

expertpower



# MDM & ENERGY MANAGEMENT

# The Ultimate All-in-One EMS

Expertpower is a SaaS cloud based software solution, providing comprehensive energy management capabilities for a wide variety of purposes such as: sub-metering, billing, meter data management, energy efficiency, demand monitoring, power quality analysis, and business intelligence.

Today's markets have increased awareness for conservation, aiming for reduction of carbon footprint and global warming. Expertpower's tools enable users to do so by setting goals and monitoring performance in the most accurate and comprehensive way possible.

Expertpower's platform offers information and analytics to improve the efficiency, reliability, security and profitability of our customers' energy system.

## Data Collection

- Automatic data collection from meters (electricity, water, gas etc.), connected by electrical pulse, serial, Ethernet or cellular communication
- Third-party system API (AMI, AMR, SCADA, CRM, ERP, OMS, Billing)
- Virtual Device: output of complex calculations of several devices
- Easy configuration of new devices, communication server and register mapping
- Import from data files

## Visualization

- View all data in your browser—no software installation, or employee training needed
- User-friendly dashboards and reporting tools
- Role & permissions based user access
- Geo-location

## Data History

- Years of consumption available as live data or archive
- Charts most of measured parameters
- Monitors trends to identify potential problems
- Endless data stored on the cloud-based MS Azure platform

## Cyber Security

- ISO 27001 & GDPR compliance
- Annual penetration testing by independent experts

## Energy Efficiency, BI & Analytics

- Data / Event Monitoring
- Business intelligence
- Power Quality



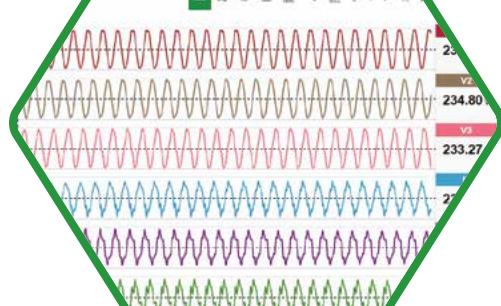
## Billing & Submetering

- Cost Calculation & Monitoring
- Invoice Management
- Tenant Management



## Meter Data Management

- VEE
- Meter readings
- Event & tampering reporting

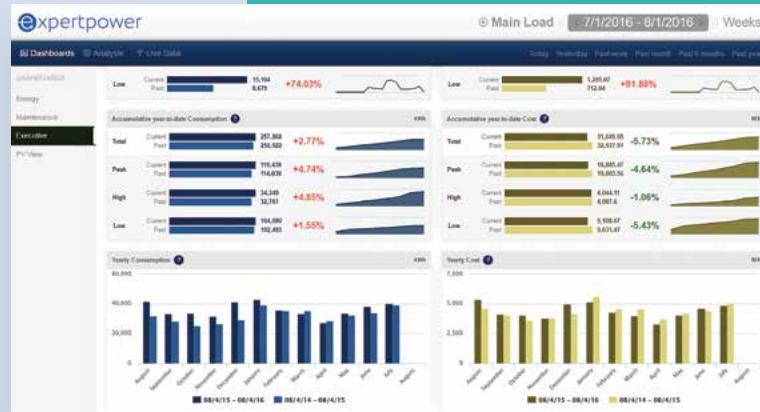


# Energy Management & Efficiency

Expertpower enables the monitoring and analysis of power and energy consumption in complex sites.

- Visualizing the collected data in user friendly dashboards and providing the techno-commercial analytics layers
- Virtual devices — provides an ability to apply complex calculations and formulas in order to create virtual metering
- Historical data, trends and detection for identifying energy consumption demands, anomalies, meter tampering, ROI calculations
- Advanced comparison wizard— select multiple devices, parameters and time periods in order to achieve deep insights related to energy consumption and energy consumers behavior
- Water, gas & steam monitoring, all on one platform

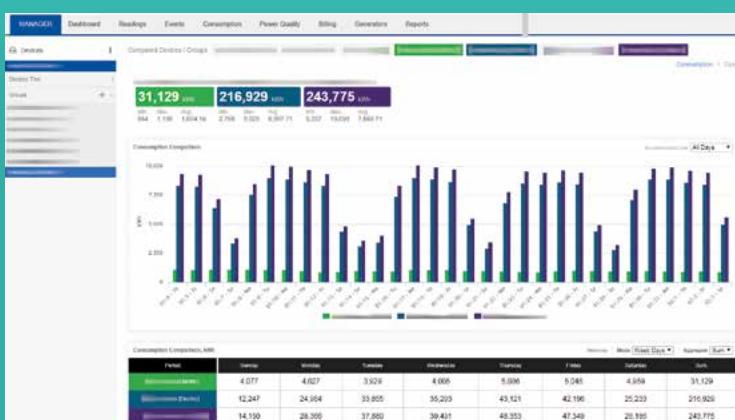
## EXECUTIVE DASHBOARD



## HEAT MAP

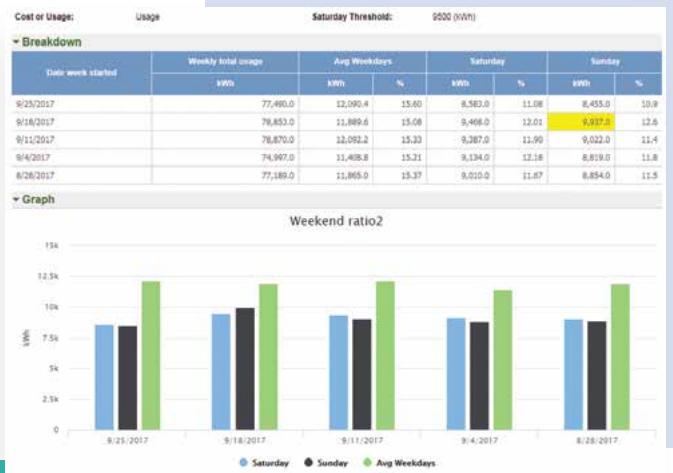


## COMPARISON



- Rich report suite and dashboards, providing actionable insights consumption and Business Intelligence:
  - Compares cumulative monthly consumption with previous years
  - Highlights excessive weekend consumption
  - Highlights consumption outliers outside working hours
  - Tracks losses reflected in energy balance distribution
- Co2 emission reporting
- Waste distribution, waste water & sewage as well as HVAC efficiency monitoring
- Energy balance

## WEEKEND RATIO



## CUMULATIVE—LAST YEAR



## HOURLY OUTLIERS

Configurable consumption alerts via email, SMS

**Report View**

Report Type:	Consumption outliers per day	Report Name:	Consumption Outliers2
Report Dates:	9/1/2016 ~ 10/1/2016	Report generation date:	2/12/2018
Devices:	Floor 1 Meter #3, 195MO Floor 1 Meter #1, 195MO Floor 1 Meter #2, 195MO Floor 1 Meter #4, 195MO Floor 1 Meter #5, 195MO Floor 1 Meter #6		
Start Hour:	01:00	End Hour:	04:00
Threshold:	10		

**Breakdown**

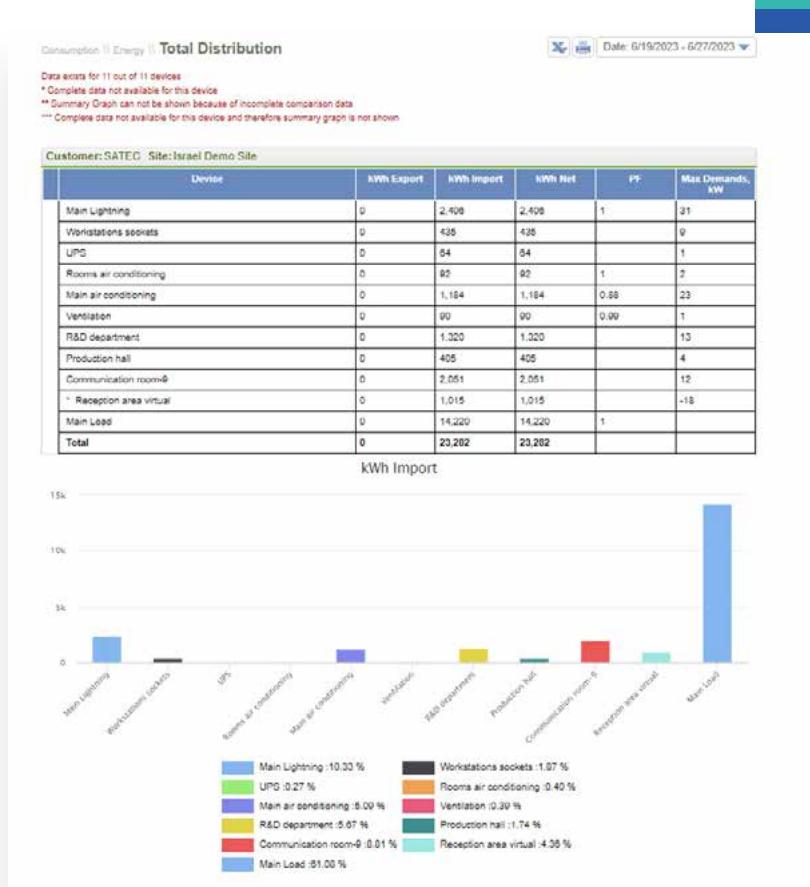
Device	Branch No.	Department	2016-09-01	2016-09-02	2016-09-03	2016-09-04	2016-09-05	2016-09-06	2016-09-07	2016-09-08	2016-09-09	2016-09-10	2016-09-11	2016-09-12	2016-09-13	2016-09-14	2016-09-15
Floor 1 Meter #1			0	1	1	0	0	1	1	0	1	1	0	0	1	0	
Floor 1 Meter #2			13	13	13	12	13	13	13	13	12	12	13	13	13	13	
Floor 1 Meter #3			2	2	2	2	2	2	2	1	1	1	1	1	1	2	
Floor 1 Meter #4			1	1	0	0	0	0	0	0	0	0	0	0	0	0	
Floor 1 Meter #5			0	1	0	0	0	0	1	0	0	0	0	1	0	0	
Floor 1 Meter #6			2	2	3	3	3	3	3	2	2	2	2	3	3	3	

# Billing & Submetering

Enables the monitoring of tenant consumption and managing the billing process for electricity, water, sewage, gas and steam, all under the same billing module

- Dynamic tariff settings, including prices, usage and seasons
- Accurate cost calculation
- Complete submetering solution
- Tenant management portal
- Flexible invoicing options
- Invoice comparison
- Billing based on virtual meters
- Supporting complex formulas and calculations
- Billing data available by reports and API

## ENERGY BALANCE - TOTAL DISTRIBUTION



## DETAILED CONSUMPTION REPORT

Can be invoiced: <input checked="" type="checkbox"/>	Device Name: 11334-PM175-13																																																																																																																																																											
Meter No.: 823549	Number of days in period: 43																																																																																																																																																											
Billing period: December 2011	Method of Charge No.: IEC V2 TOU energy import tariff Low Voltage																																																																																																																																																											
Dates of meter readings: 10/31/2011 - 12/13/2011																																																																																																																																																												
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## ENERGY BILL

Computation No. \_\_\_\_\_

**SATEC**

**Electricity usage bill**

To \_\_\_\_\_  
\_\_\_\_\_

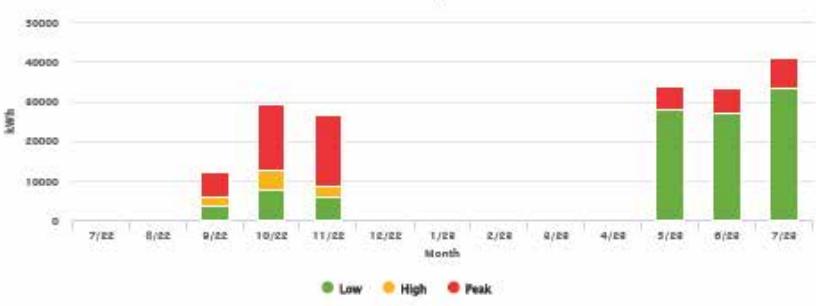
Meter No. \_\_\_\_\_  
 Billing month \_\_\_\_\_  
 Number of days in period \_\_\_\_\_  
 Metering period \_\_\_\_\_  
 Invoice date \_\_\_\_\_  
 Method of Charge \_\_\_\_\_

(לתקופה נקבעה גזע תמיכת ליבורן בין דוחות השנתיים לא כולל מס)

Description	Energy Measurements							Billing	
	Usage code	Season	Tariff	Previous		Present		Usage (kWh)	Cost per kWh (agorot)
TOU Energy 077	Summer	Peak	7/1/2023	1,943,686	8/1/2023	1,951,475	7,785.00	141.31	11,006.64
TOU Energy 078	Summer	High	7/1/2023	585,484	8/1/2023	585,484	0.00	0.00	0.00
TOU Energy 079	Summer	Low	7/1/2023	1,765,448	8/1/2023	1,788,720	33,272.00	41.15	13,691.43
<b>Subtotal</b>			7/1/2023		8/1/2023		41,081.00		24,888.00
PF	General	General	7/1/2023		8/1/2023		0.987		
0.92 סך נורש									
VAT			7/1/2023		8/1/2023			17.00%	4,198.67
תaxes קיבולות-י-KVA			7/1/2023		8/1/2023		0.00	29.13	0.00
<b>Total Charge</b>			7/1/2023		8/1/2023				28,888.73

  
Demo

**TOU Usage**



Produced with Expertpower™

# Power Quality

## DETAILED EVENT ANALYSIS



**expertpower** MANAGER > POWER QUALITY > EN50160-2007 STANDARD > CATEGORY OVERVIEW

**MANAGER** Dashboard Readings Events Consumption Power Quality Billing Generators Reports

Power Quality > EN50160-2007 Standard > Categories Overview

Time Range: Start Date: 12/31/2017 End Date: 2/10/2018

Customer: Site: Location: Device: PM175

Category	Week 1 Mon 01-Jun-18	Week 2 Tue 02-Jun-18	Week 3 Wed 03-Jun-18	Week 4 Thu 04-Jun-18	Week 5 Fri 05-Jun-18
Power Frequency	✓	✓	✓	✓	✓
Voltage Variability	✓	✓	✓	✓	✓
Rapid Voltage Change	✓	✗	✓	✓	✓
Pulse Severity	✓	✓	✓	✓	✗
Voltage Unbalance	✓	✓	✓	✓	✓
Harmonec Voltage	✓	✓	✓	✓	✓

**expertpower** MANAGER > POWER QUALITY > EN50160-2007 STANDARD > COMPLIANCE REPORT

**MANAGER** Dashboard Readings Events Consumption Power Quality Billing Generators Reports

Power Quality > EN50160-2007 Standard > Compliance Report

Date: 12/31/2017 - 2/10/2018

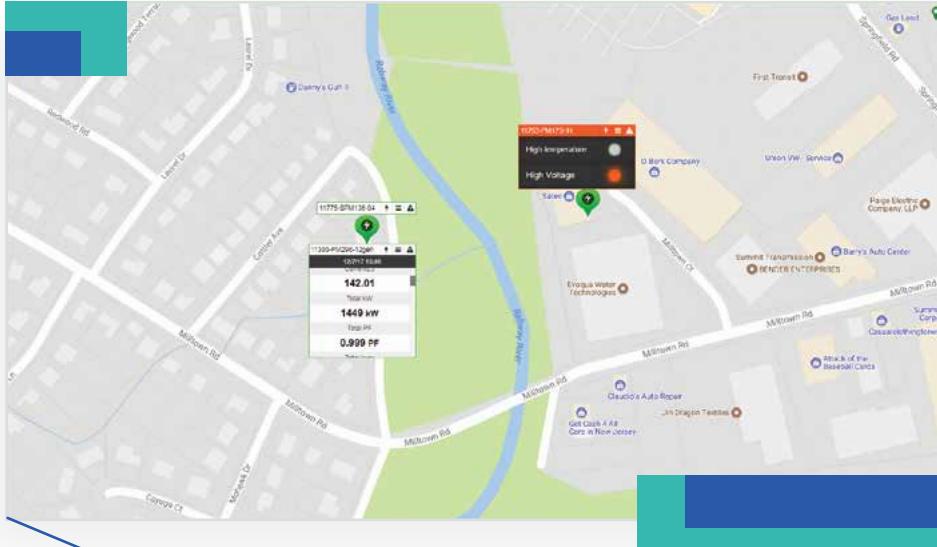
Customer: Site: Location: Device: PM175

Parameter	Value	Pass/Fail
Power Frequency	0	Pass
Voltage Variability	0	Pass
Rapid Voltage Changes	0	Pass
Pulse Severity	0	Pass
Voltage Unbalance	0	Pass
Harmonec Voltage	0	Pass

**Customer Inventory**

Item	Quantity	Unit	Description	Pass/Fail
12345678	100	kg	Power Quality Monitor	Pass
12345679	100	kg	Power Quality Monitor	Pass
12345680	100	kg	Power Quality Monitor	Pass
12345681	100	kg	Power Quality Monitor	Pass
12345682	100	kg	Power Quality Monitor	Pass
12345683	100	kg	Power Quality Monitor	Pass
12345684	100	kg	Power Quality Monitor	Pass
12345685	100	kg	Power Quality Monitor	Pass
12345686	100	kg	Power Quality Monitor	Pass
12345687	100	kg	Power Quality Monitor	Pass
12345688	100	kg	Power Quality Monitor	Pass
12345689	100	kg	Power Quality Monitor	Pass
12345690	100	kg	Power Quality Monitor	Pass
12345691	100	kg	Power Quality Monitor	Pass
12345692	100	kg	Power Quality Monitor	Pass
12345693	100	kg	Power Quality Monitor	Pass
12345694	100	kg	Power Quality Monitor	Pass
12345695	100	kg	Power Quality Monitor	Pass
12345696	100	kg	Power Quality Monitor	Pass
12345697	100	kg	Power Quality Monitor	Pass
12345698	100	kg	Power Quality Monitor	Pass
12345699	100	kg	Power Quality Monitor	Pass
12345600	100	kg	Power Quality Monitor	Pass
12345601	100	kg	Power Quality Monitor	Pass
12345602	100	kg	Power Quality Monitor	Pass
12345603	100	kg	Power Quality Monitor	Pass
12345604	100	kg	Power Quality Monitor	Pass
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12345610	100	kg	Power Quality Monitor	Pass
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12345620	100	kg	Power Quality Monitor	Pass
12345621	100	kg	Power Quality Monitor	Pass
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12345646	100	kg	Power Quality Monitor	Pass
12345647	100	kg	Power Quality Monitor	Pass
12345648	100	kg	Power Quality Monitor	Pass
12345649	100	kg	Power Quality Monitor	Pass
12345650	100	kg	Power Quality Monitor	Pass
12345651	100	kg	Power Quality Monitor	Pass
12345652	100	kg	Power Quality Monitor	Pass
12345653	100	kg	Power Quality Monitor	Pass
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12345656	100	kg	Power Quality Monitor	Pass
12345657	100	kg	Power Quality Monitor	Pass
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12345659	100	kg	Power Quality Monitor	Pass
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12345662	100	kg	Power Quality Monitor	Pass
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12345665	100	kg	Power Quality Monitor	Pass
12345666	100	kg	Power Quality Monitor	Pass
12345667	100	kg	Power Quality Monitor	Pass
12345668	100	kg	Power Quality Monitor	Pass
12345669	100	kg	Power Quality Monitor	Pass
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12345674	100	kg	Power Quality Monitor	Pass
12345675	100	kg	Power Quality Monitor	Pass
12345676	100	kg	Power Quality Monitor	Pass
12345677	100	kg	Power Quality Monitor	Pass
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12345682	100	kg	Power Quality Monitor	Pass
12345683	100	kg	Power Quality Monitor	Pass
12345684	100	kg	Power Quality Monitor	Pass
12345685	100	kg	Power Quality Monitor	Pass
12345686	100	kg	Power Quality Monitor	Pass
12345687	100	kg	Power Quality Monitor	Pass
12345688	100	kg	Power Quality Monitor	Pass
12345689	100	kg	Power Quality Monitor	Pass
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12345691	100	kg	Power Quality Monitor	Pass
12345692	100	kg	Power Quality Monitor	Pass
12345693	100	kg	Power Quality Monitor	Pass
12345694	100	kg	Power Quality Monitor	Pass
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12345696	100	kg	Power Quality Monitor	Pass
12345697	100	kg	Power Quality Monitor	Pass
12345698	100	kg	Power Quality Monitor	Pass
12345699	100	kg	Power Quality Monitor	Pass
12345600	100	kg	Power Quality Monitor	Pass
12345601	100	kg	Power Quality Monitor	Pass
12345602	100	kg	Power Quality Monitor	Pass
12345603	100	kg	Power Quality Monitor	Pass
12345604	100	kg	Power Quality Monitor	Pass
12345605	100	kg	Power Quality Monitor	Pass
12345606	100	kg	Power Quality Monitor	Pass
12345607	100	kg	Power Quality Monitor	Pass
12345608	100	kg	Power Quality Monitor	Pass
12345609	100	kg	Power Quality Monitor	Pass
12345610	100	kg	Power Quality Monitor	Pass
12345611	100	kg	Power Quality Monitor	Pass
12345612	100	kg	Power Quality Monitor	Pass
12345613	100	kg	Power Quality Monitor	Pass
12345614	100	kg	Power Quality Monitor	Pass
12345615	100	kg	Power Quality Monitor	Pass
12345616	100	kg	Power Quality Monitor	Pass
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12345618	100	kg	Power Quality Monitor	Pass
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12345623	100	kg	Power Quality Monitor	Pass
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12345626	100	kg	Power Quality Monitor	Pass
12345627	100	kg	Power Quality Monitor	Pass
12345628	100	kg	Power Quality Monitor	Pass
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12345636	100	kg	Power Quality Monitor	Pass
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12345638	100	kg	Power Quality Monitor	Pass
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12345644	100	kg	Power Quality Monitor	Pass
12345645	100	kg	Power Quality Monitor	Pass
12345646	100	kg	Power Quality Monitor	Pass
12345647	100	kg	Power Quality Monitor	Pass
12345648	100	kg	Power Quality Monitor	Pass
12345649	100	kg	Power Quality Monitor	Pass
12345650	100	kg	Power Quality Monitor	Pass
12345651	100	kg	Power Quality Monitor	Pass
12345652	100	kg	Power Quality Monitor	Pass
12345653	100	kg	Power Quality Monitor	Pass
12345654	100	kg	Power Quality Monitor	Pass
12345655	100	kg	Power Quality Monitor	Pass
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12345670	100	kg	Power Quality Monitor	Pass
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12345674	100	kg	Power Quality Monitor	Pass
12345675	100	kg	Power Quality Monitor	Pass
12345676	100	kg	Power Quality Monitor	Pass
12345677	100	kg	Power Quality Monitor	Pass
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12345679	100	kg	Power Quality Monitor	Pass
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12345683	100	kg	Power Quality Monitor	

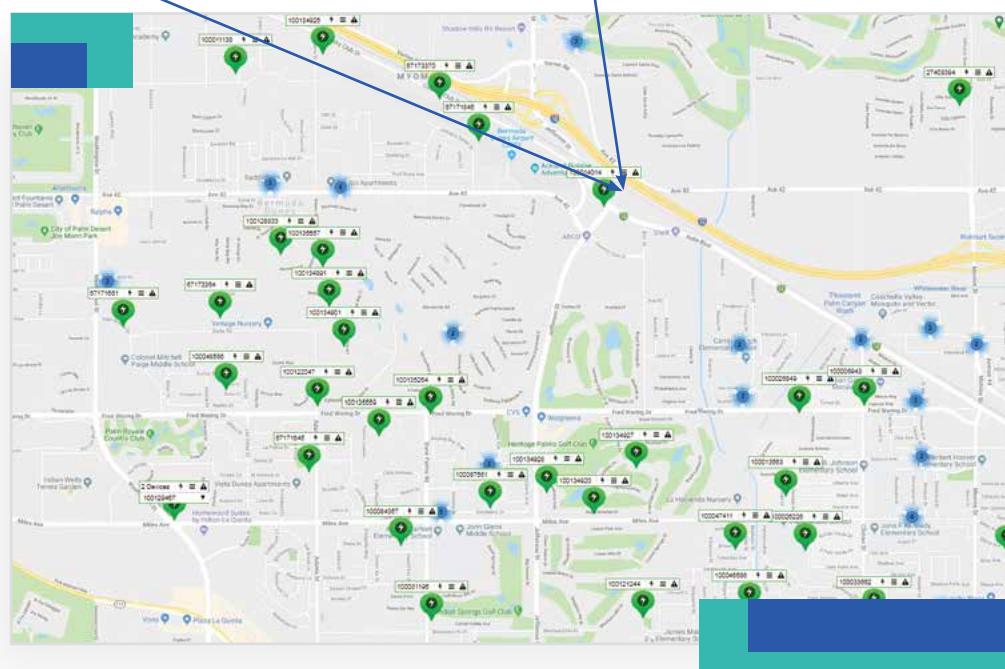
# Geolocation



- Monitoring wide geographic location based metering systems
- Transformer/substation monitoring, generating critical alerts, such as overload, or transformer overheating or oil level
- Outage visualization and monitoring

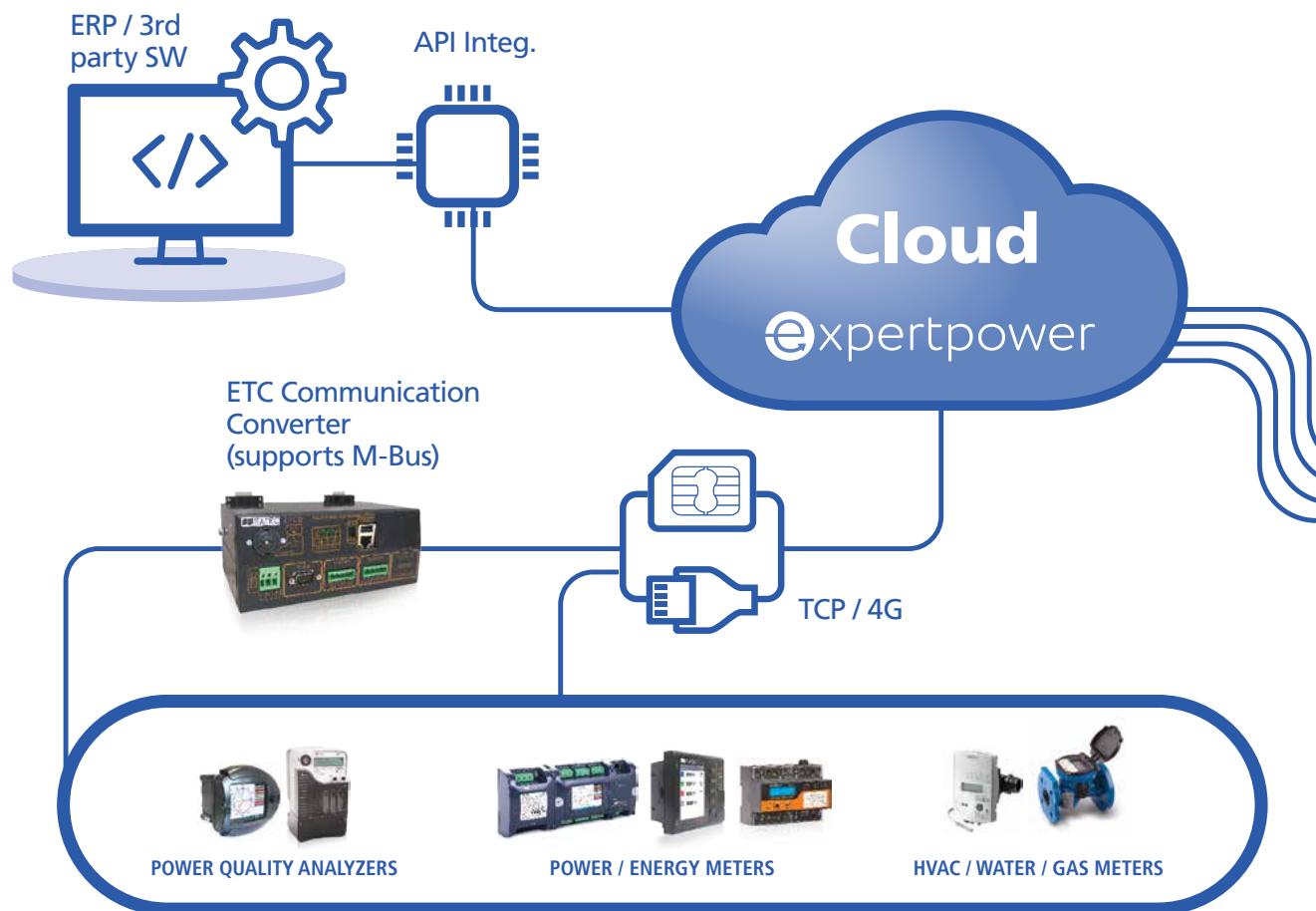
## GEOLOCATION

Expertpower GeoLocation Dashboard allows for geographical meter display, alert notification and navigation on a map or satellite view.



# System Architecture

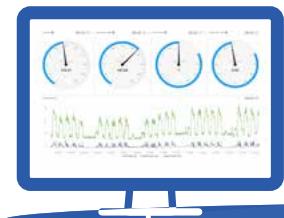
## EXPERTPOWER ENERG



# GY MANAGEMENT



Energy Management & Efficiency



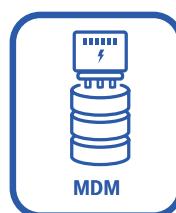
Billing & Submetering



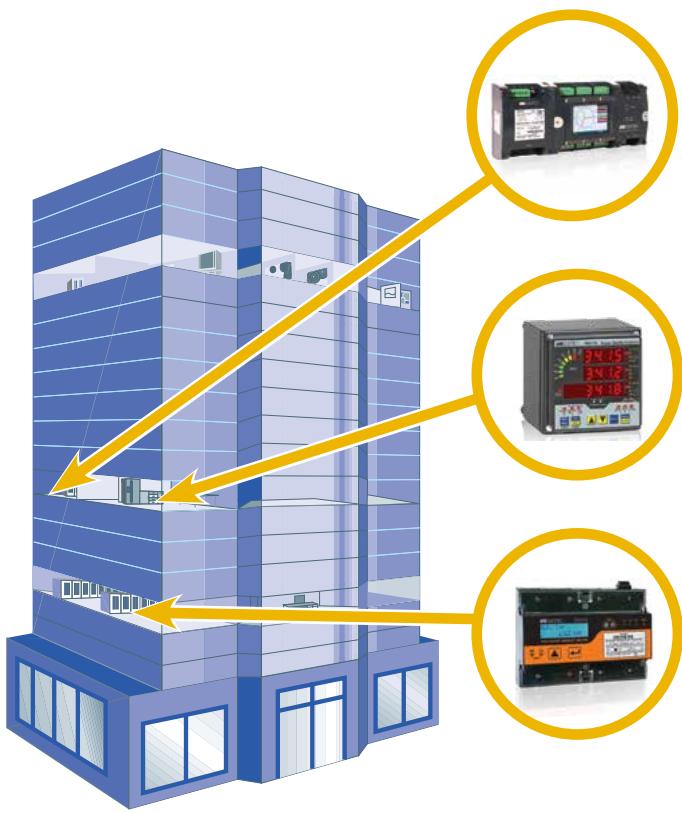
Power Quality



BI / Data Analytics



# Applications



## Commercial

Commercial Buildings | Shopping Centers

Universities | Hospitals | Residential

### ENERGY EFFICIENCY & COSTS

- Reduce energy consumption
- Reduce surcharges and penalties (power factor, peak demand, etc.)
- Initiate corporate level saving plans

### SUBMETERING & BILLING

- Comprehensive billing solution for energy retailing (electrical, water, gas and air condition) to sub-tenants
- Web access for tenants, to view their bills and on-line data

### POWER RELIABILITY

- Proactive maintenance for maximum system availability
- Analyze demands to help utilize existing infrastructure
- EV consumption monitoring

**SATEC**

Computation No. [REDACTED]

### Electricity usage bill

To [REDACTED]

Meter No. [REDACTED]  
 Billing month [REDACTED]  
 Number of days in period [REDACTED]  
 Metering period [REDACTED]  
 Invoice date [REDACTED]  
 Method of Charge [REDACTED]

[Hebrew text: להלן פרטי השימוש ומחירו ביחידות נורמה לא כולל מס]

Description	Energy Measurements							Billing		
	Usage code	Season	Tariff	Previous		Present		Usage (kWh)	Cost per kWh (agorot)	Total cost (NIS)
				Previous Date	Previous Reading	Present Date	Present Reading			
TOU Energy 077	Summer	Peak	7/1/2023	1,943,686	8/1/2023	1,951,475	7,789.00	141.31	11,006.64	
TOU Energy 078	Summer	High	7/1/2023	585,484	8/1/2023	585,484	0.00	0.00	0.00	
TOU Energy 079	Summer	Low	7/1/2023	1,755,448	8/1/2023	1,786,720	33,272.00	41.15	13,691.43	
<b>Subtotal</b>			<b>7/1/2023</b>		<b>8/1/2023</b>		<b>41,061.00</b>		<b>24,886.06</b>	
PF	General	General	7/1/2023		8/1/2023		0.987			
0.82 גדרש%										
VAT			7/1/2023		8/1/2023			17.00%	4,198.87	
מטלת חומרה KVA			7/1/2023		8/1/2023		0.00	29.13	0.00	
<b>Total Charge</b>			<b>7/1/2023</b>		<b>8/1/2023</b>				<b>28,886.73</b>	

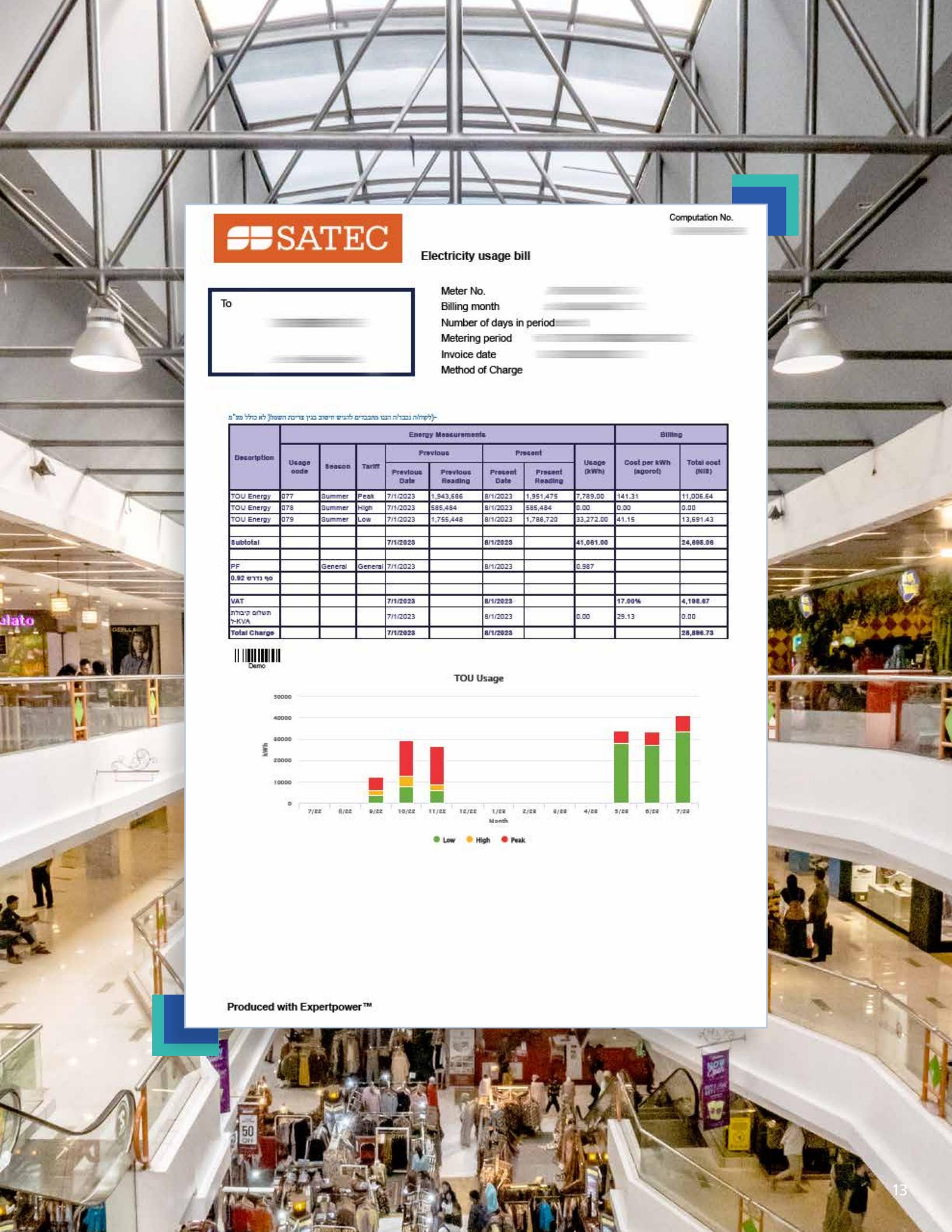
Barcode: Demo

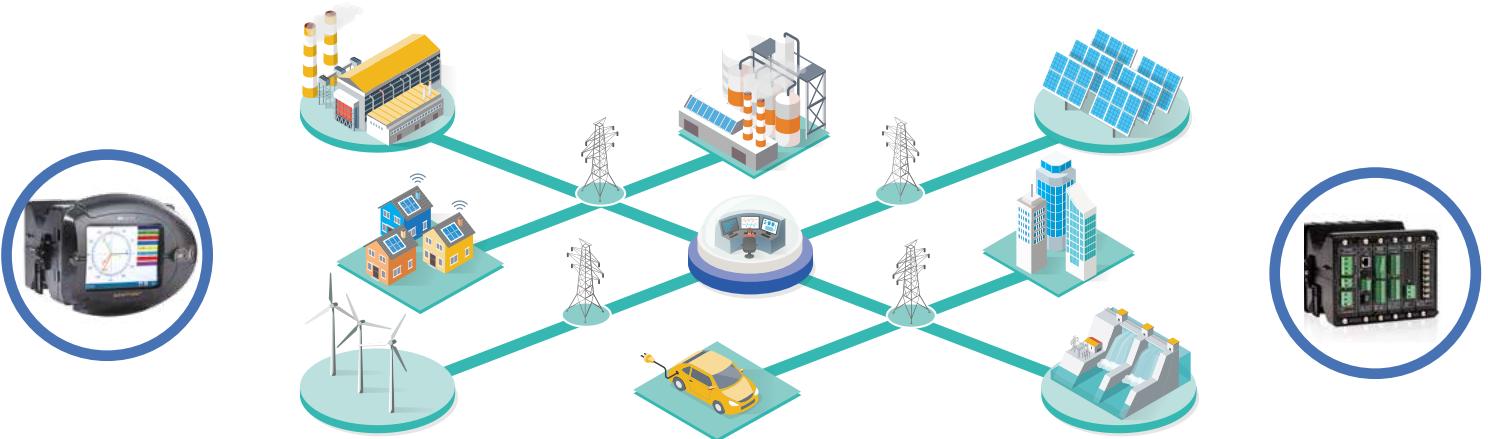
#### TOU Usage

Month	Low (kWh)	High (kWh)	Peak (kWh)
7/22	~1000	~1000	~1000
8/22	~1000	~1000	~1000
9/22	~1000	~1000	~1000
10/22	~10000	~10000	~10000
11/22	~10000	~10000	~10000
12/22	~10000	~10000	~10000
1/23	~10000	~10000	~10000
2/23	~10000	~10000	~10000
3/23	~10000	~10000	~10000
4/23	~10000	~10000	~10000
5/23	~10000	~10000	~10000
6/23	~10000	~10000	~10000
7/23	~10000	~10000	~10000

● Low ● High ● Peak

Produced with Expertpower™





## Utilities | Smart Grid | Renewable

Generation | Transmission | Distribution

Electricity / Water / Gas Utilities

### SMART GRID

- MDM complete solution including billing
- Monitor and reduce energy losses

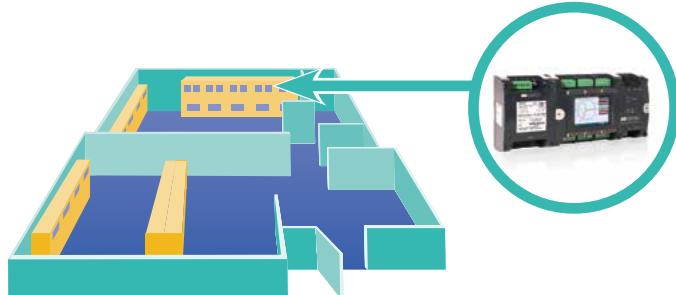
### POWER QUALITY

- Analyze source of power quality issues to enable quick resolution

- Manage customers' power quality analysis

### NETWORK SECURITY

- Proactive maintenance for maximum system availability
- Analyze demands to help utilize existing infrastructure and transformers monitoring



## Data Centers

### ENERGY EFFICIENCY & COSTS

- Optimize Power Usage Effectiveness (PUE) via:
- Monitoring and enhancing HVAC performance
- Minimize downtime by flagging and preventing overload
- Proactive maintenance for maximum system availability
- Analyze demands to optimize existing infrastructure and prevent over-design

### SUBMETERING AND BILLING

- Comprehensive, high-resolution billing solution for retailing energy to customers, down to an individual electric cabinet or even individual computer
- Web access for customers to view their bills and online data

## Industrial

Semi-Conductors  
Petrochemical  
Mining | Automotive  
Food & Beverage



### ENERGY EFFICIENCY & COSTS

- Reduce energy consumption
- Reduce surcharges and penalties (power factor, peak demand etc.)
- Initiate corporate level saving plans

### POWER RELIABILITY

- Proactive maintenance for maximum system availability
- Analyze demands to optimize existing infrastructure and prevent over-design

### POWER QUALITY

- Monitor power quality to prevent failure
- Generate compliance reports in accordance with local regulation



**e**xpertpower



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**SATEC-GLOBAL.COM/EXPERTPOWER**