

# SCHNEIDER SCADA

REAL TIME SINGLE-LINE DIAGRAM EXAMPLE

# LEGO



# MAIN



## Energy Management System

Lego, Monterrey Plant



**Subestación 115 kV**



**Moldeo - M1 M2**



**Moldeo - M3 M4**



**Moldeo - Servicios**



**High Bay Warehouse**



**Packing - Edificio A**



**Packing - Edificio B**



**Reportes**



**Energy Key**



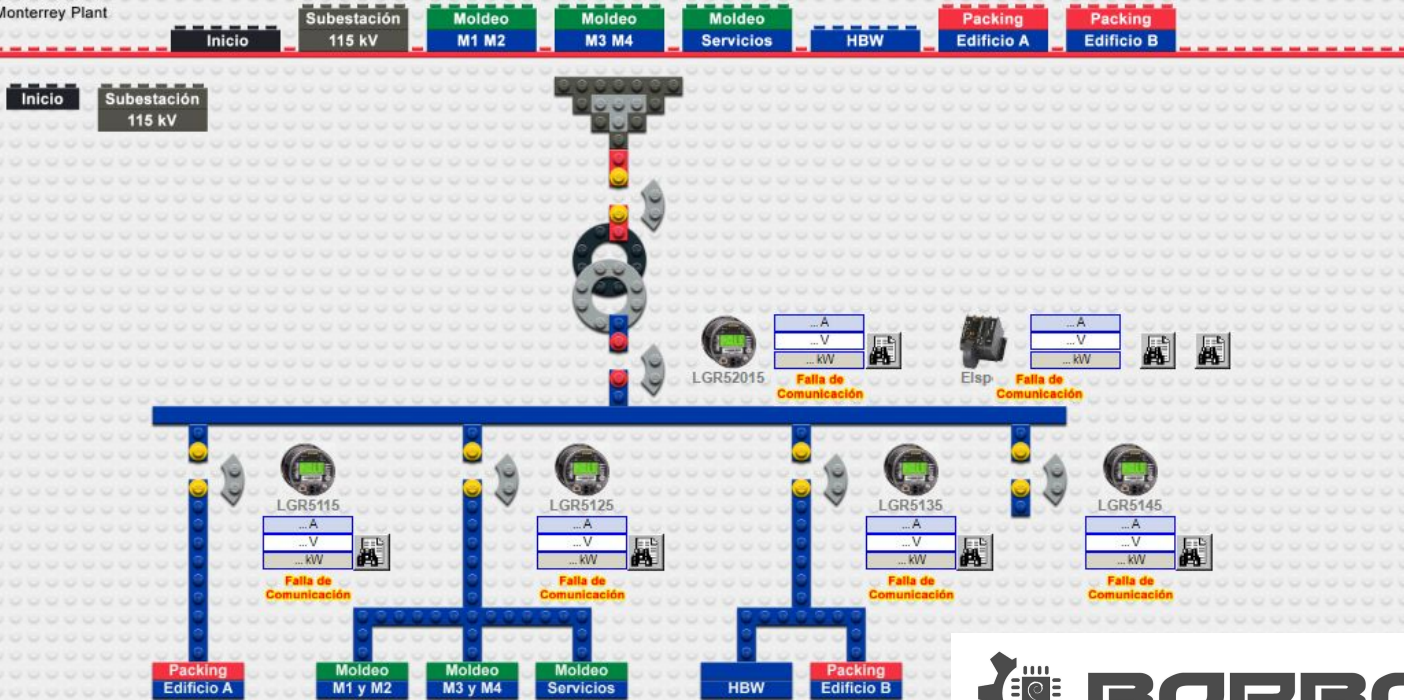
**BORBOLLA**  
AUTOMATION

# SUBSTATION 115 kV



## Energy Management System

### Lego, Monterrey Plant



# BORBOLLA

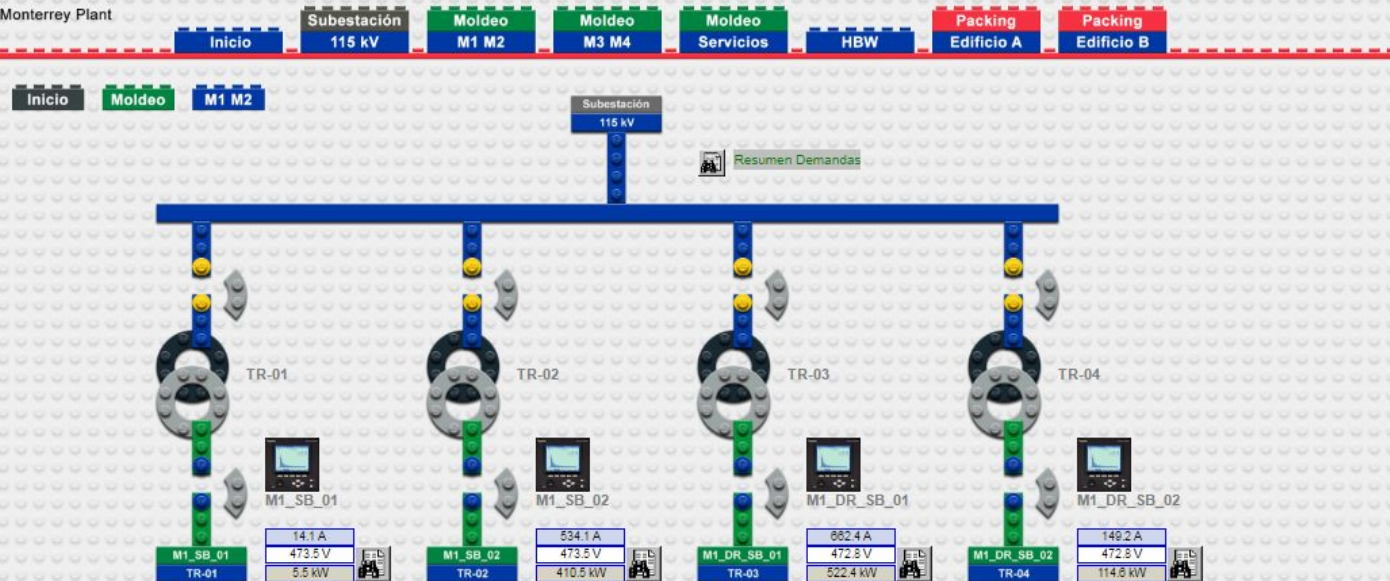
## AUTOMATION

# M1 M2



## Energy Management System

Lego, Monterrey Plant





# MOLDING M3 M4

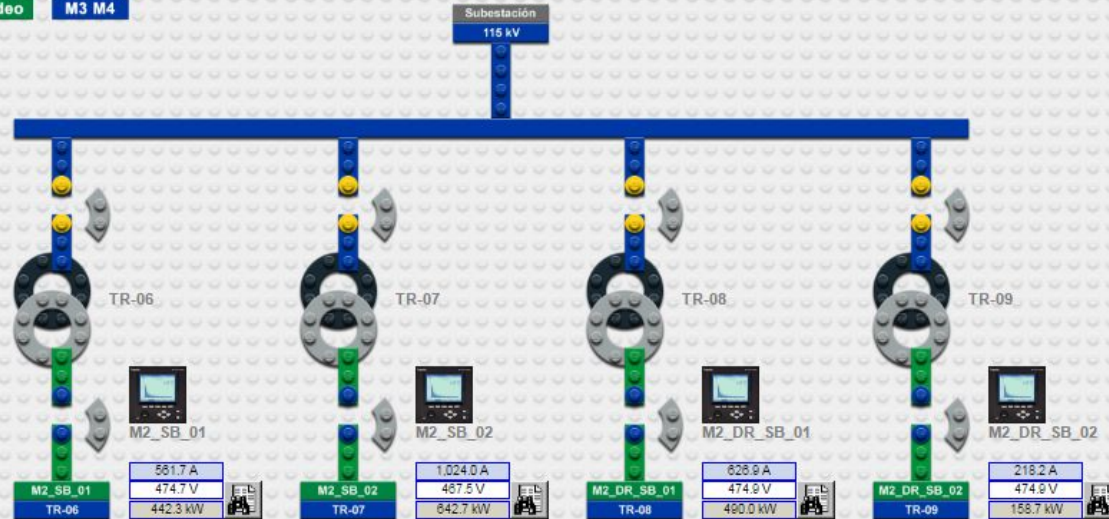


## Energy Management System

Lego, Monterrey Plant



Inicio Moldeo M3 M4

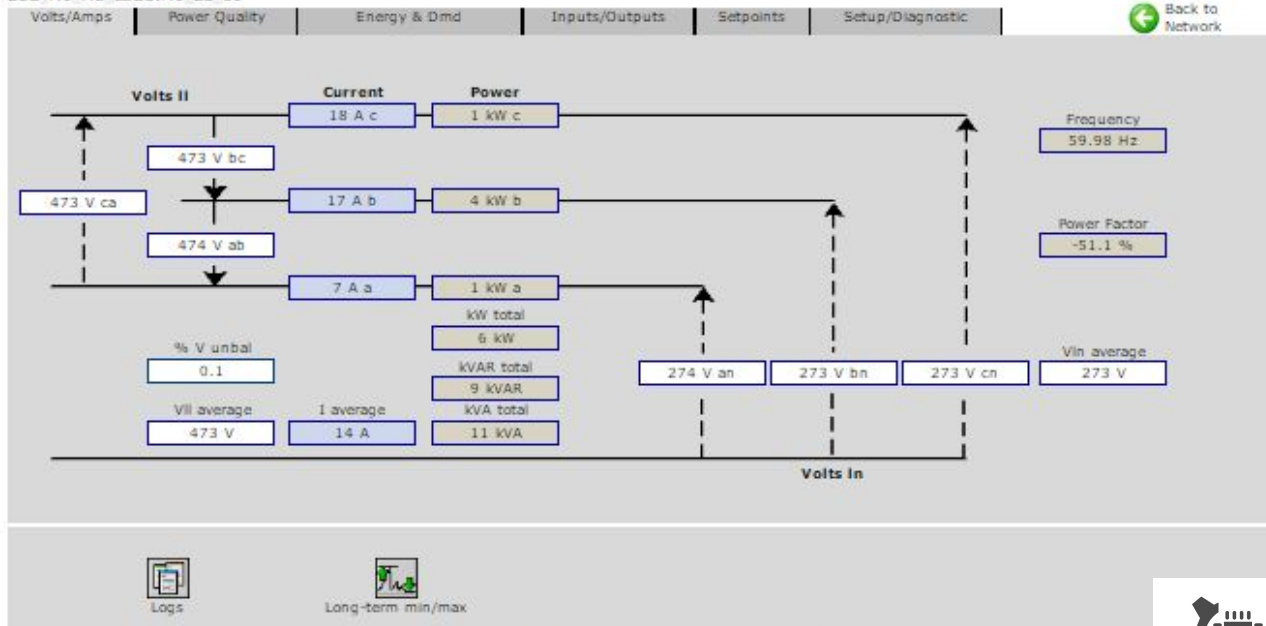


# DETAIL



PowerLogic™ ION Enterprise™

SUB M1 M2 LEGO.M1 SB 01



Device Time 30/11/2016 04:11:47.547 p.m.

Device Type 7650



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# TIMESTAMP

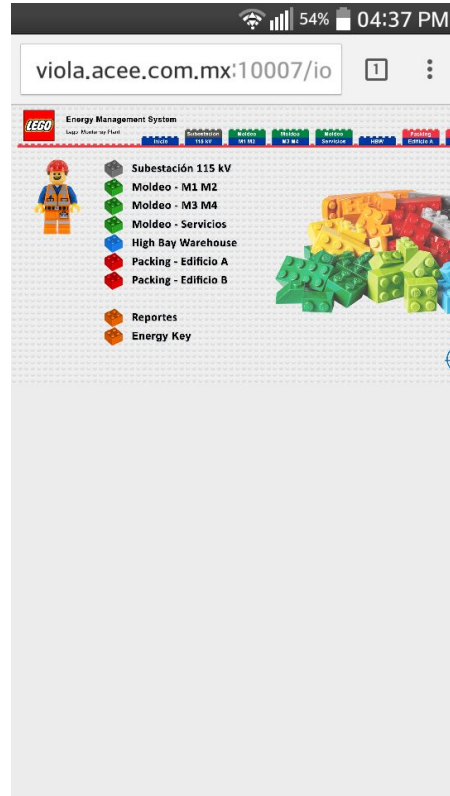
SUB\_M1\_M2\_LEGO.M1\_SB\_01

Device Diagram Change Date Range Show Graph

Timestamp	P	Q	Real Energy Into the Load
11/30/2016 4:10:00.000 PM	7.047	10.201	659,531.625
11/30/2016 4:05:00.000 PM	6.554	9.952	659,531.063
11/30/2016 4:00:00.000 PM	6.621	10.127	659,530.500
11/30/2016 3:55:00.000 PM	6.682	10.284	659,529.938
11/30/2016 3:50:00.000 PM	7.104	10.355	659,529.375
11/30/2016 3:45:00.000 PM	6.665	9.976	659,528.813
11/30/2016 3:40:00.000 PM	6.606	9.979	659,528.250
11/30/2016 3:35:00.000 PM	6.741	10.127	659,527.688
11/30/2016 3:30:00.000 PM	6.689	10.199	659,527.125
11/30/2016 3:25:00.000 PM	6.878	10.099	659,526.563
11/30/2016 3:20:00.000 PM	6.541	9.946	659,526.000
11/30/2016 3:15:00.000 PM	6.551	10.076	659,525.438
11/30/2016 3:10:00.000 PM	6.985	10.309	659,524.875
11/30/2016 3:05:00.000 PM	10.427	9.977	659,524.313
11/30/2016 3:00:00.000 PM	14.407	10.113	659,523.438
11/30/2016 2:55:00.000 PM	14.216	9.885	659,522.250
11/30/2016 2:50:00.000 PM	17.761	9.957	659,521.063
11/30/2016 2:45:00.000 PM	9.114	9.954	659,519.563
11/30/2016 2:40:00.000 PM	6.597	9.977	659,518.813
11/30/2016 2:35:00.000 PM	6.833	10.091	659,518.250
11/30/2016 2:30:00.000 PM	6.593	9.868	659,517.688
11/30/2016 2:25:00.000 PM	6.644	9.830	659,517.125
11/30/2016 2:20:00.000 PM	6.985	9.961	659,516.625
11/30/2016 2:15:00.000 PM	6.675	10.080	659,516.000
11/30/2016 2:10:00.000 PM	6.559	10.031	659,515.438
11/30/2016 2:05:00.000 PM	6.518	9.969	659,514.938
11/30/2016 2:00:00.000 PM	6.952	10.154	659,514.375
11/30/2016 1:55:00.000 PM	6.689	9.998	659,513.813
11/30/2016 1:50:00.000 PM	6.516	10.056	659,513.250
11/30/2016 1:45:00.000 PM	6.808	10.294	659,512.688
11/30/2016 1:40:00.000 PM	6.535	10.117	659,512.125
11/30/2016 1:35:00.000 PM	6.869	10.031	659,511.563
11/30/2016 1:30:00.000 PM	6.781	10.127	659,511.000
11/30/2016 1:25:00.000 PM	6.549	9.966	659,510.438
11/30/2016 1:20:00.000 PM	7.576	10.590	659,509.875
11/30/2016 1:15:00.000 PM	8.061	10.655	659,509.250
11/30/2016 1:10:00.000 PM	8.146	10.877	659,508.625
11/30/2016 1:05:00.000 PM	8.061	10.797	659,507.938
11/30/2016 1:00:00.000 PM	7.835	10.530	659,507.250
11/30/2016 12:55:00.000 PM	7.972	10.545	659,506.563



# CELL PHONE VISUALIZATION EXAMPLE



# JOHNSON CONTROLS

# Johnson Controls



# MAIN



## Energy Management System

Planta García

Inicio

Acometida

Subestación 01

Subestación 03

Subestación 05

Subestación 07

Resumen

Facturación



Diagrama Eléctrico



Resumen de Consumos



Facturación Eléctrica



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# ELECTRIC DIAGRAM



Energy Management System

Planta García

Inicio

Acometida

Subestación 01

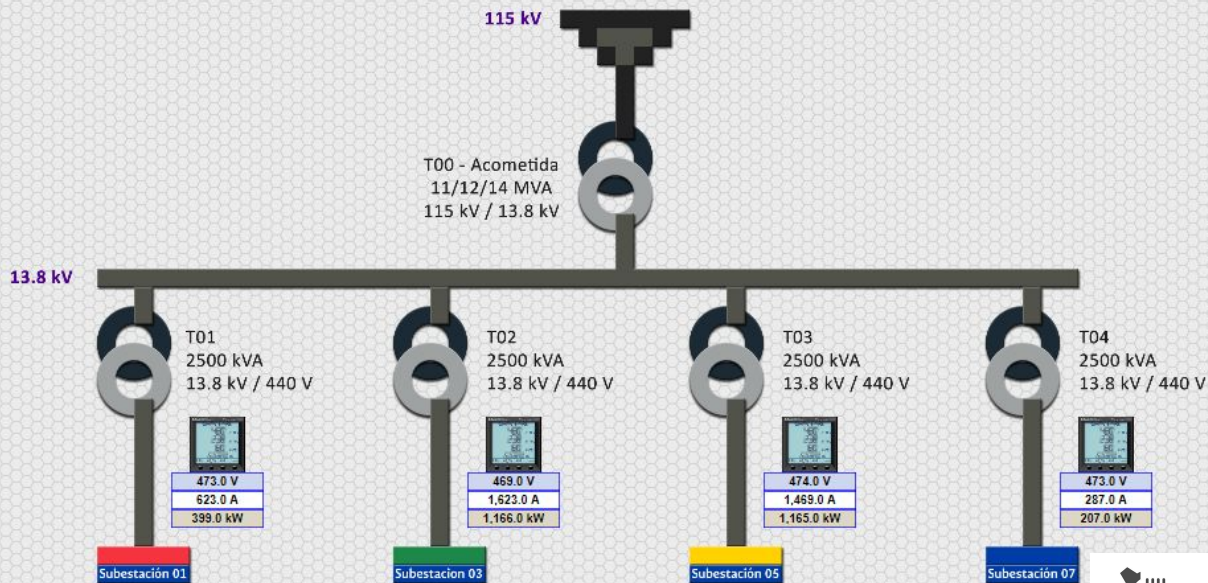
Subestación 03

Subestación 05

Subestación 07

Resumen

Facturación



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# ELECTRONIC BILLING



Energy Management System

Planta García

Inicio

Acometida

Subestación 01

Subestación 03

Subestación 05

Subestación 07

Resumen

Facturación

Línea/Grupo	Transformador	Potencia Real	Potencia Reactiva	Energía	
Línea 1	Subestación 01	396.0 kW	... kVAr	... kWh	
	Subestación 03	1,172.0 kW	... kVAr	... kWh	
Línea 2	Subestación 05	1,126.0 kW	... kVAr	... kWh	
	Subestación 07	206.0 kW	... kVAr	... kWh	
Total	Acometida	396.0 kW	... kVAr	... kWh	



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# WHIRLPOOL





# MAIN



## Energy Management System

Planta Ramos Arizpe

Inicio

Principal

Gabinetes

Ensamble

Puertas

Servicios

FDC

Compresores  
Aire Húmedo



**Diagrama Eléctrico**



**Medición de Gases**



**Resumen de Consumos**



**Facturación Eléctrica**



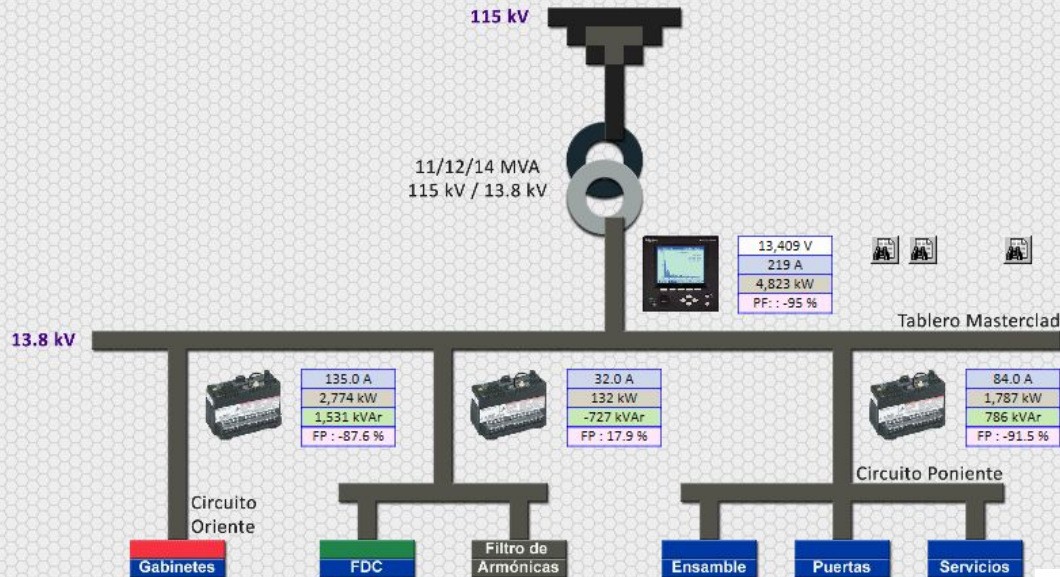
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# ELECTRIC DIAGRAM



## Energy Management System

Planta Ramos Arizpe



**BORBOLETA**  
AUTOMATION



# GAS MEASUREMENT



## Energy Management System

Planta Ramos Arizpe

Inicio

Principal

Gabinets

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Puertas

Servicios

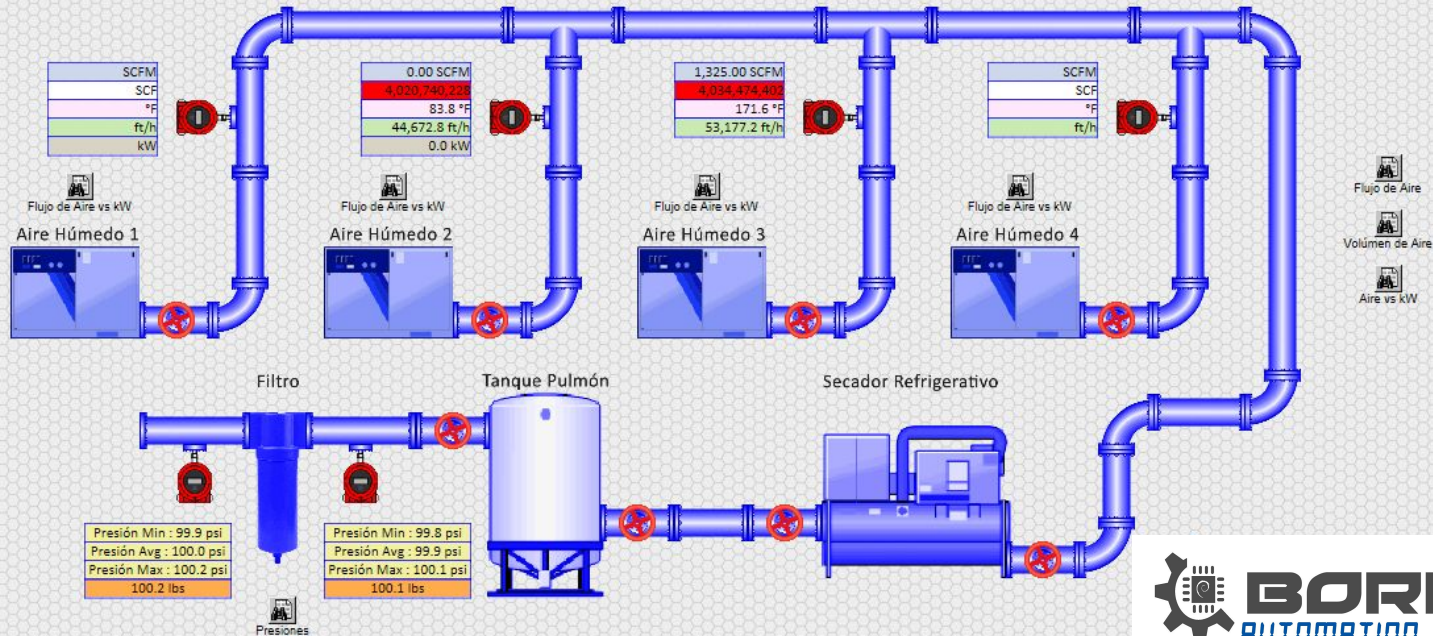
FDC

Compresores  
Aire Húmedo

Compresores  
Aire Seco

Gas Natural  
y Agua

Oxígeno,  
Nitrógeno  
y Helio



# ELECTRONIC BILLING



## Energy Management System

Planta Ramos Arizpe

Inicio

Principal

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Puertas

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FDC

Compresores  
Aire Húmedo

Compresores  
Aire Seco

Gas Natural  
y Agua

Oxígeno,  
Nitrógeno  
y Helio

### Subestación

### Transformador

### Potencia

### Demanda

### Energía

#### Gabinetes

1B1 - Edificio Gabinetes y Oficinas	418 kW	419 kW	327,754 kW-h
1P1 - Gabinetes Zeus y Bulk	885 kW	853 kW	404,838 kW-h
1P2 - Gabinetes Juno	kW	kW	0 kW-h
<b>Total</b>			<b>732,592 kW-h</b>

#### FDC

FDC - FDC Principal	122 kW	128 kW	120,945 kW-h
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#### Ensamble

2B2 - Edificio Puertas y Almacenes	420 kW	434 kW	320,236 kW-h
2P2 - Ensamble y Espumado - Gabinetes Zeus	414 kW	387 kW	198,359 kW-h
<b>Total</b>		<b>831 kW</b>	<b>518,594 kW-h</b>

#### Puertas

2P3 - Puertas - Scott y Comi	631 kW	590 kW	281,434 kW-h
2P4 - Puertas Cannon / Ensamble Juno	245 kW	234 kW	143,915 kW-h
<b>Total</b>		<b>683 kW</b>	<b>425,349 kW-h</b>

#### Servicios

2P3 - Puertas - Scott y Comi	621 kW	592 kW	486,431 kW-h
2P4 - Puertas Cannon / Ensamble Juno	402 kW	399 kW	175,464 kW-h
<b>Total</b>		<b>973 kW</b>	<b>661,896 kW-h</b>

#### Total

Tablero Principal - Masterclad	4,805 kW	4,676 kW	2,930,512 kW-h
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Dem Inst : 4,805 kW

Dem 5min : 4,676 kW

Dem 15min : 4,672 kW

FP : -94.26 %



Potencia



Demanda



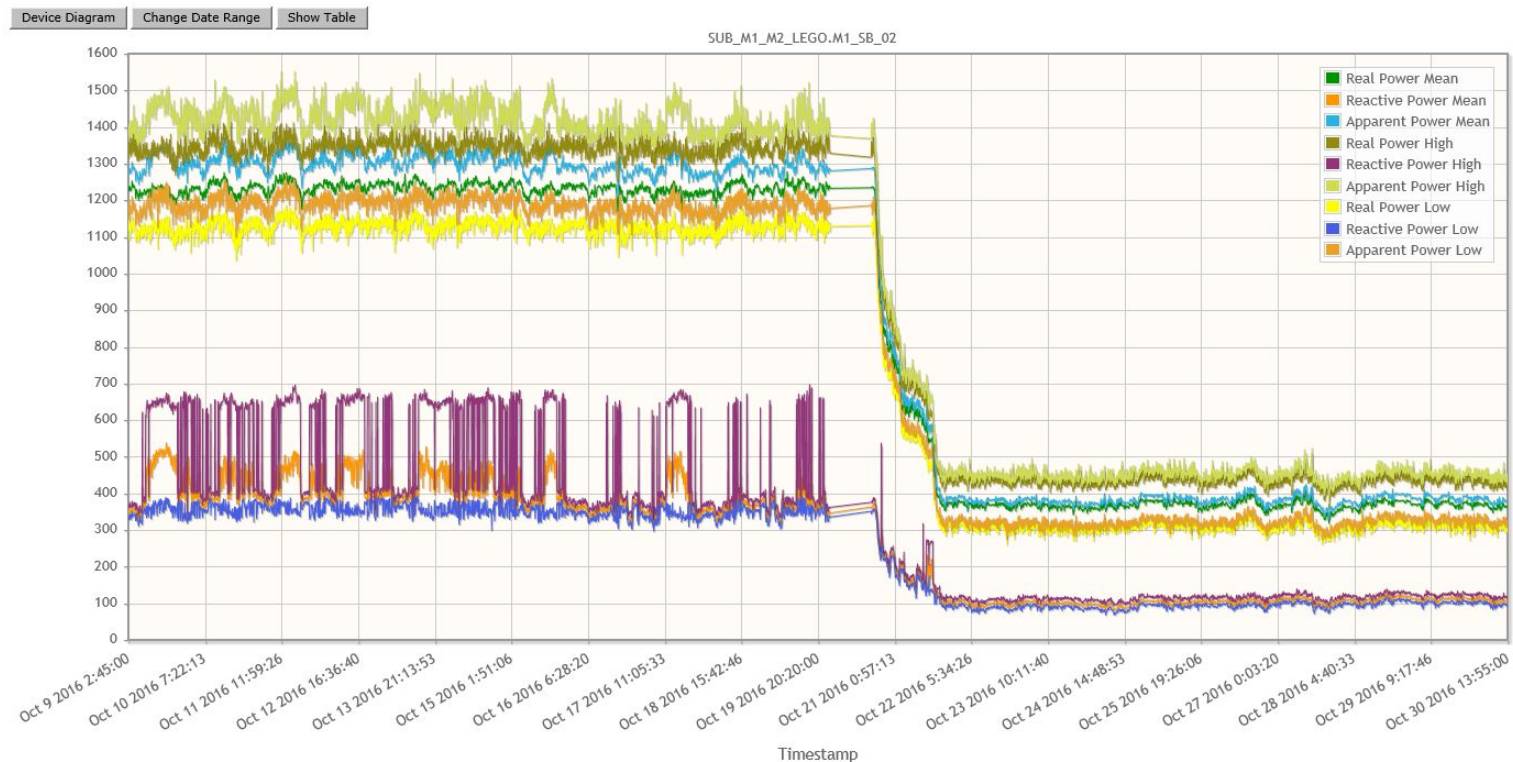
Energía



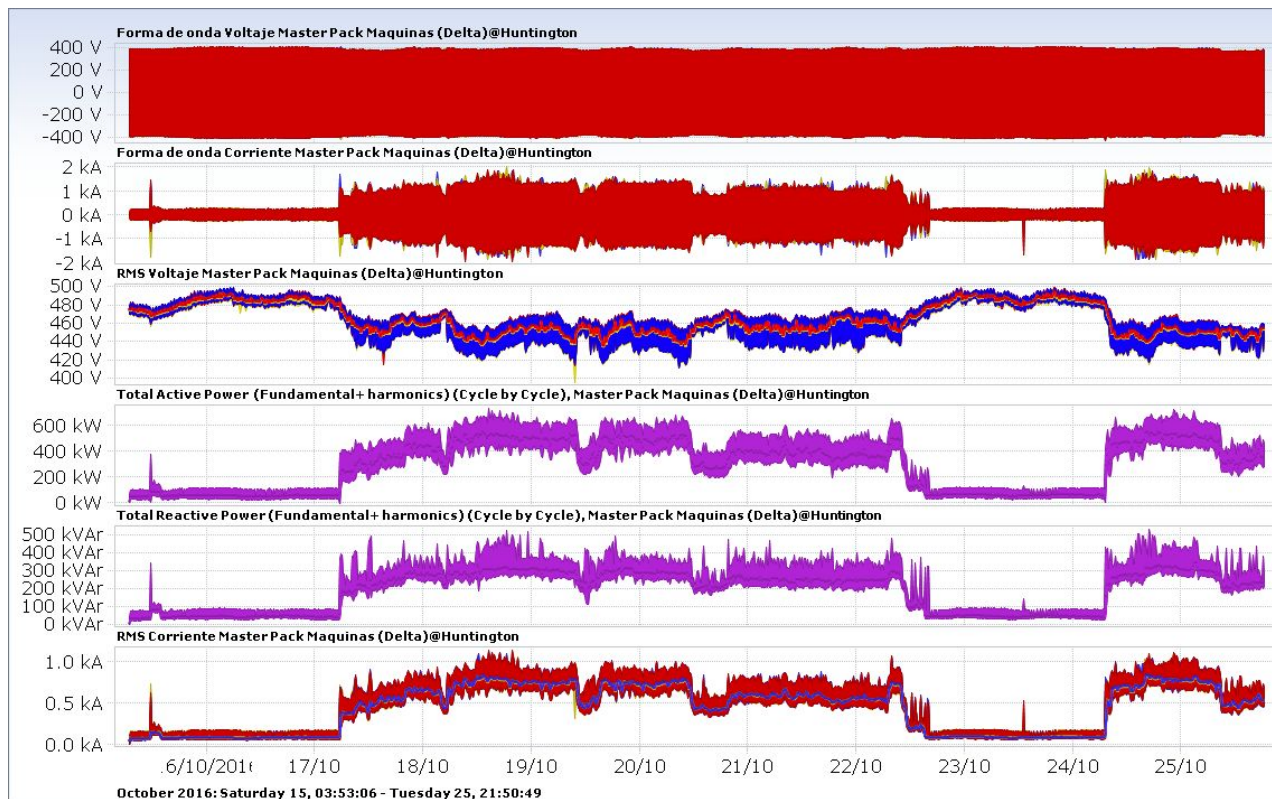
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# TENDENCY VISUALIZATION EXAMPLE OF kW , kVAr and kVA

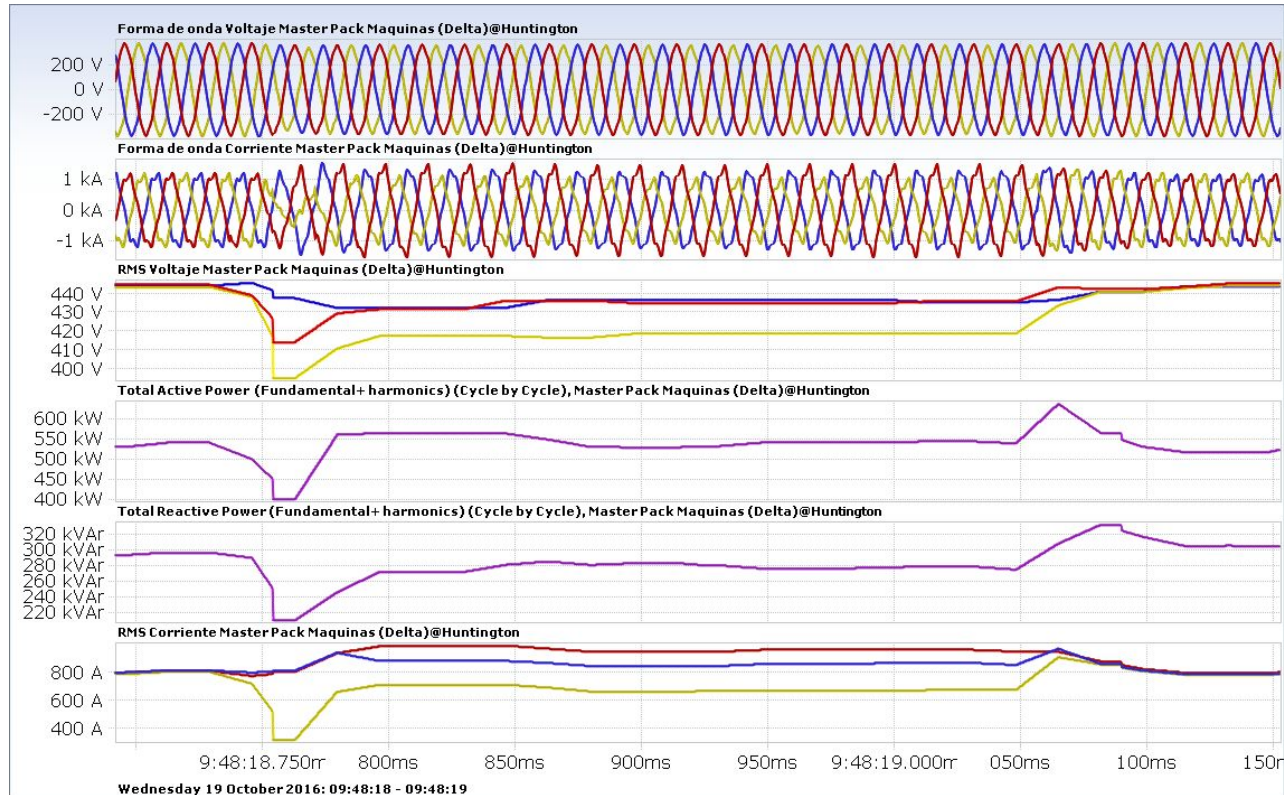


# PER PHASE VOLTAGE AND CURRENT BEHAVIOR ANALYSIS





# PER CYCLE VOLTAGE AND CURRENT BEHAVIOR ANALYSIS



# PM8240 ANALYSER

## Type of measurement

- Power Factor ( $\cos(\Phi)$ )
- Apparent Power (VA)
- Active and reactive power (P and Q)
- Voltage (V)
- Current (A)

## I/O

- Current Analogue Input
- Voltage Analog input
- DC Digital Input
- AC Digital input
- Pulse output