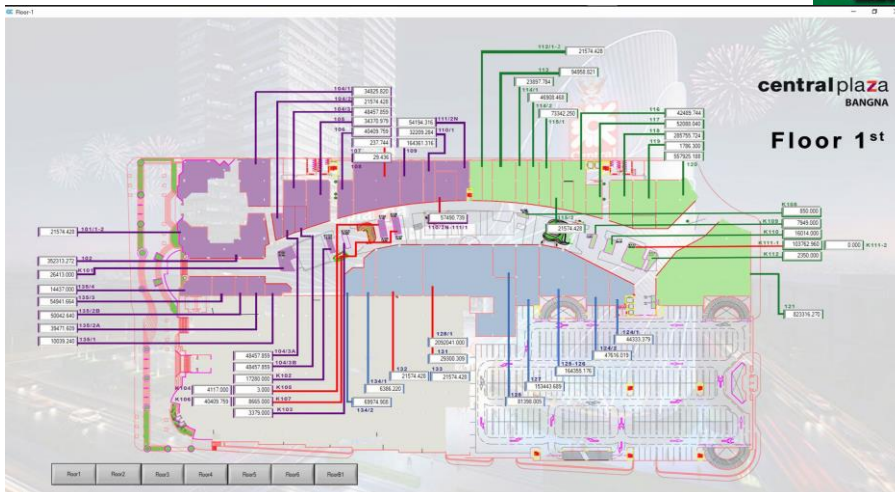
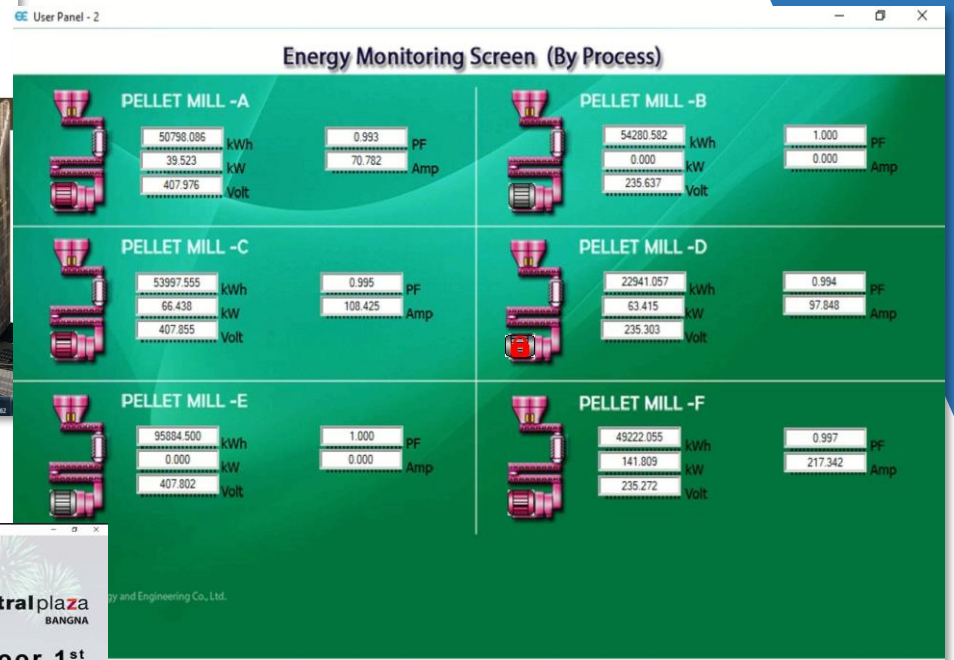
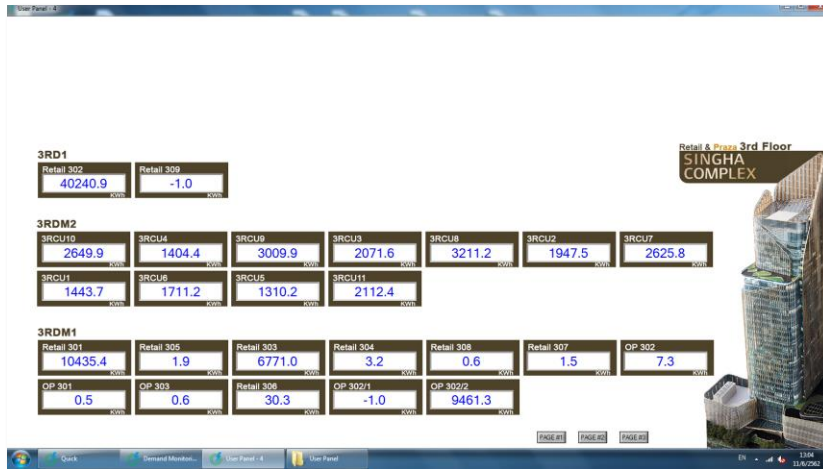




แสดงผลรูปแบบ User Panel



แสดงผลรูปแบบ User Panel





SmartEE สามารถใช้งานได้ทั้งภาษาไทยและภาษาอังกฤษ

สามารถเลือกแสดงผลตามช่วงเวลาการคิดค่าไฟฟ้าได้ อีกทั้งยังสามารถ

ตั้งเวลาการลบข้อมูลอัตโนมัติได้อีกด้วย

The 'Demand Configure' dialog box, General tab, contains the following settings:

- Demand Monitoring:** ☐ Display Grid, ☒ Grid Color, ☐ Background Color.
- Precision:** Power/Energy: 0.01 kW, Current: 0.01 Amp.
- Drive:** C:\, **Project Name:** Example, **New Project** button.
- Control Method:** ☐ CYCLIC, ☒ PRIORITY.
- Language:** ☐ Thai, ☒ English.
- User Panel:** ☐ User Panel Editable, ☐ Not visible on start up, ☐ Retrieve 1 year recorded data on start program. It will be effect on next start.
- Operation Speed:** Normal (dropdown), **Windows Sizable:** ☒, **Minimize on start up:** ☐, **Windows Lockout:** ☐.
- Automatic Delete/Move Data:** ☒ Automatic delete the second data, Delete it when the data older than (days): 45, ☐ Automatic delete the demand data, Delete it when the data older than (days): 210, ☐ Move to: D:\Demand21.dat\Backup.
- Warning Line 2:** -2.00, **Set Point:** 1960.00, **Warning Line 1:** -4.00, **Set Point:** 1920.00. Demand is calculated from: KW (selected), KVA.
- Reporter:** SmartEEpro-Reporter.Exe, **AutoRun:** TSS.EXE.
- Buttons:** OK, APPLY, CANCEL.

The 'Demand Configure' dialog box, Billing Normal/TOD/TOU tab, contains the following settings:

- Demand Mode:** ☒ Time of Day (TOD), ☐ Time of Use (TOU), ☐ Normal (24 Hours), ☐ H-N-L (High/Normal/Low).
- TOD Time:** A vertical bar chart showing time intervals: 0:00 to 8:00 (green), 8:00 to 18:30 (yellow), 18:30 to 21:30 (red), and 21:30 to 24:00 (green).
- Day begin at:** 0:00.
- Billing Unit:** Baht.
- Buttons:** OK, APPLY, CANCEL.



EE Meter Configure

Select Meter: Total, Total2, Total3, Total4, Total5, Total6, Demo, Manual, Meter3, Meter4, Meter5, Meter6, Meter7, Meter8, Dummy Meter#

Interface: OEE, Record and Demand Setpoint, Alarm1, Alarm2, Control

Name: Total Max KW/KVA: 10000 Advance Import Meter Config from File

Description: Protocol: None Port Config Export Meter Config & Type

(Protocol can be set in Port Config Panel)

Port: None Address: 1 Meter Type: Accumulate Meter

Meter IP Address: 192.168.1.127 Port: 502 Time out (sec): 0.50

Enable: Calculate Demand from (Import - Export) VP or VL (check for VL) Read Digital Input/Output

Read Harmonic Single Phase Vscale: 1.000000 Iscale: 1.000000 Counter: Energy

Enable to use the data with another meter. Counter: Energy

OK Apply Cancel

EE Meter Configure

Select Meter: Total, Total2, Total3, Total4, Total5, Total6, Demo, Manual, Meter3, Meter4, Meter5, Meter6, Meter7, Meter8, Dummy Meter#

Interface: OEE, Record and Demand Setpoint, Alarm1, Alarm2, Control

Name: Demo Max KW/KVA: 10000 Advance Import Meter Config from File

Description: Protocol: None Port Config Export Meter Config & Type

(Protocol can be set in Port Config Panel)

Port: None Address: 1 Meter Type: Demo Meter

If use others protocol on modbus protocol, please avoid address 35, 36, 37, 60

Meter IP Address: 192.168.1.127 Port: 502 Time out (sec): 0.50

Enable: Calculate Demand from (Import - Export) VP or VL (check for VL) Read Digital Input/Output

Read Harmonic Single Phase Vscale: 1.000000 Iscale: 1.000000 Counter: Energy

Enable to use the data with another meter. Counter: Energy

ADD VALUE OF THIS METER TO...

	Multiply
None	1.000000
None	1.000000
None	1.000000
None	1.000000
None	1.000000
None	1.000000
None	1.000000
None	1.000000
None	1.000000
None	1.000000

Unsync process Quick Panel OEE Enable

Meter OPC's url Config OPC server connection

Check duplicate meter address OK/APPLY with config Meter Gate Repeater Setup repeater to send data to every host

OK Apply Cancel

สามารถ บวก ลบ คูณ หาร มิเตอร์ในระบบเพื่อ
ทำการจัดกลุ่มค่าต่างๆได้

EE Meter Configure

Select Meter: Total, Total2, Total3, Total4, Total5, Total6, Demo, Manual, Meter3, Meter4, Meter5, Meter6, Meter7, Meter8

Interface: OEE, Record and Demand Setpoint, Alarm1, Alarm2, Control

☒ Enable monitoring

Enable Alarm for this meter ☒

Power (kW)

Enable	SetPoint1	SetPoint2	DelayTime	#(Count)	Hysteresis	AutoReset	Command	Load	User Message	Alarm
☒	0.0	+Inf	5	0	0	0	uncontrol	0		None
☒	0.0	+Inf	5	0	0	0	uncontrol	0		None
☒	0.0	-Inf	5	0	0	0	uncontrol	0		None
☒	0.0	-Inf	5	0	0	0	uncontrol	0		None

Forecast kWDM

Enable	SetPoint1	SetPoint2	DelayTime	#(Count)	Hysteresis	AutoReset	Command	Load	User Message	Alarm
☒	0.0	+Inf	5	0	0	0	uncontrol	0		None
☒	0.0	+Inf	5	0	0	0	uncontrol	0		None
☒	0.0	-Inf	5	0	0	0	uncontrol	0		None
☒	0.0	-Inf	5	0	0	0	uncontrol	0		None

Power L1 (kW1)

Enable	SetPoint1	SetPoint2	DelayTime	#(Count)	Hysteresis	AutoReset	Command	Load	User Message	Alarm
☒	0.0	+Inf	5	0	0	0	uncontrol	0		None
☒	0.0	+Inf	5	0	0	0	uncontrol	0		None
☒	0.0	-Inf	5	0	0	0	uncontrol	0		None
☒	0.0	-Inf	5	0	0	0	uncontrol	0		None

Power L2 (kW2)

Enable	SetPoint1	SetPoint2	DelayTime	#(Count)	Hysteresis	AutoReset	Command
☐	0.0	+Inf	5	0	0	0	uncontrol
☐	0.0	+Inf	5	0	0	0	uncontrol
☐	0.0	-Inf	5	0	0	0	uncontrol
☐	0.0	-Inf	5	0	0	0	uncontrol

Power L3 (kW3)

Enable	SetPoint1	SetPoint2	DelayTime	#(Count)	Hysteresis	AutoReset	Command
☐	0.0	+Inf	5	0	0	0	uncontrol

Dummy Meter# 0

OK Apply Cancel

☐ Check duplicate n
☐ OK/APPLY with c
☐ Setup repeater to

EE Meter Configure

Select Meter: Total, Total2, Total3, Total4, Total5, Total6, Demo, Manual, Meter3, Meter4, Meter5, Meter6, Meter7, Meter8

Interface: OEE, Record and Demand Setpoint, Alarm1, Alarm2, Control

☒ Enable monitoring

Running (Hour)

Step	SetPoint	Command	Load	User Message	Alarm
Step-1	0.00	uncontrol	0		None
Step-2	0.00	uncontrol	0		None

Digital Input

☐ Enable

Input	Alarm Type	Command	Load	User Message	Alarm
Input 1	No Sound & No Record	uncontrol	0		None
Input 2	No Sound & No Record	uncontrol	0		None
Input 3	No Sound & No Record	uncontrol	0		None
Input 4	No Sound & No Record	uncontrol	0		None
Input 5	No Sound & No Record	uncontrol	0		None
Input 6	No Sound & No Record	uncontrol	0		None
Input 7	No Sound & No Record	uncontrol	0		None
Input 8	No Sound & No Record	uncontrol	0		None
Input 9	No Sound & No Record	uncontrol	0		None
Input 10	No Sound & No Record	uncontrol	0		None
Input 11	No Sound & No Record	uncontrol	0		None
Input 12	No Sound & No Record	uncontrol	0		None
Input 13	No Sound & No Record	uncontrol	0		None
Input 14	No Sound & No Record	uncontrol	0		None
Input 15	No Sound & No Record	uncontrol	0		None
Input 16	No Sound & No Record	uncontrol	0		None

Event

☐ Enable

Event	Alarm Type	Command	Load	User Message	Alarm
CT changing	No Sound & No Record	uncontrol	0		None
PT changing	No Sound & No Record	uncontrol	0		None
Lost connection	No Sound & No Record	uncontrol	0		None

Dummy Meter# 0

OK Apply Cancel

☐ Check duplicate meter address
☐ OK/APPLY with config Meter Gate Repeater
☐ Setup repeater to send data to every host

สามารถเลือกตั้ง Alarm ในแต่ละ parameter ได้



From	Subject	Received
Date: Today		
smarteepro@gmail.com	Factory1: 30/06/2013 9:36:03 System Shutdown.	ร.ร. 30/6/2556 9:36
smarteepro@gmail.com	Factory1: 30/06/2013 9:34:51 System Started.	ร.ร. 30/6/2556 9:35
smarteepro@gmail.com	Factory1: 30/06/2013 9:34:07 Key Module isn't found, Program will be terminated in 2 hours.	ร.ร. 30/6/2556 9:35

Alarm to E-mail Report To E-mail

Demand Setup

General Billing Normal/TOD/TOU Export Data Alarm to E-mail

☒ Enable Send All Alarms to E-mail

From/To/Cc Information

From: smarteepro@gmail.com To: engineer@company.com
To: channarong@tat.co.th manager@company.com
Cc:
Subject: Factory1: <message>
<empty subject> = Alarm Message

E-Mail Account

SMTP Server: smtp.gmail.com:587 mail.company.com

Logon Information

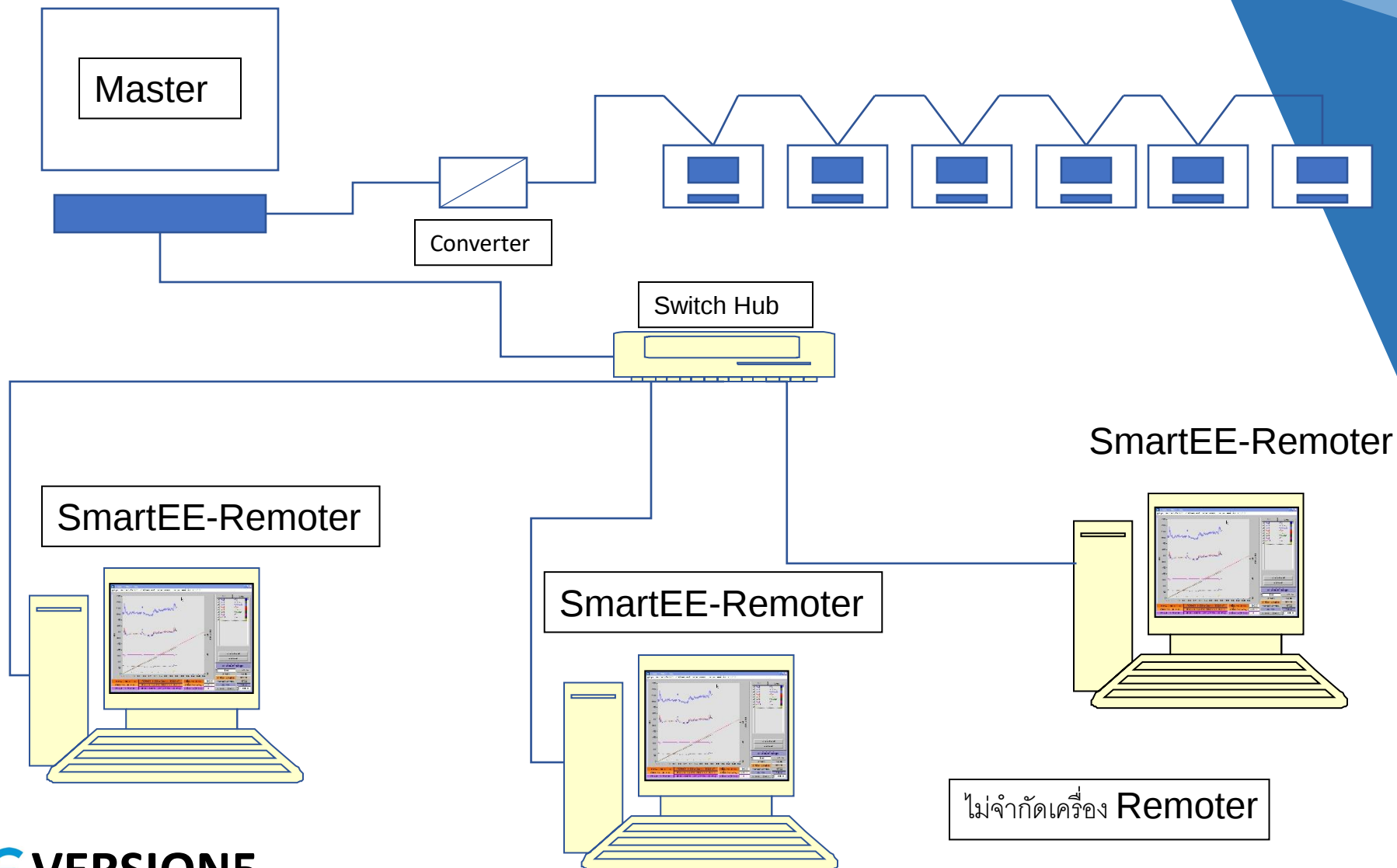
User Name: smarteepro@gmail.com
Password:

Copy from Send Mail Panel

OK APPLY CANCEL



SmartEE มีโปรแกรม **SmartEE Remoter** ที่ช่วยให้ผู้ใช้สามารถดูการใช้พลังงานไฟฟ้าผ่านคอมพิวเตอร์ได้ พร้อมกันหลายๆเครื่องโดยไม่จำกัดเครื่องคอมพิวเตอร์



EE VERSION 5

Energy Management Software

SERVICING YOU SINCE 2000



Smart Report



Smart Monitor



Smart Control
OPTIONAL



Smart OEE
OPTIONAL



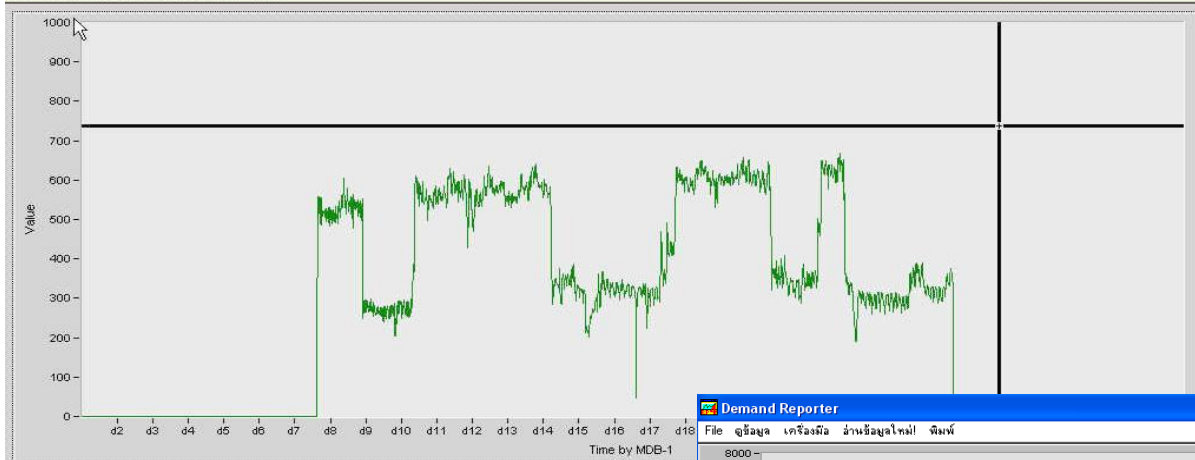
Smart Notify
OPTIONAL



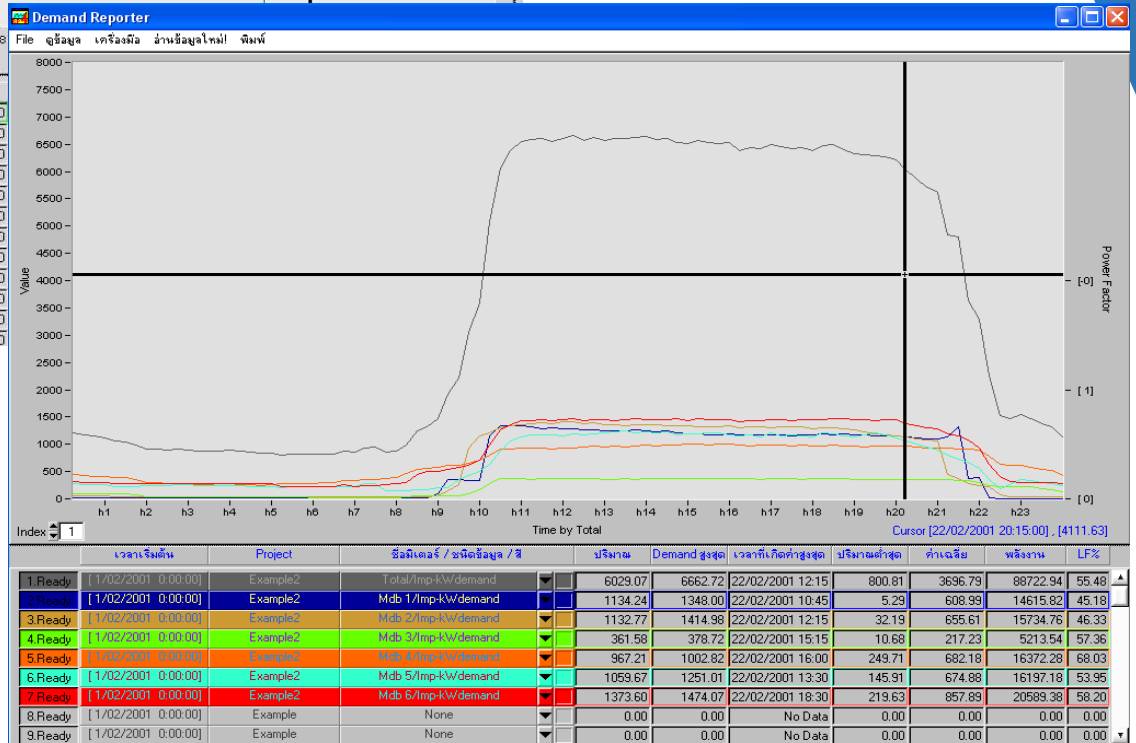
Energy On WEB
OPTIONAL

แสดงค่าการใช้พลังงานทุกวินาทีเลือกช่วงเวลาแสดงผลได้ไม่จำกัด รายวัน รายเดือน หรือรายวินาที

File ดูข้อมูล เครื่องมือ อ่านข้อมูลใหม่! พิมพ์



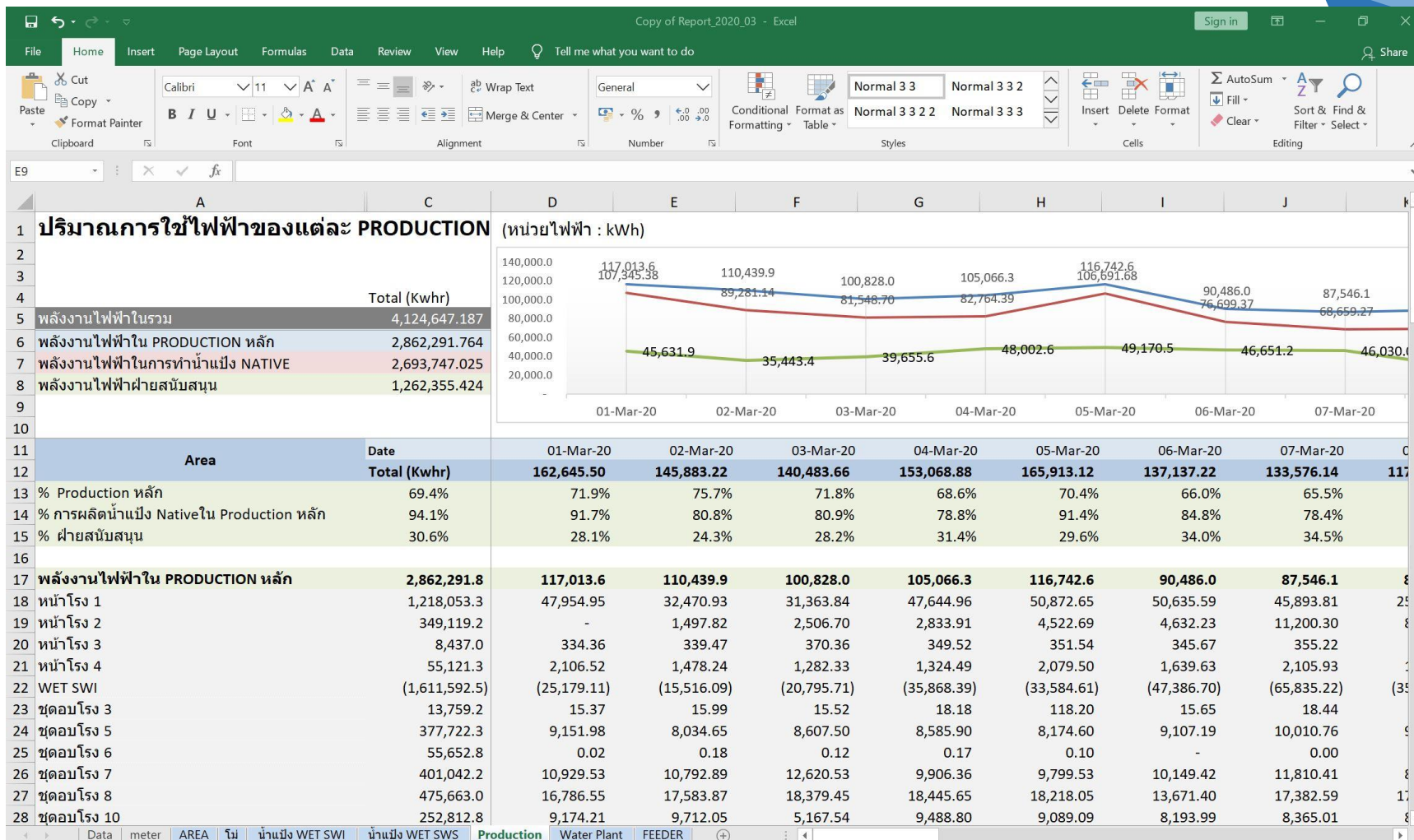
Index	เวลาเริ่มต้นหรือข้อมูล	Project	ชื่อมิเตอร์ / ชนิดข้อมูล / วัสดุ	ปริมาณ
Ready	[1/01/2000 0:00:00]	Example1	Mdb 1/Imp.Demand	0.00
None	[1/08/2005 0:00:00]	Example	None	0.00
None	[1/08/2005 0:00:00]	Example	None	0.00
None	[1/08/2005 0:00:00]	Example	None	0.00
None	[1/08/2005 0:00:00]	Example	None	0.00
None	[1/08/2005 0:00:00]	Example	None	0.00
None	[1/08/2005 0:00:00]	Example	None	0.00
None	[1/08/2005 0:00:00]	Example	None	0.00
None	[1/08/2005 0:00:00]	Example	None	0.00
None	[1/08/2005 0:00:00]	Example	None	0.00
None	[1/08/2005 0:00:00]	Example	None	0.00
None	[1/08/2005 0:00:00]	Example	None	0.00
None	[1/08/2005 0:00:00]	Example	None	0.00



Export to Excel

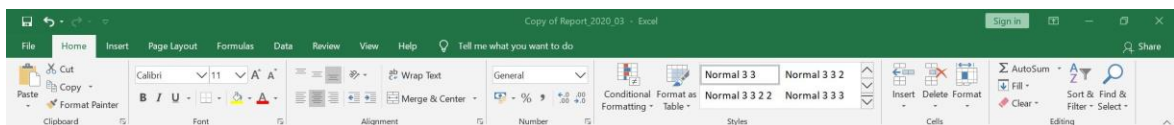


Monthly1-2-20 [Compatibility Mode] - Excel																
File Home Insert Page Layout Formulas Data Review View Help Tell me what you want to do																
Clipboard Font Alignment Number Styles Cells Editing																
C19 X ✓ fx =(MATCH(D19,OFFSET(data_day1,96*(\$A19-1),D\$1),0)-1)*15/(60*24)+\$B19																
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
1			0.00		1.00		2.00		3.00		4.00		5.00		6.00	
2		Demand (kw)	SB1_HP_NO3/Imp-KWH_final	SB2_HP_NO1/Imp-KWH_final	SB2_SB1_HP_NO2/Imp-KWH_final	SB2_HP_NO3/Imp-KWH_final	SB3_TR6_LP3/Imp-KWH_fir	SB3_TR6_LP4/Imp-KWH_final	SB4_TR11_LP_NO1/Imp-KWH_fina							
3	1	1 February 2020	2/1/20 0:15 -	1.00	2/1/20 0:15 -	1.00	2/1/20 0:15 -	1.00	2/1/20 0:15 -	1.00	2/1/20 0:15 -	1.00	2/1/20 0:15 -	1.00	2/1/20 0:15 -	1.00
4	2	2 February 2020	2/2/20 0:15 -	1.00	2/2/20 0:15 -	1.00	2/2/20 0:15 -	1.00	2/2/20 0:15 -	1.00	2/2/20 0:15 -	1.00	2/2/20 0:15 -	1.00	2/2/20 0:15 -	1.00
5	3	3 February 2020	2/3/20 0:15 -	1.00	2/3/20 0:15 -	1.00	2/3/20 0:15 -	1.00	2/3/20 0:15 -	1.00	2/3/20 0:15 -	1.00	2/3/20 0:15 -	1.00	2/3/20 0:15 -	1.00
6	4	4 February 2020	2/5/20 0:00	2,117,813.31	2/5/20 0:00	5,122,814.26	2/5/20 0:00	1,130,871.34	2/4/20 14:45	3,704,859.00	2/4/20 0:15 -	1.00	2/5/20 0:00	18,611,067.16	2/4/20 0:15 -	1.00
7	5	5 February 2020	2/6/20 0:00	2,121,757.37	2/6/20 0:00	5,125,310.08	2/6/20 0:00	1,133,616.64	2/5/20 0:15	3,704,859.00	2/5/20 0:15 -	1.00	2/6/20 0:00	18,623,363.26	2/6/20 0:00	5,580,793.78
8	6	6 February 2020	2/7/20 0:00	2,125,692.14	2/7/20 0:00	5,127,763.00	2/7/20 0:00	1,136,723.08	2/6/20 0:15	3,704,859.00	2/6/20 0:15 -	1.00	2/7/20 0:00	18,635,685.74	2/7/20 0:00	5,594,177.93
9	7	7 February 2020	2/8/20 0:00	2,129,620.05	2/8/20 0:00	5,130,180.75	2/8/20 0:00	1,140,025.36	2/7/20 0:15	3,704,859.00	2/7/20 0:15 -	1.00	2/8/20 0:00	18,648,074.01	2/8/20 0:00	5,607,541.85
10	8	8 February 2020	2/9/20 0:00	2,133,550.46	2/9/20 0:00	5,132,596.98	2/9/20 0:00	1,143,356.38	2/8/20 0:15	3,704,859.00	2/8/20 0:15 -	1.00	2/9/20 0:00	18,660,438.01	2/9/20 0:00	5,620,918.62
11	9	9 February 2020	2/10/20 0:00	2,137,482.05	2/10/20 0:00	5,135,004.44	2/10/20 0:00	1,146,774.04	2/9/20 0:15	3,704,859.00	2/9/20 0:15 -	1.00	2/10/20 0:00	18,672,876.56	2/10/20 0:00	5,634,272.00
12	10	10 February 2020	2/11/20 0:00	2,141,416.23	2/11/20 0:00	5,137,406.47	2/11/20 0:00	1,149,971.25	2/10/20 0:15	3,704,859.00	2/10/20 0:15 -	1.00	2/11/20 0:00	18,685,242.34	2/11/20 0:00	5,647,641.58
13	11	11 February 2020	2/12/20 0:00	2,145,343.37	2/12/20 0:00	5,139,805.72	2/12/20 0:00	1,153,212.84	2/11/20 0:15	3,704,859.00	2/11/20 0:15 -	1.00	2/12/20 0:00	18,697,578.21	2/12/20 0:00	5,660,963.39
14	12	12 February 2020	2/13/20 0:00	2,149,267.05	2/13/20 0:00	5,142,195.58	2/13/20 0:00	1,156,729.90	2/12/20 0:15	3,704,859.00	2/12/20 0:15 -	1.00	2/13/20 0:00	18,709,883.28	2/13/20 0:00	5,674,278.93
15	13	13 February 2020	2/14/20 0:00	2,153,199.68	2/14/20 0:00	5,144,551.43	2/14/20 0:00	1,159,873.65	2/13/20 0:15	3,704,859.00	2/13/20 0:15 -	1.00	2/14/20 0:00	18,722,130.62	2/14/20 0:00	5,687,587.37
16	14	14 February 2020	2/15/20 0:00	2,157,132.09	2/15/20 0:00	5,146,883.00	2/15/20 0:00	1,162,900.08	2/14/20 0:15	3,704,859.00	2/14/20 0:15 -	1.00	2/15/20 0:00	18,734,374.59	2/15/20 0:00	5,700,876.77
17	15	15 February 2020	2/16/20 0:00	2,161,062.23	2/16/20 0:00	5,149,204.73	2/16/20 0:00	1,166,224.63	2/15/20 0:15	3,704,859.00	2/15/20 0:15 -	1.00	2/16/20 0:00	18,746,550.20	2/16/20 0:00	5,714,287.60
18	16	16 February 2020	2/17/20 0:00	2,164,999.77	2/17/20 0:00	5,151,498.62	2/17/20 0:00	1,169,336.36	2/16/20 0:15	3,704,859.00	2/16/20 0:15 -	1.00	2/17/20 0:00	18,758,727.36	2/17/20 0:00	5,727,666.48
19	17	17 February 2020	2/18/20 0:00	2,168,931.50	2/18/20 0:00	5,153,795.03	2/18/20 0:00	1,172,684.00	2/17/20 0:15	3,704,859.00	2/17/20 0:15 -	1.00	2/18/20 0:00	18,770,903.20	2/18/20 0:00	5,740,995.21
20	18	18 February 2020	2/18/20 19:30	2,172,091.05	2/18/20 19:30	5,155,593.08	2/18/20 19:30	1,175,547.70	2/18/20 16:45	3,704,939.58	2/18/20 0:15 -	1.00	2/18/20 19:30	18,780,783.24	2/18/20 19:30	5,751,839.66
21	19	19 February 2020	2/19/20 20:30	2,176,231.64	2/19/20 20:30	5,158,080.05	2/19/20 20:30	1,179,096.14	2/19/20 7:30	3,704,939.00	2/19/20 0:15 -	1.00	2/19/20 20:30	18,793,458.78	2/19/20 20:30	5,765,773.10
22	20	20 February 2020	2/20/20 0:15 -	1.00	2/20/20 0:15 -	1.00	2/20/20 0:15 -	1.00	2/20/20 0:15 -	1.00	2/20/20 0:15 -	1.00	2/20/20 0:15 -	1.00	2/20/20 0:15 -	1.00
23	21	21 February 2020	2/21/20 0:15 -	1.00	2/21/20 0:15 -	1.00	2/21/20 0:15 -	1.00	2/21/20 0:15 -	1.00	2/21/20 0:15 -	1.00	2/21/20 0:15 -	1.00	2/21/20 0:15 -	1.00
DemandData Demand Kwhr Energy by Period (TOD) Energy by Period (TOU) Energy Cost by Period (TOU) Holid...																





Smart Report



ปริมาณการใช้ไฟฟ้าของแต่ละพื้นที่ (หน่วยไฟฟ้า: kWh)															
Date															
Area															
1	พื้นที่โรง1	33.03%	1,218,053.30	47,954.95	32,470.93	31,363.84	47,644.96	50,872.65	50,635.59	45,893.81	25,156.36	35,201.66	49,403.78	46,487.51	48,206.98
2	พื้นที่โรง2	9.47%	349,119.19	-	1,497.82	2,506.70	2,833.91	4,522.69	4,632.23	11,200.30	8,009.76	9,549.43	13,958.11	12,665.50	15,728.14
3	พื้นที่โรง3	0.23%	8,437.05	334.36	339.47	370.36	349.52	351.54	345.67	355.22	356.47	350.76	348.51	357.71	241.61
4	พื้นที่โรง4	1.44%	53,014.74	1,478.24	1,382.33	1,324.49	2,079.50	1,639.63	2,205.93	1,539.46	1,740.55	2,111.99	2,099.80	1,718.52	1,763.80
5	WET SWI	-43.70%	(1,611,592.51)	(25,179.11)	(15,516.09)	(20,795.71)	(35,868.39)	(33,584.61)	(47,386.70)	(65,835.22)	(35,025.22)	(50,495.22)	(66,290.60)	(69,409.01)	(65,977.82)
6	WET 8	2.14%	78,957.83	2,866.43	2,145.65	2,077.77	2,316.24	2,249.29	2,440.70	2,617.22	1,899.02	2,026.29	2,753.74	2,716.18	2,877.56
7	WET 6-7	8.52%	314,363.99	10,987.50	9,255.56	9,207.69	9,485.76	11,044.58	10,654.55	12,606.65	10,862.13	12,285.23	12,614.19	11,787.05	9,182.93
8	WET 10	12.18%	449,015.92	16,926.57	16,836.68	14,139.98	14,111.10	17,375.76	14,001.70	15,801.37	17,101.81	12,126.35	16,717.44	15,926.79	17,317.05
9	Modifi0	11.50%	424,163.46	14,958.73	15,791.97	15,884.42	16,423.66	16,431.61	12,385.01	15,213.61	15,234.34	14,967.79	13,752.58	14,648.70	15,093.24
10	Modifi10	0.00%	-	-	-	-	-	-	-	-	-	-	-	-	-
11	ชุดอบโรง 3	0.37%	13,759.19	15.37	15.99	15.52	18.18	118.20	15.65	18.44	16.01	18.32	98.12	300.67	392.38
12	ชุดอบโรง 5	10.24%	377,722.30	9,151.98	8,034.65	8,607.50	8,585.90	8,174.60	9,107.19	10,010.76	9,983.23	10,415.44	11,228.83	13,842.16	14,302.44
13	ชุดอบโรง 6	1.51%	55,652.78	0.02	0.18	0.12	0.17	0.10	0.00	-	-	-	456.20	1,954.06	2,532.81
14	ชุดอบโรง 7	10.88%	401,042.21	10,929.53	10,792.89	12,620.53	9,906.36	9,799.53	10,149.42	11,810.41	8,911.04	9,491.99	10,816.30	13,461.53	12,105.05
15	ชุดอบโรง 8	12.90%	479,462.93	16,786.55	17,583.87	18,379.45	18,446.85	18,118.05	13,871.40	17,382.59	17,156.35	16,854.44	14,827.12	16,468.36	16,734.87
16	ชุดอบโรง 10	6.86%	252,812.85	9,174.21	9,712.05	5,167.54	9,488.89	-	-	-	-	-	-	-	-
17	ระบบน้ำ 1 (คตอ.2,3)	1.72%	63,596.46	3,345.25	1,736.48	3,420.51	3,421.1	-	-	-	-	-	-	-	-
18	ระบบน้ำ 2	0.02%	616.41	20.82	31.93	19.89	15.5	-	-	-	-	-	-	-	-
19	Boiler	5.86%	215,932.50	7,609.74	7,719.39	7,014.64	7,419.1	-	-	-	-	-	-	-	-
20	อาคารปั่นลมน	0.00%	92.49	-	-	-	-	-	-	-	-	-	-	-	-
21	โรงคั่ว 11	2.39%	82,285.70	3,697.38	3,283.35	3,323.46	3,513.3	-	-	-	-	-	-	-	-
22	โรงคั่ว 12	0.03%	959.81	1.58	1.58	1.59	1.5	-	-	-	-	-	-	-	-
23	ชุดอบโรง	0.37%	13,460.97	451.95	445.23	434.04	455.4	-	-	-	-	-	-	-	-
24	ถังบดกล	1.90%	70,230.97	2.70	2.70	2,577.44	2.7	-	-	-	-	-	-	-	-
25	ออฟฟิศหน้า	9.33%	344,076.98	14,821.59	10,741.62	10,975.06	15,304.4	-	-	-	-	-	-	-	-
26	TRF	-1.77%	(45,144.88)	(660.17)	(1,527.66)	(1,616.41)	(1,719.5	-	-	-	-	-	-	-	-
27	SWC	1.99%	79,282.85	1,204.71	2,585.43	2,731.79	2,869.5	-	-	-	-	-	-	-	-
28	TRF2 (SWC2)	0.00%	-	-	-	-	-	-	-	-	-	-	-	-	-

Copy of Report 2020.03 - Excel

ปริมาณการใช้ไฟฟ้าของFEEDER 1-4 (หน่วยไฟฟ้า: kWh)															
Date															
Area															
1	Total Feeder 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	M-Feeder4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	Total Feeder 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	M-Feeder3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Total Feeder 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	M-Feeder2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	Total Feeder 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	M-Feeder1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	Total Feeder 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	M-Feeder4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Total Feeder 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	M-Feeder4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	Total Feeder 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	G/Total Feeder	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	TR1_1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	TR1_1_02	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	TR1_2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	TR1_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	TR1_4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	TR1_5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	TR1_6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	TR1_7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	TR1_8	-	-	-	-	-	-	-	-	-	-	-	-	-	-



		READING FROM (1/05/16 TO 31/05/16)			
5235102008	MIXING	COST CENTRE	DEPARTMENT	UNIT CONSUMPTION	
	- Premix Line			UNIT	AMOUNT(Rs.)
	- Batching-1A	5235102001	FACTORY & ADMIN	1,235	6,175.03
	- Mixer-2A	5235102031	RAW MATERIAL	22,604	113,018.85
	- Fishmeal mixing	5235102037	FINISHED GOODS	-	-
	- Mixer-2B	5235102006	GRINDING	194,115	970,575.67
	- Liquid-1	5235102008	MIXING	14,110	70,547.91
	- Batching-1B	5235102010	PELLETING	301,516	1,507,579.71
	- Batching-1C	5235102016	PACKING	9,878	49,392.45
	- Mixer-2C	5235102066	MAINTENANCE	408	2,041.72
		5235102069	BOILER	23,184	115,920.14
		5235102018	AIR COMPRESSOR & GENERATOR	94,947	474,735.76
5235102010	PELLETING	5235102024	SUPER PS	-	-
		xxxxxxxxxxx	PREMIX PLANT	932	4,659.07
		xxxxxxxxxxx	CENTRAL LAB	0	0.00
		xxxxxxxxxxx	CENTRAL PROJECT ENG.	-	-
		xxxxxxxxxxx	DORMITORY	4,762	23,808.20
			TOTAL	1,335,382	3,338,455
			Electricity cost and Diesel cost	Electricity cost(From Bill)	Diesel cost(From account)
				6,676,909	
			Total production	100,000	
		Unit/Ton	13.35		

การคำนวณค่าไฟฟ้าแบบ TOD / TOU / Normal



Smart Report

Normal:Demo

Print Export

Day Report

1 March 2020

2 March 2020

3 March 2020

4 March 2020

5 March 2020

6 March 2020

7 March 2020

8 March 2020

9 March 2020

10 March 2020

11 March 2020

12 March 2020

13 March 2020

14 March 2020

15 March 2020

16 March 2020

17 March 2020

18 March 2020

19 March 2020

20 March 2020

21 March 2020

22 March 2020

23 March 2020

24 March 2020

25 March 2020

26 March 2020

27 March 2020

28 March 2020

29 March 2020

30 March 2020

31 March 2020

TAT Energy & Engineering Co.,Ltd

Report of Meter: Demo

1 March 2020

from : 1 March 2020 [0:00] to : 1 April 2020 [0:00]

1. Demand Cost

None

0.0

196.2600

0.00

0.00

29/03/2020 17:45

1411.8

2. Energy Cost

Hour

kWhr

Baht/kWhr

Baht

LoadFactor

Hour

kWhr

24.00

0

1.7034

0.00

0.00

744.00

1297.8

3. Power Factor

kVAR

pf<0.85

Baht/kVAR

Baht

kVAR

pf<0.85

None

0.0

0.0

14.0200

0.00

357.8

0

29/03/2020 13:15

4. Product Counter

Count

Baht/Unit

Baht

Kwhr/Count

Counter

0

10.0000

0.00

0.0000

5. Service charge

6. FT (Fuel adjustment)

7. Total

8. Value Added Tax

9. Grand Total

Comment: The price of demand

TOD:Demo

Print Export

Day Report

1 March 2020

2 March 2020

3 March 2020

4 March 2020

5 March 2020

6 March 2020

7 March 2020

8 March 2020

9 March 2020

10 March 2020

11 March 2020

12 March 2020

13 March 2020

14 March 2020

15 March 2020

16 March 2020

TAT Energy & Engineering Co.,Ltd

Report of Meter: Demo

1 March 2020

from : 1 March 2020 [0:00] to : 1 April 2020 [0:00]

1. Demand Cost

None

0.0

285.0500

0.00

0.00

29/03/2020 18:45

1369.0

390229.51

296.49

1.1 On Peak

1.2 Partial Peak

1.3 Off Peak

1.4 Total of Demand

None

0.0

58.8800

0.00

0.00

29/03/2020 17:45

1411.8

2517.95

0.22

None

0.0

0.0000

0.00

0.00

1/01/1900 7:15

0.0

0.00

0.00

392747.47

30.26

2. Energy Cost

Hour

kWhr

Baht/kWhr

Baht

LoadFactor

Hour

kWhr

3.00

0

1.7034

0.00

0.00

325.50

11637.0

2.1 On Peak

2.2 Partial Peak

2.3 Off Peak

2.4 Total of Energy

10.50

0

1.7034

0.00

0.00

744.00

1297.8

29/03/2020 13:15

1369.0

390229.51

296.49

29/03/2020 17:45

1411.8

2517.95

0.22

1/01/1900 7:15

0.0

0.00

0.00

392747.47

30.26

TOU:Demo

Print Export

Day Report

1 March 2020

2 March 2020

3 March 2020

4 March 2020

5 March 2020

6 March 2020

7 March 2020

8 March 2020

9 March 2020

10 March 2020

11 March 2020

12 March 2020

13 March 2020

14 March 2020

15 March 2020

16 March 2020

TAT Energy & Engineering Co.,Ltd

Report of Meter: Demo

1 March 2020

from : 1 March 2020 [0:00] to : 1 April 2020 [0:00]

1. Demand Cost

None

0.0

132.9300

0.00

0.00

13/03/2020 16:00

1408.3

187200.03

22.83

1.1 On Peak (m-f)

1.2 Off Peak (m-f)

1.3 Off Peak (Sa/Su)

1.4 Total of Demand

None

0.0

0.0000

0.00

0.00

None

0.0

0.00

0.00

228.17

2. Import Energy Cost

Hour

kWhr

Baht/kWhr

Baht

LoadFactor

Hour

kWhr

0.00

0

2.6950

0.00

0.00

286.00

8200.0

2.1 On Peak (m-f)

2.2 Off Peak (m-f)

2.3 Off Peak (Sa/Su)

2.4 Total of Energy

0.00

0

1.1914

0.00

0.00

242.00

0

29/03/2020 17:45

1411.8

2517.95

0.22

1/01/1900 7:15

0.0

0.00

0.00

392747.47

30.26

3. Power Factor

kVAR

pf<0.85

Baht/kVAR

Baht

kVAR

pf<0.85

None

0.0

0.0

14.0200

0.00

357.8

0.0

29/03/2020 13:15

4. Export Energy

kWhr

Baht/kWhr

Baht

kWhr

Baht

0

2.6950

0.00

0

1.1914

0.00

4.1 On Peak (m-f)

4.2 Off Peak (m-f)

4.3 Off Peak (Sa/Su)

4.4 Total of Export Energy

0

1.1914

0.00

0

1.1914

0.00

5. Product Counter

Count

Baht/Unit

Baht

Kwhr/Count

Counter

0

10.0000

0.00

0.0000

6. Service charge

7. FT (Fuel Adjustment)

8. Total

9. Value Add Tax

10. Grand Total

Comment:

1. OnPeak (m-f) 9:00 - 22:00, Off Peak (m-f) 22:00 - 9:00, Off Peak (sa/su) 0:00 - 24:00

2. If program was shutdown before 22:00, the energy will be calculate in rate of Off Peak.

3. Select of 'Energy' = Import - Export will be effect with Demand Value only.

Estimate Billing

Actual Billing

29055.73

444137.61

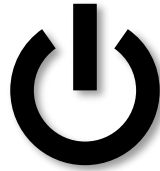
2.24

34.22

EE VERSION 5

Energy Management Software

SERVICING YOU SINCE 2000



**Smart Control
OPTIONAL**



Smart Monitor



Smart Report



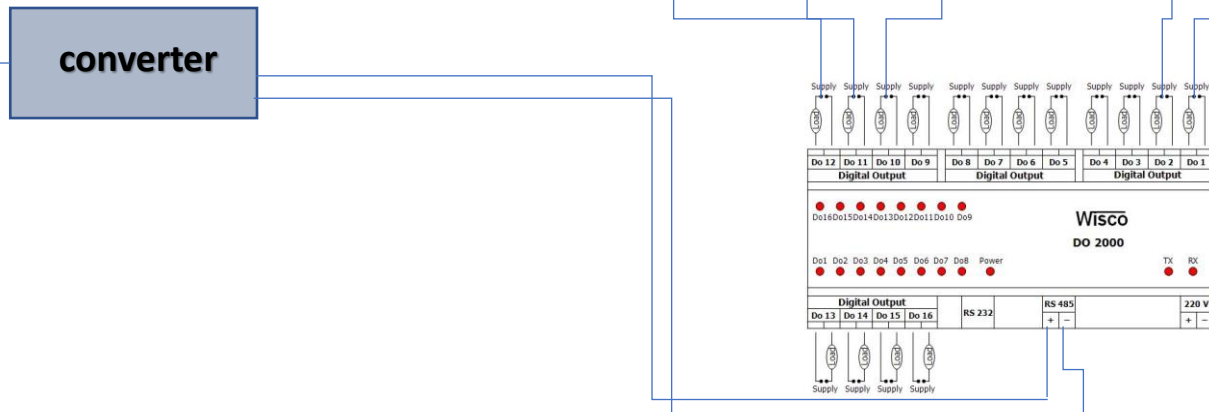
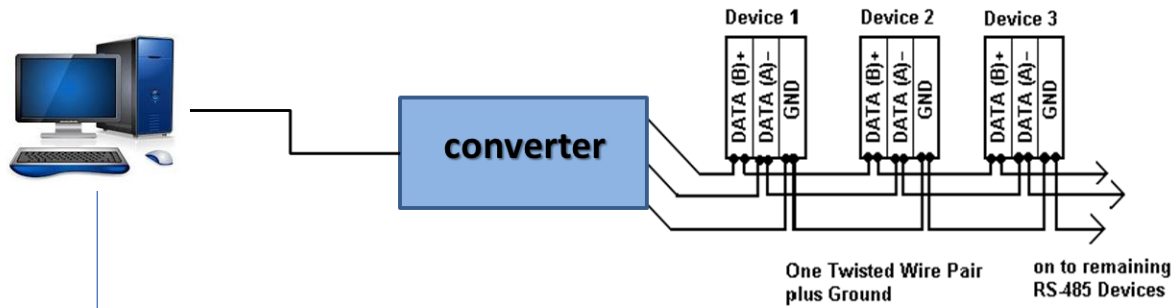
**Smart OEE
OPTIONAL**



**Smart Notify
OPTIONAL**



**Energy On WEB
OPTIONAL**





Remote IO



Magnetic

ส่งผ่าน **remote IO** หรือ **PLC** มี **IO** มี **Converter** โปรแกรมจะส่งสัญญาณไปที่ **IO** ส่วน **IO** จะส่งไป **Magnetic IO** ต่อเป็น **Rs485** หน้า **contact** เป็นแค่ สัญญาณ **analog NC NO**



Load Configuration

Edit		Control Mode	CutKw	RunKw	DlyCut	DlyStart	MinCut	MaxCut	MinRun	Operate
Load 1	Load No.1	Demand	30	30	10	20	20	0	60	60
Load 2	Load No.2	Demand	30	30	10	20	20	0	60	60
Load 3	Load No.3	Demand	30	30	10	20				
Load 4	Load No.4	Demand	30	30	10	20				
Load 5	Load No.5	Demand	30	30	10	20				
Load 6	Load No.6	Demand	30	30	10	20				
Load 7	Load No.7	Demand	30	30	10	20				
Load 8	Load No.8	Demand	30	30	10	20				
Load 9	Load No.1	Demand	30	30	10	20				
Load 10	Load No.1	Demand	30	30	10	20				
Load 11	Load No.1	Demand	30	30	10	20				
Load 12	Load No.1	Demand	30	30	10	20				
Load 13	Load No.1	Demand	30	30	10	20				
Load 14	Load No.1	Demand	30	30	10	20				
Load 15	Load No.1	Demand	30	30	10	20				
Load 16	Load No.1	Demand	30	30	10	20				

CutKW = Over KW(demand) for load cutting
UnCutKW = Under KW(demand) for re-start the load
DlyCut = Time delay to cutting the next load
DlyStart = Time delay to re-start the next load

MinCut = Minimum time for cutting the load
MaxCut = Maximum time for cutting the load

Schedule Programming List

Load #1 Load No.1

Cut 0:00 MON 1.WEEK(S)

Schedule Program by Week

Load #1 Line #2

☐ Weekly ☐ Daily

Specific Week

☐ 1st 7days (1st to 7th)
☐ 2nd 7days (8th to 14th)
☐ 3rd 7days (15th to 21th)
☐ 4th 7days (22th to 28th)
☐ 5st 7days (29th to End)

MON TUE WED THU FRI SAT SUN

☐ ☐ ☐ ☐ ☐ ☐ ☐

Setting Time

Hour Minute

0 0

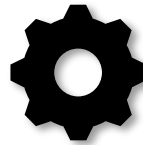
Demand -
UnCut Load (Output off) -
Cut Load (Output on) -

Now Time Add Replace Cancel

EE VERSION 5

Energy Management Software

SERVICING YOU SINCE 2000



**Smart OEE
OPTIONAL**



Smart Monitor



Smart Report



**Smart Control
OPTIONAL**

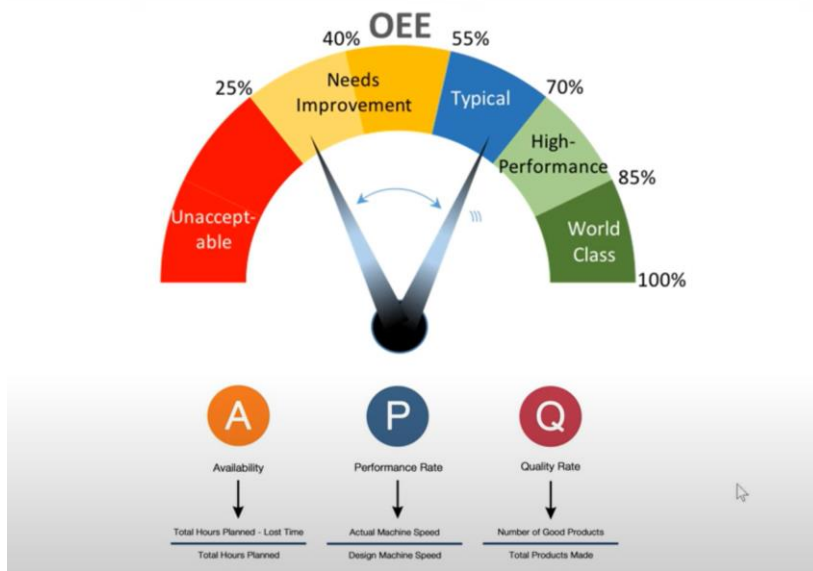


**Smart Notify
OPTIONAL**



**Energy On WEB
OPTIONAL**

OVERALL EQUIPMENT EFFECTIVENESS: OEE



วัดประสิทธิภาพการผลิตแบบ Real Time ด้วย

SmartEE

- OEE
- %No load
- Energy/product
- Steam/product
- Water/product
- Air/product
- Event notify on Line





Smart OEE
OPTIONAL

REAL TIME ENERGY MONITORING

DEMAND

TARGET
ACTUAL
DIFF.

2000.000
1348.486
651.514

kw.
kw.
kw.

PELLET 1

66.6	69.0	90.0	93.7
%OEE	%P	%Q	%A

4.00 TON.

0.00 TON.

TARGET PRODUCTION

ACTUAL PRODUCTION

PELLET 2

64.0	80.0	89.0	90.0
%OEE	%P	%Q	%A

8.30 TON.

0.00 TON.

TARGET PRODUCTION

ACTUAL PRODUCTION

PELLET 3

72.3	81.5	92.0	96.5
%OEE	%P	%Q	%A

7.50 TON.

0.00 TON.

TARGET PRODUCTION

ACTUAL PRODUCTION

HAMMERMILL 1

81.4	92.5	95.0	95.7
%OEE	%P	%Q	%A

0.10 TON.

0.00 TON.

TARGET PRODUCTION

ACTUAL PRODUCTION

HAMMERMILL 2

70.5	89.1	87.0	91.0
%OEE	%P	%Q	%A

4.00 TON.

0.00 TON.

TARGET PRODUCTION

ACTUAL PRODUCTION

HAMMERMILL 3

87.4	98.0	93.0	96.0
%OEE	%P	%Q	%A

0.10 TON.

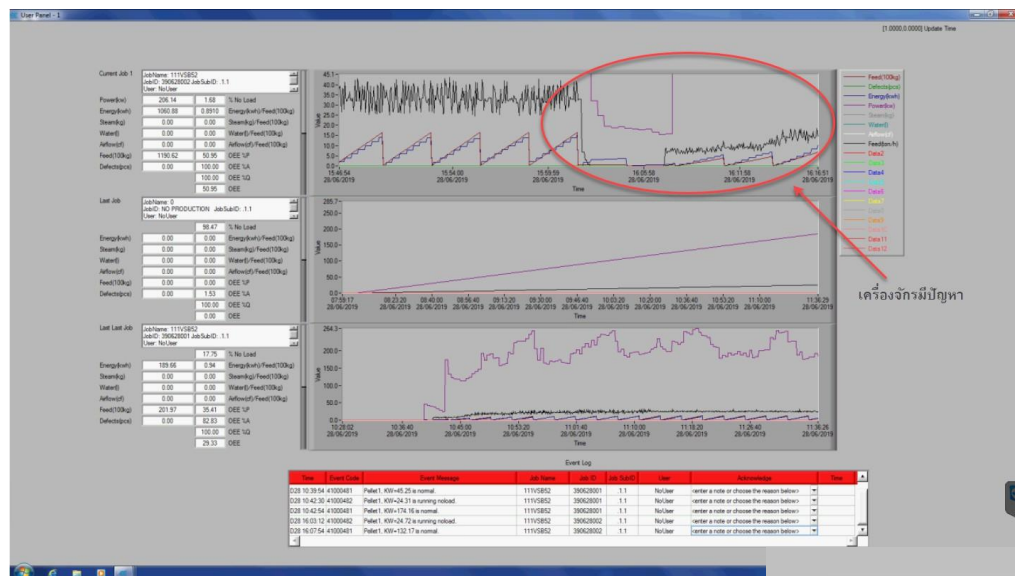
0.00 TON.

TARGET PRODUCTION

ACTUAL PRODUCTION



Smart OEE
OPTIONAL



เครื่องจักรมีปัญหา

Search for chats and messages

KKU-SME-01
SmartEE@KKU
JobName: 20190228

KKU-SME-07
SmartEE@KKU
JobName: 20190228

KKU-SME-09
SmartEE@KKU
JobName: 20190228

KKU-SME-10
SmartEE@KKU
JobName: 20190228

KKU-SME-08
SmartEE@KKU
JobName: 20190228

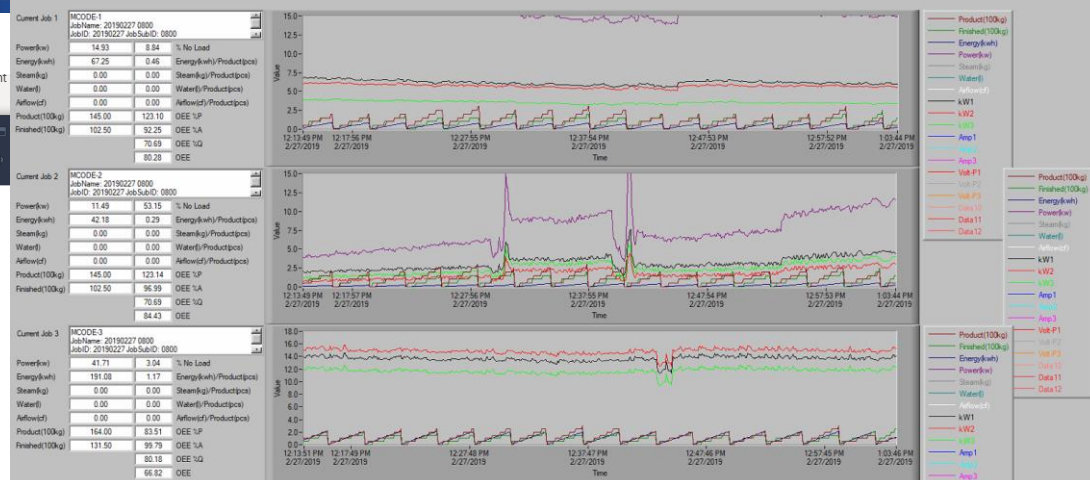
KKU-SME-02
SmartEE@KKU
JobName: 20190228

KKU-SME-05
SmartEE@KKU
TimeValue:435

SmartEE@KKU Fac5: MCODE-3
JobName: 20190228 0800
JobID: 20190228 JobSubID: 0800
User: ByShift1
Product(100kg): 69.50
Finished(100kg): 45.00
Power(kw): 40.27 kw
Energy(kwh): 66.25 kwh
Energy(kwh)/Product(pcs): 0.95
OEE: 36.55
OEE %P: 69.40
OEE %A: 81.35
OEE %Q: 64.75
%NoLoad: 19.76
kW1: 13.57
kW2: 14.86
kW3: 11.84
Amp1: 68.00
Amp2: 70.04
Amp3: 63.63
Volt-P1: 228.64
Volt-P2: 236.01
Volt-P3: 232.14
Data10: 0.00
Data11: 0.00

LINE Notify SmartEE@KKU Fac5: EventLog...

OPTIONAL
To Line Application



EE VERSION 5

Energy Management Software

SERVICING YOU SINCE 2000



Smart Notify
OPTIONAL



Smart Monitor



Smart Report



Smart Control
OPTIONAL

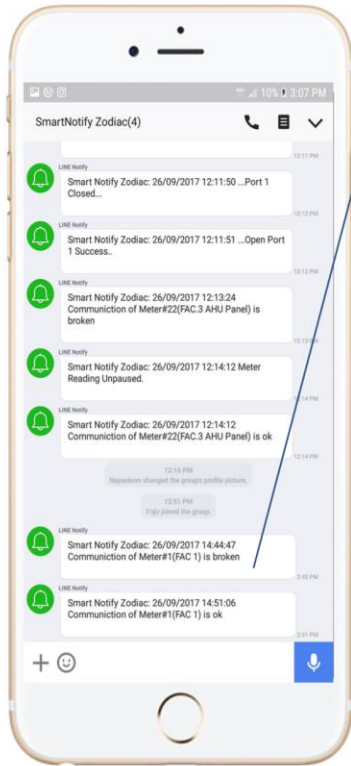


Smart OEE
OPTIONAL

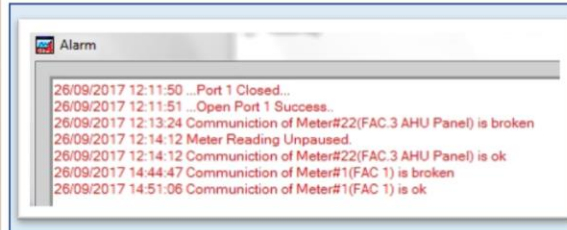
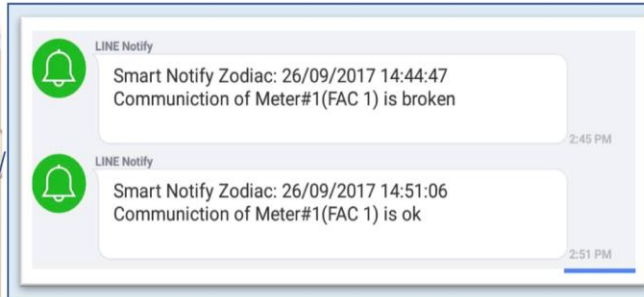


Energy On WEB
OPTIONAL

❖ Smart Alarm to Line Application Notify



LINE Alarm



((SmartEE Alarm





Smart Notify To Line Application

Search for chats and m...

KKU-SME-01
SmartEE@KKU
JobName: 2019

KKU-SME-07
SmartEE@KKU
JobName: 2019

KKU-SME-09
SmartEE@KKU
JobName: 2019

KKU-SME-10
SmartEE@KKU
JobName: 2019

KKU-SME-08
SmartEE@KKU
JobName: 2019

KKU-SME-02
SmartEE@KKU

KKU-SME-05
SmartEE@KKU
TimeValue:435

KKU-SME-05 โกลคอลลลิทมิล
10

SmartEE@KKU Fac5: MCODE-3
JobName: 20190228 0800
JobID: 20190228 JobSubID: 0800
User: ByShift1
Product(100kg): 69.50
Finished(100kg): 45.00
Power(kw): 40.27 kw
Energy(kwh): 66.25 kwh
Energy(kwh)/Product(pcs): 0.95
OEE: 36.55
OEE %P: 69.40
OEE %A: 81.35
OEE %Q: 64.75
%NoLoad: 19.76
kW1: 13.57
kW2: 14.86
kW3: 11.84
Amp1: 68.00
Amp2: 70.04
Amp3: 63.63
Volt-P1: 228.64
Volt-P2: 236.01
Volt-P3: 232.14
Data10: 0.00
Data11: 0.00

LINE Notify SmartEE@KKU Fac5: EventLog:...

Current Job 1	MCODE-1 JobName: 20190227 0800 JobID: 20190227 JobSubID: 0800		
Power(kw)	14.93	8.84	% No Load
Energy(kwh)	67.25	0.46	Energy(kwh)/Product(pcs)
Steam(kg)	0.00	0.00	Steam(kg)/Product(pcs)
Water(l)	0.00	0.00	Water(l)/Product(pcs)
Airflow(cf)	0.00	0.00	Airflow(cf)/Product(pcs)
Product(100kg)	145.00	123.10	OEE %P
Finished(100kg)	102.50	92.25	OEE %A
		70.69	OEE %Q
		80.28	OEE
Current Job 2	MCODE-2 JobName: 20190227 0800 JobID: 20190227 JobSubID: 0800		
Power(kw)	11.49	53.15	% No Load
Energy(kwh)	42.18	0.29	Energy(kwh)/Product(pcs)
Steam(kg)	0.00	0.00	Steam(kg)/Product(pcs)
Water(l)	0.00	0.00	Water(l)/Product(pcs)
Airflow(cf)	0.00	0.00	Airflow(cf)/Product(pcs)
Product(100kg)	145.00	123.14	OEE %P
Finished(100kg)	102.50	96.99	OEE %A
		70.69	OEE %Q
		84.43	OEE
Current Job 3	MCODE-3 JobName: 20190227 0800 JobID: 20190227 JobSubID: 0800		
Power(kw)	41.71	3.04	% No Load
Energy(kwh)	191.08	1.17	Energy(kwh)/Product(pcs)
Steam(kg)	0.00	0.00	Steam(kg)/Product(pcs)
Water(l)	0.00	0.00	Water(l)/Product(pcs)
Airflow(cf)	0.00	0.00	Airflow(cf)/Product(pcs)
Product(100kg)	164.00	83.51	OEE %P
Finished(100kg)	131.50	99.79	OEE %A
		80.18	OEE %Q
		66.82	OEE

EE VERSION 5

Energy Management Software

SERVICING YOU SINCE 2000



**Energy On WEB
OPTIONAL**



Smart Monitor



Smart Report



**Smart Control
OPTIONAL**



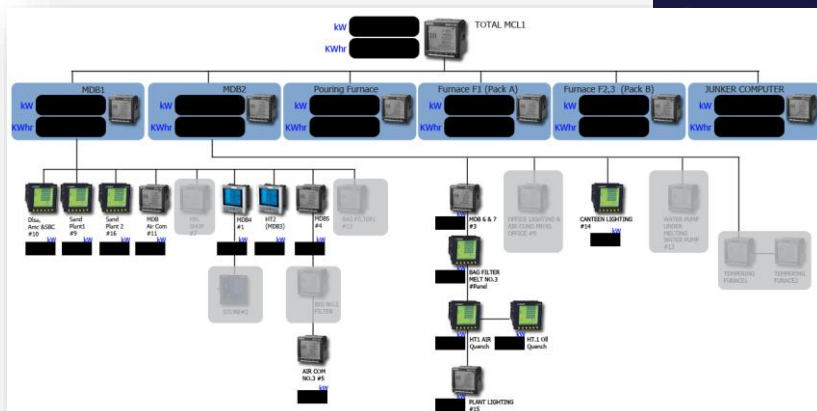
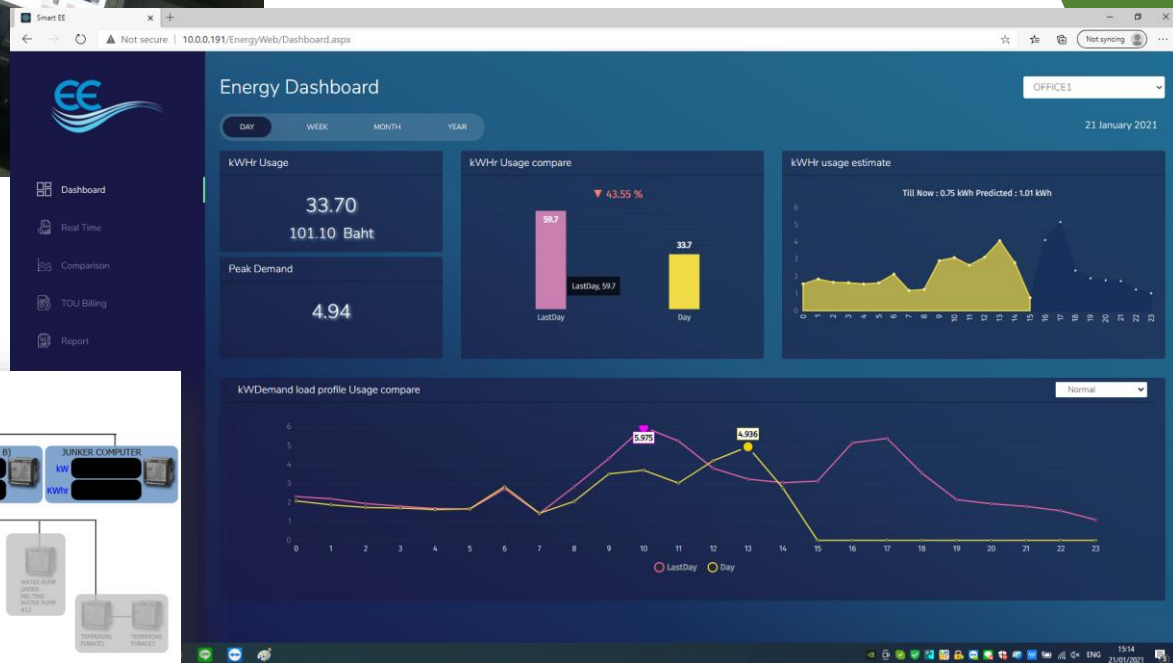
**Smart OEE
OPTIONAL**



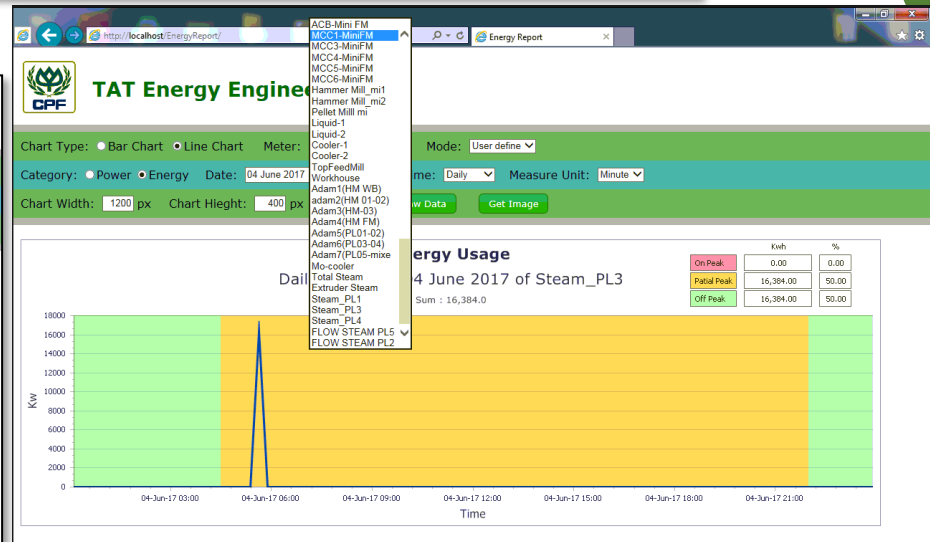
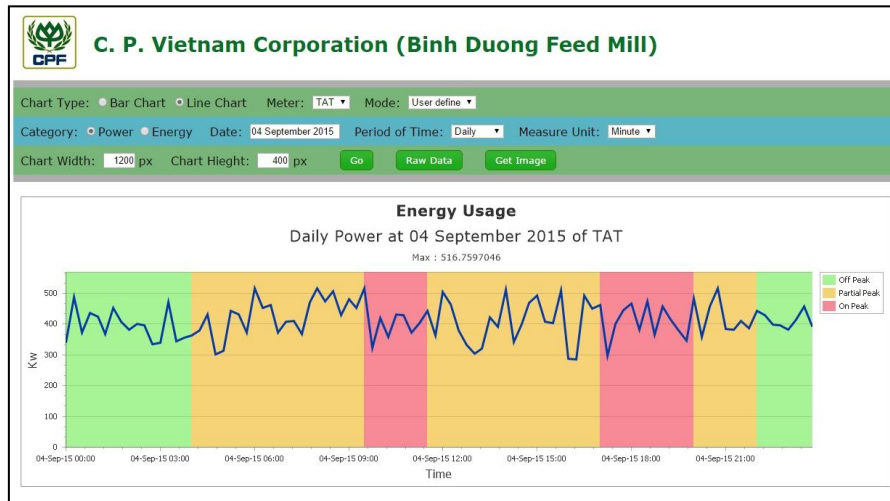
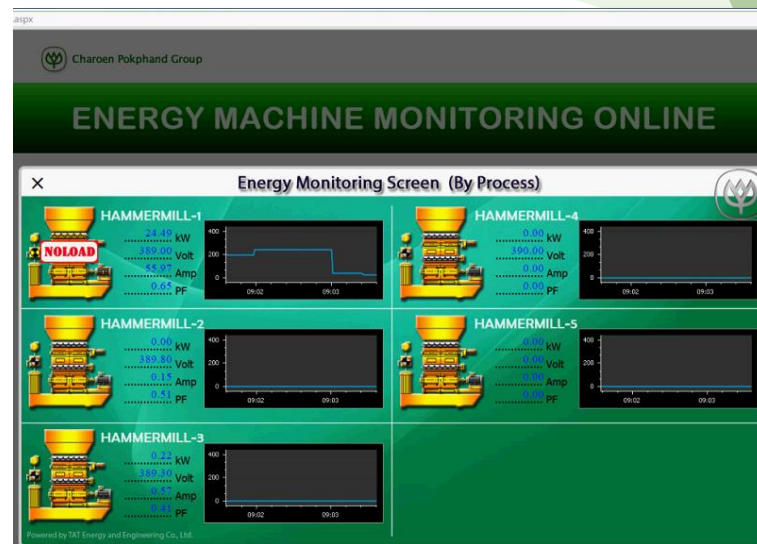
**LINE Notify
OPTIONAL**



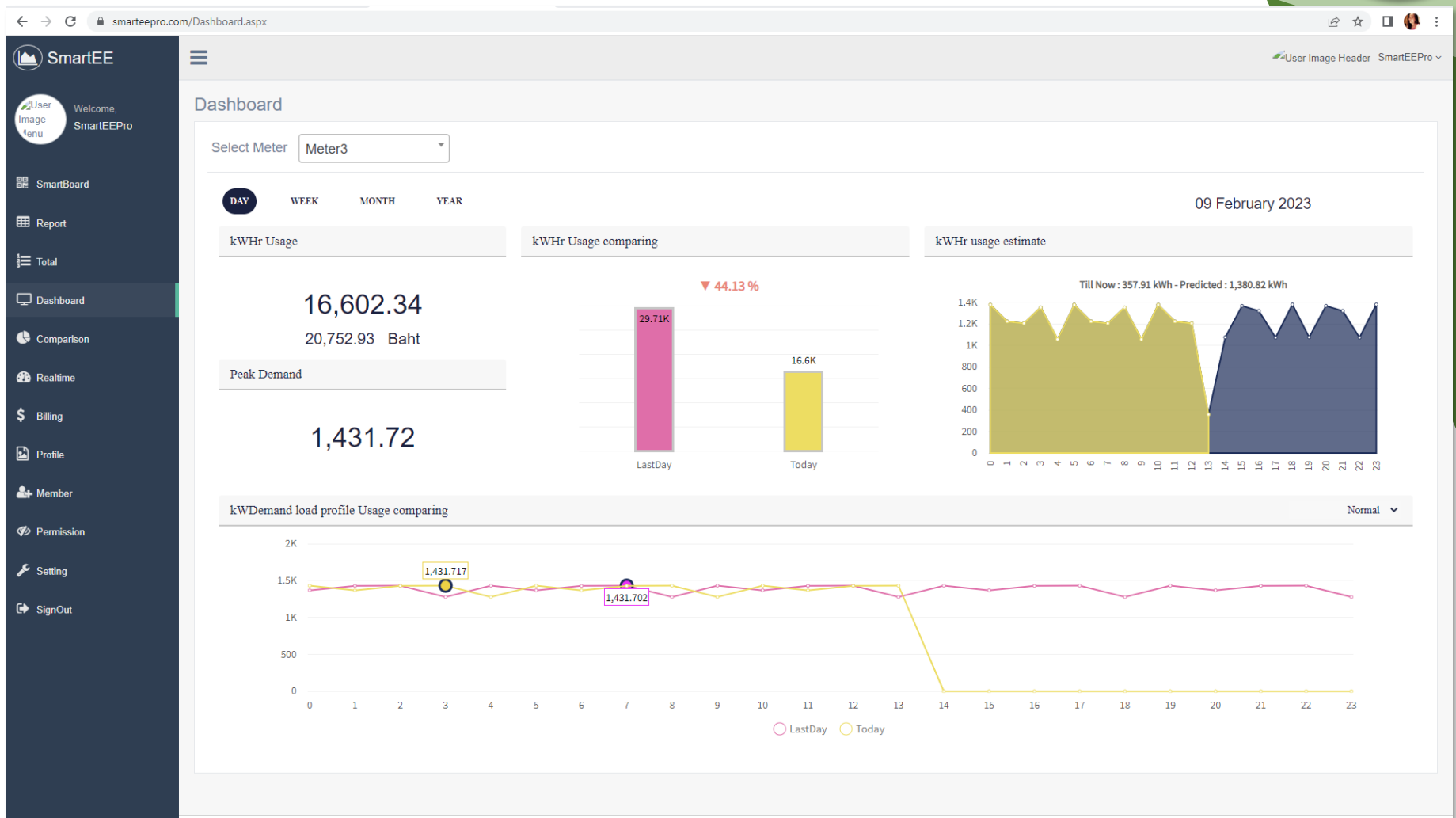
การแสดงผลผ่านเว็บ optional



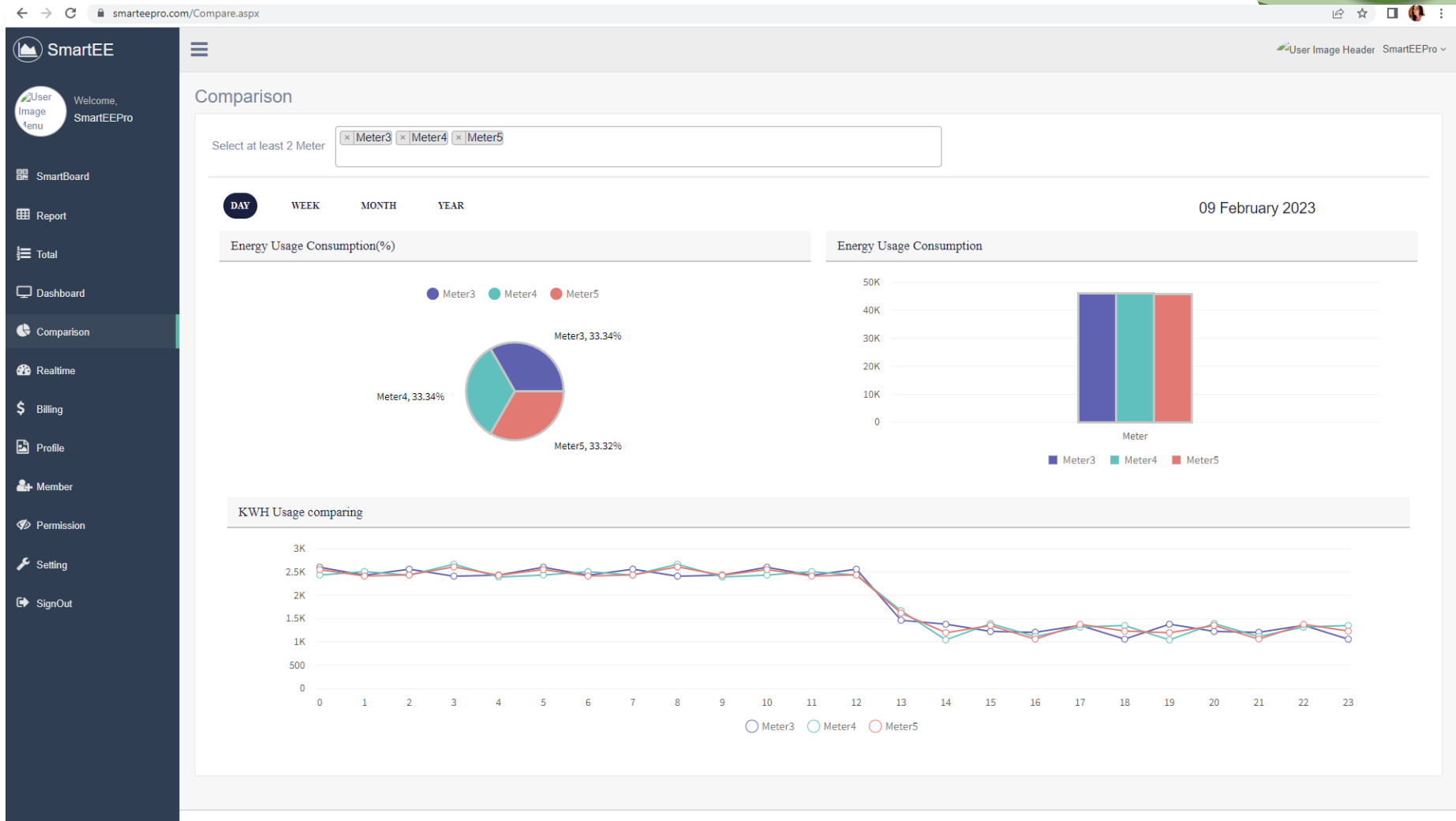
การแสดงผลผ่านเว็บ optional



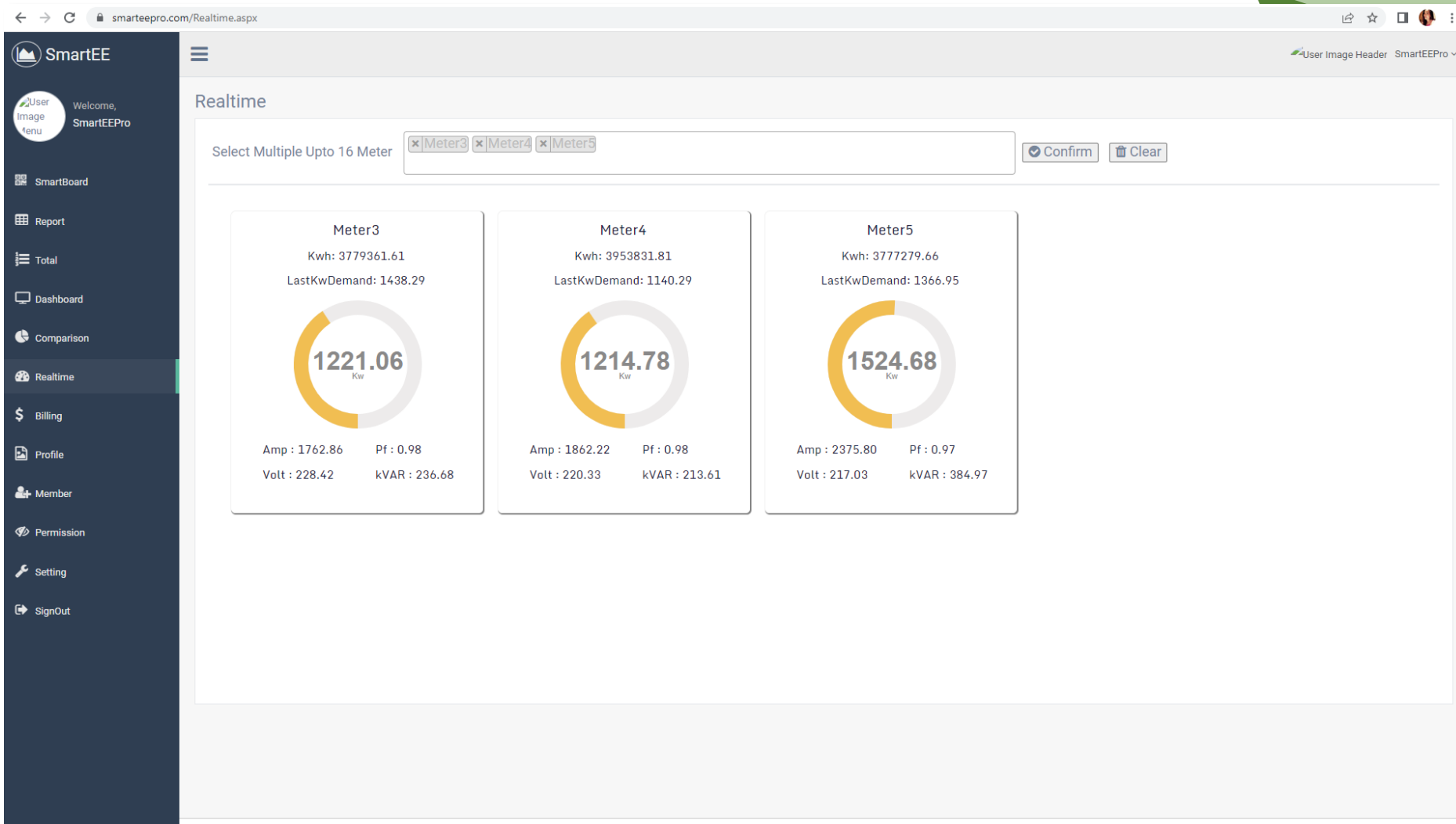
การแสดงผลผ่านเว็บ optional



การแสดงผลผ่านเว็บ optional



การแสดงผลผ่านเว็บ optional



การแสดงผลผ่านเว็บ optional



Welcome,
SmartEEPro

SmartBoard

Report

Total

Dashboard

Comparison

Realtime

Billing

Profile

Member

Permission

Setting

SignOut

Report

Select Meter

Meter3

Copy

CSV

Excel

PDF

Print

Search:

09/02/2023 - 09/02/2023

Times	Meter	kW	kW-Demand	kWh	VoltL-avr	Amp-avr	PF
2023-02-09 13:15	Meter3	1,177.25	1,315.26	3,779,376.96	373.43	1,859.80	0.98
2023-02-09 13:00	Meter3	1,428.67	1,431.65	3,779,289.28	382.02	2,328.10	0.97
2023-02-09 12:45	Meter3	1,364.40	1,428.88	3,778,931.37	387.17	2,021.15	0.97
2023-02-09 12:30	Meter3	1,444.44	1,364.37	3,778,574.15	379.01	2,262.24	0.97
2023-02-09 12:15	Meter3	1,285.17	1,263.44	3,778,233.05	383.34	2,073.38	0.98
2023-02-09 12:00	Meter3	1,015.06	766.84	3,777,917.19	375.69	1,681.89	0.97
2023-02-09 11:45	Meter3	723.61	921.56	3,777,725.48	382.75	1,165.49	-1.00
2023-02-09 11:30	Meter3	909.10	1,277.02	3,777,495.09	371.24	1,470.61	0.97
2023-02-09 11:15	Meter3	1,495.62	1,326.49	3,777,175.84	378.32	2,336.83	0.97
2023-02-09 11:00	Meter3	1,306.49	1,368.25	3,776,844.21	374.26	2,146.54	0.96
2023-02-09 10:45	Meter3	1,458.94	1,288.37	3,776,502.15	372.03	2,429.01	0.97
2023-02-09 10:30	Meter3	1,428.67	1,431.66	3,776,180.06	377.24	2,236.10	0.97
2023-02-09 10:15	Meter3	1,364.40	1,428.85	3,775,822.15	381.24	2,131.32	0.97
2023-02-09 10:00	Meter3	1,444.44	1,364.42	3,775,464.93	379.46	2,214.09	0.97
2023-02-09 09:45	Meter3	1,285.17	1,263.40	3,775,123.83	378.77	2,045.37	0.98
2023-02-09 09:30	Meter3	1,015.06	766.83	3,774,807.98	374.78	1,575.55	0.97
2023-02-09 09:15	Meter3	723.61	921.59	3,774,616.27	375.53	1,084.93	-1.00
2023-02-09 09:00	Meter3	909.10	1,276.98	3,774,385.87	381.29	1,402.71	0.97
2023-02-09 08:45	Meter3	1,495.62	1,326.50	3,774,066.63	385.50	2,301.94	0.97
2023-02-09 08:30	Meter3	1,306.49	1,368.31	3,773,735.00	385.82	1,966.34	0.96
2023-02-09 08:15	Meter3	1,458.94	1,288.32	3,773,392.92	382.31	2,290.91	0.97
2023-02-09 08:00	Meter3	1,428.67	1,431.67	3,773,070.84	382.51	2,229.66	0.97
2023-02-09 07:45	Meter3	1,364.40	1,428.85	3,772,712.93	379.66	2,210.34	0.97
2023-02-09 07:30	Meter3	1,444.44	1,364.42	3,772,355.72	385.43	2,200.35	0.97
2023-02-09 07:15	Meter3	1,285.17	1,263.42	3,772,014.61	385.24	1,951.43	0.98
2023-02-09 07:00	Meter3	1,015.06	766.82	3,771,698.76	381.06	1,579.83	0.97
2023-02-09 06:45	Meter3	723.61	921.56	3,771,507.05	377.65	1,124.11	-1.00

Powered by - TAT Energy & Engineering Co.,Ltd.

EE VERSION5

การแสดงผลผ่านเว็บ optional



SmartEE

Welcome, SmartEEPro

SmartBoard

Report

Total

Dashboard

Comparison

Realtime

Billing

Profile

Member

Permission

Setting

SignOut

Billing

Select Meter Demo

09/02/2023 - 09/02/2023

Billing of Demo on 09/02/2023 - 09/02/2023 (TOU Rate)

Item	Amount	Baht/Unit	Total
1.On Peak Energy Charge (09:00 - 22:00)	0.00 kWh	0.00	0.00
2.Off Peak Energy Charge (22:00 - 09:00)	0.00 kWh	0.00	0.00
3.Holiday Energy Charge	0.00 kWh	0.00	0.00
4.Demand Charge	0.00 kWh	0.00	0.00
5.FT Charge	0.00 kWh	0.00	0.00
6.Service Charge		0.00	0.00
Total			0.00
Vat		0.00 %	0.00
Grand Total			0.00

Note

1)Average energy unit charge (before VAT) = NaN Baht/kWh

2)Average energy unit charge (after VAT) = NaN Baht/kWh

3)Max Demand was occurred on 09/02/2023

Print

Save

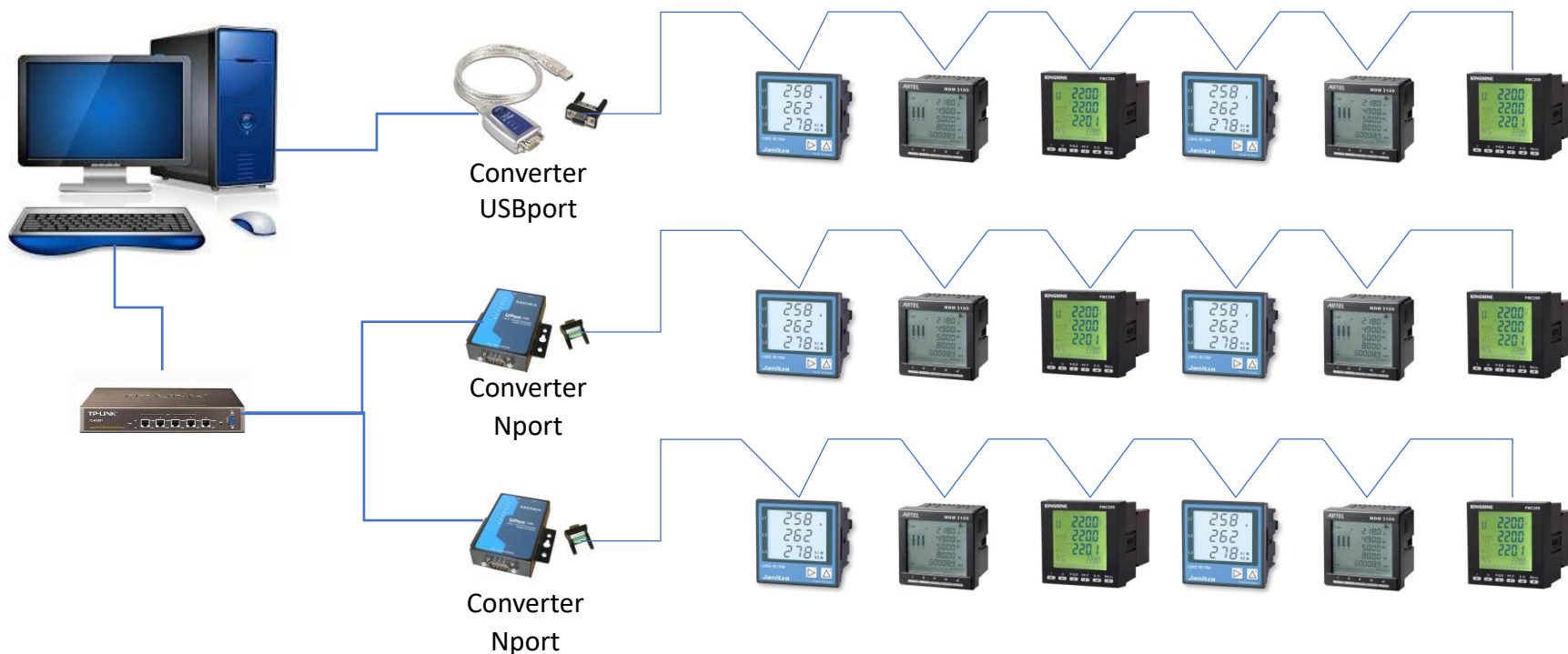
EE VERSION 5

Energy Management Software

SERVICING YOU SINCE 2000

Communication Wiring

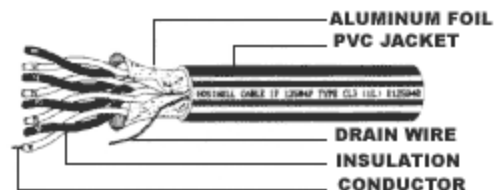




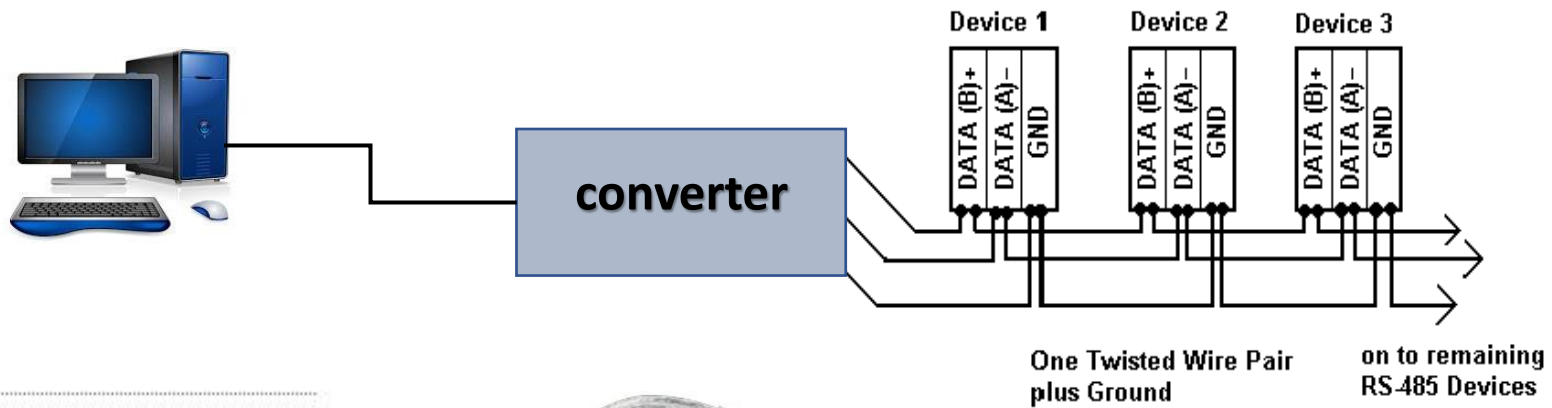
Multipairs Foilded Shielded

Overall Foilded Shielded
 UL subject 13 type CL2 ,CL3
 NEC articles 725 –38(b) (1)
 105°C, 300, 600 Volt

Conductor: fine stranded concentric bare copper
 Insulation: 105°C PVC optional PE, PP
 Jacket: Black sunlight resistant PVC
 Application: For process control and instrumentation.
 Passes UL type CL2, CL3 vertical tray flame test.
 Installed in cable trays, raceways, conduit or aerial.



Communication Wiring (RS-485 converter)



Digital meter



C422



C485



Communication Cable

Communication Wiring (TCP/IP converter)

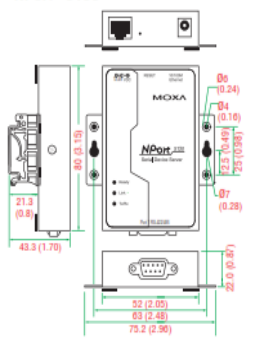


Switch
Hub

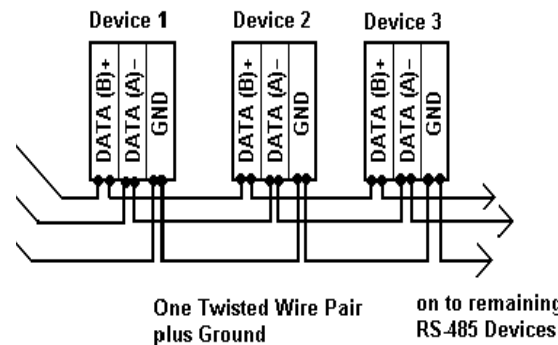
LAN Cable

Loop 1

NPort® 5130



converter



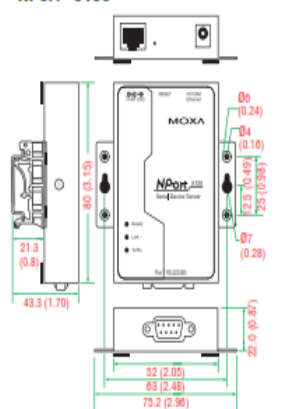
Digital meter

Switch
Hub

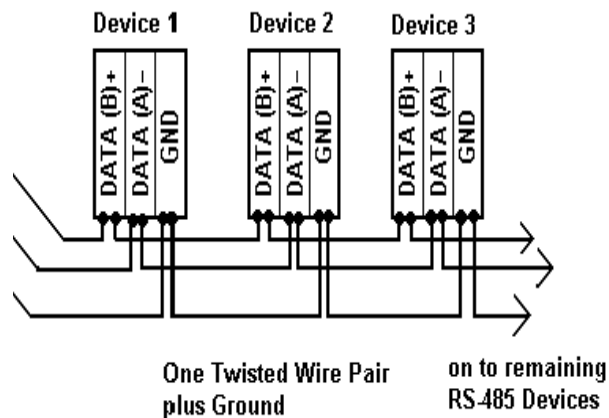
LAN Cable

Loop 2,3,....

NPort® 5130



converter

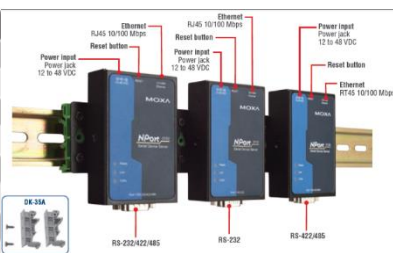


Digital meter

NPort® 5130 (RS-422/485)

PIN	RS-422/485-4w	RS-485-2w
1	TxD-(A)	-
2	TxD+(B)	-
3	RxD+(B)	Data+(B)
4	RxD-(A)	Data-(A)
5	GND	GND
6	-	-
7	-	-
8	-	-

Converter diagram



SmartEE สามารถใช้ได้ทุกแบรนด์ของมิเตอร์



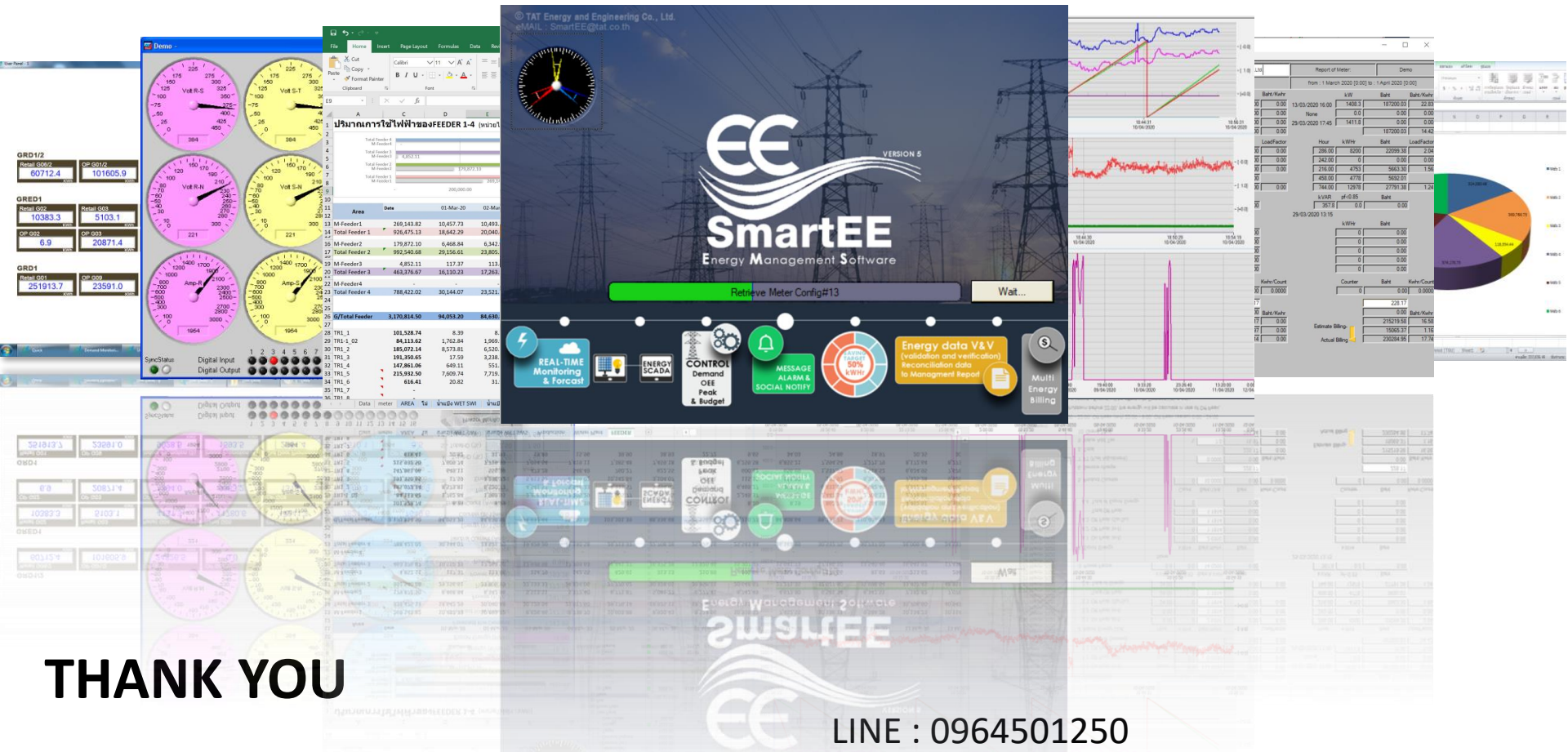
Site Reference



EE VERSION 5

Energy Management Software

SERVICING YOU SINCE 2000



THANK YOU

LINE : 0964501250

Email : info@7-mars.com

Call : 096-4501250 (Puvanat S.)