

Wi-LEM: Energy Monitoring & Cost Allocation

Reduce the Cost of your Energy Efficiency Projects!



The time of installation is a driving factor for the total energy management project cost, especially in existing buildings. Using a wireless mesh sub-metering network can dramatically reduce time and money and therefore improve the profitability of your project.

Case Study: Data-Center.

Description:
The new generation of “rack-able” servers has become much smaller which allows to increase the power density of each cabinet. It is critical for the data-center facility manager to be able to monitor the electrical load for each server to ensure that the current load does not exceed the breaker capacity and switch off the line. Another consequence is the higher energy consumption. Data-centers are challenged to allocate costs by customers more precisely based on actual consumption rather than space. The ideal scenario would be to equip the building with sub-meters. This would require important installation costs which result in a long duration for return on investment.

Solution:
The use of a wireless mesh sub-metering network has significant advantages:

- Small size of the sub-meter makes the solution suitable for an existing cabinet (no need for an additional one).
- Easy and Quick Fit reduces the installation cost dramatically and avoids downtime.
- Easy to expand which facilitates the addition of new customers to the data-center (new sub-meter is automatically recognised by the network).

Case Study: Energy Project.

Description:
The first step in an energy retrofit project is the audit of your site in order to determine which part of the building needs to be monitored. The role of the Energy Service Company (ESCO) is to provide a maximum of measuring points to ensure high accuracy whilst keeping an eye on the budget. In the case of traditional wired sub-meters the total cost of the project was proportional to the number of measurement points. In addition the monitored site can have different configurations which can lead to variable and unpredictable installation costs. After execution of the audit, the ESCO will need to remove the installed sub-meters which will result in additional dismantling costs.

Solution:
Using a wireless mesh sub-metering network provides considerable benefits:

- Split core current transformers are perfectly adapted for existing installations.
- Wireless communication makes installation and dismantling much faster.
- Easy to expand which allows the ESCO to add new sub-meters if additional measurement points are needed.

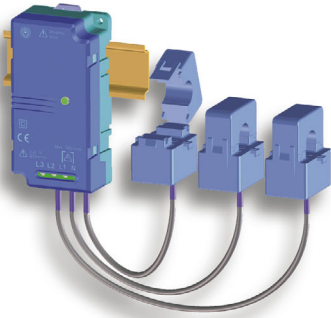
Applications

- Cost allocation to specific department or user.
- Energy efficiency project audit: improvement verifications
- Equipments and system efficiency benchmark
- Load management & peak demand

Key Benefits

- Reduce the total hardware cost of your data acquisition chain
- Small size: ideal regardless of the space in your cabinet.
- Reduce the installation time (wireless + split core CT)
- Easy to expand

Wi-LEM: Wireless Mesh Sub-Metering Network Description



Energy Meter Node (EMN):

- Measurement values:

	Configurable Reading Interval (5 to 30 minutes)													
	Interval Base Values									Cumulated Values				
	L1			L2			L3			SUM	L1	L2	L3	SUM
	Av	Min	Max	Av	Min	Max	Av	Min	Max					
Current (A)														
Voltage (V)														
Active Energy (kWh)														
Reactive Energy (kVarh)														
Apparent Energy (kVA)														
Frequency														

- Direct connections to:
 - 3 phases Star (with or without neutral) or Delta 120/240 VAC
 - Single phase 120/240 VAC
- Line powered
- Current rating: 5, 20, 50, 100 A
- Accuracy: Active energy IEC 62053-21 Class 1

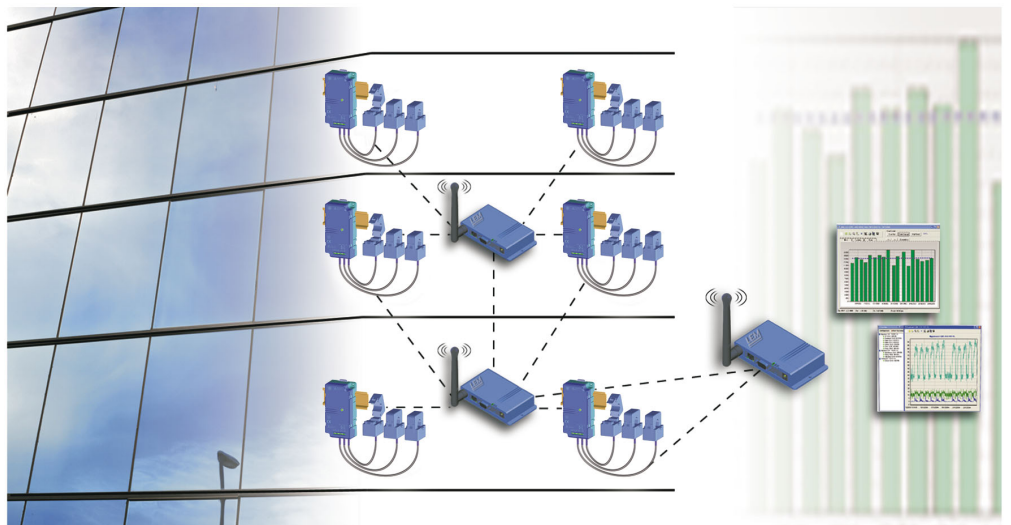


Mesh Gate:

- Automatic detection of new sub-meter
- Interface RS 232/485 MODBUS RTU.
- Distance to sub-meter line of sight: 20 meters
- RF frequency range 2.4 GHz unlicensed ISN band

Mesh Node:

- Automatically recognised by the gateway
- Auxiliary power supply (provided)



Wireless Mesh Network Diagram (Commercial Building).