Utility Bill Verification (IEC)

Check for Utility Bill Discrepancies

EcoStruxure Power Digital Application

ESXP2GE021EN-05
11/2023

EcoStruxure™ Power

Schneider Electric™

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Table of Contents

Overview

Context of Application

Electrical energy has some unique characteristics such as time-of-use or peak demand charges that can contribute to complicated billing. Mistakes do happen in energy billing and are surprisingly common.

Discrepancies can include:

- Invoicing errors
- Incorrect rates applied
- Incorrect meter readings
- Duplicate line items

Problem to Solve

The facility manager needs to:

- Be able to provide energy billing data to financial organizations.
- Get a reliable basis for comparison to dispute the utility bill with the energy provider.
- Understand the billing composition and details.

Purpose of the Application

Provide an accurate reference for bill validation and analysis

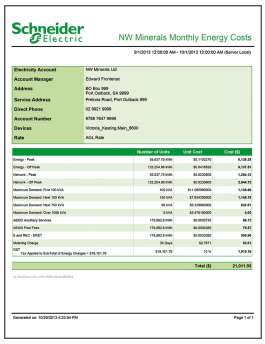
- Automatic generation of a shadow bill using power monitoring software
- Measurement taken at the same location as the utility meter
- Energy consumption data collected with the same frequency (typically 15 minutes) and equal (or better) accuracy as the utility bill

Application Outcomes

Reports

The shadow bill includes the same information as the original utility bill to compare key measurements:

- Energy usage (kWh, kVARh, kVAh)
- Demand (kW, kVAR)
- Power factor
- Time of use (TOU) and seasonal usage
- Other fees and miscellaneous charges



Shadow Bill Generated by Schneider Electric

Cloud-Based Analytics and Services

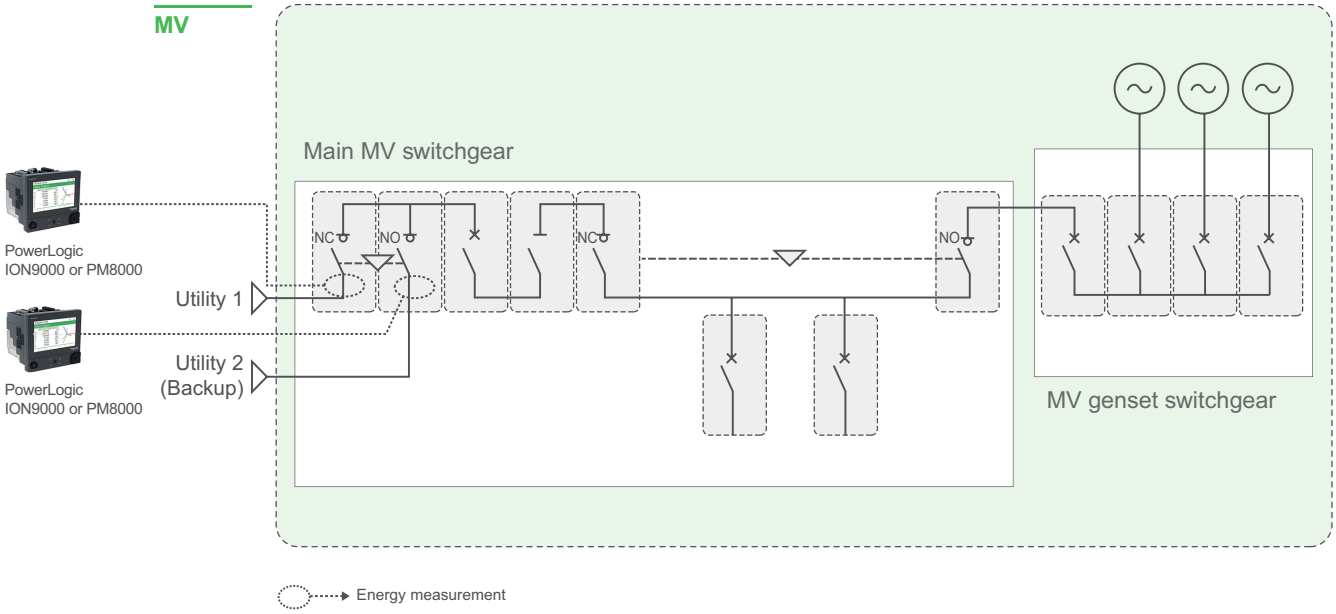
As an option, EcoStruxure Service Plan powered by EcoStruxure Power Advisor provides data quality analytics with recommendations from our Schneider Electric service experts.

EcoStruxure Power Advisor Data Quality Report

Electrical Architecture

The following diagram details the areas of the architecture where the connected products should be installed in order to implement the Utility Bill Verification application.

Certified utility grade meters must be installed (on each utility incomer) to perform accurate measurements which can help with utility bill verification.



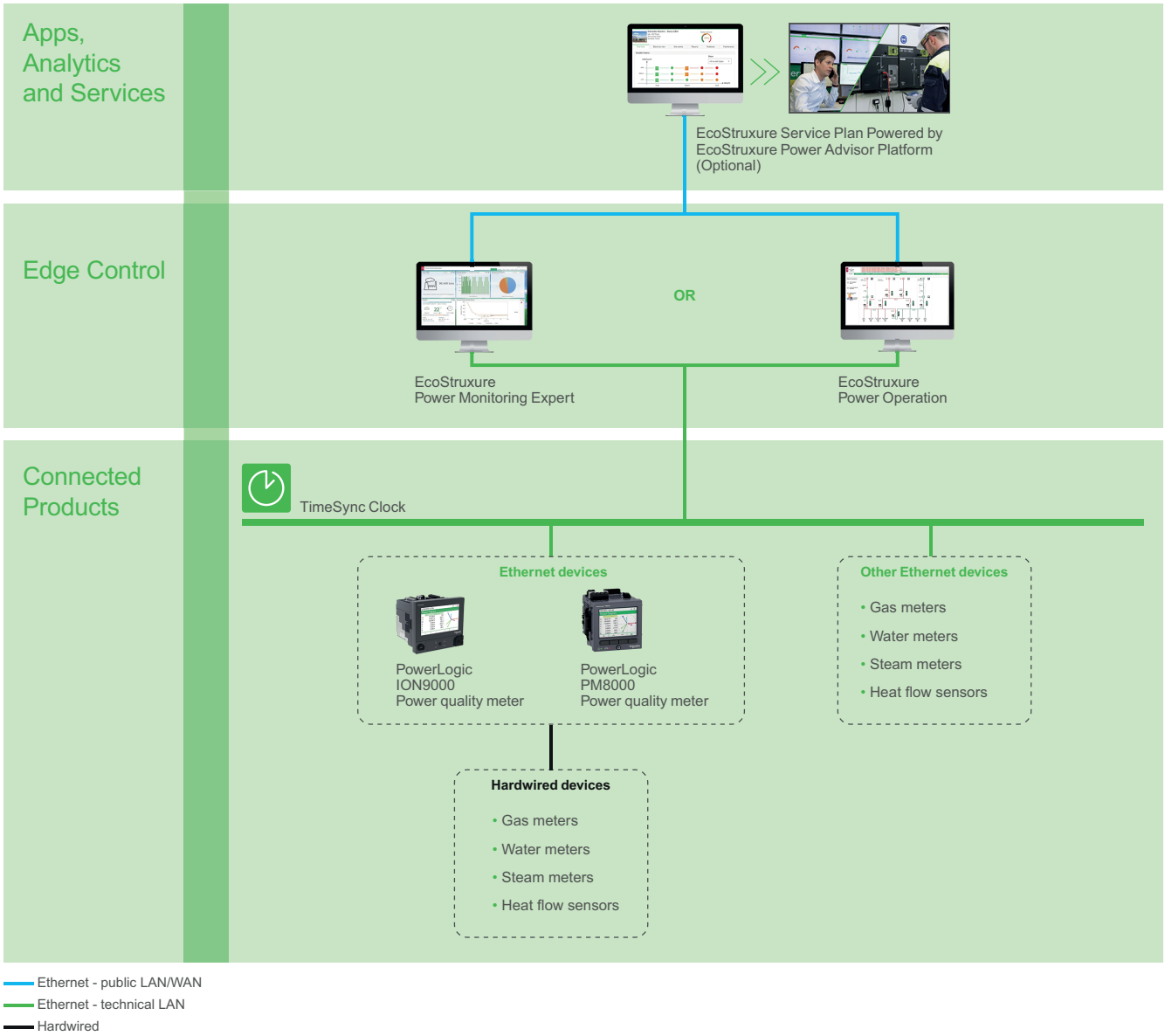
Digital Architecture

The digital architecture of the Utility Bill Verification application consists of utility-grade energy meters collecting accurate energy and demand (power) data. This data is then transferred by IP communication to the Edge Control software (EcoStruxure Power Monitoring Expert or Power Operation) for reporting.

Power and energy values (kW, kVAR, kVA, kWh, kVARh, kVAh) must be measured by certified utility-grade energy meters (PowerLogic ION9000/PM8000).

As an option, data from EcoStruxure Power Monitoring Expert or Power Operation can be passed on to the EcoStruxure Power Advisor platform and interpreted by experts as part of the EcoStruxure Service Plan.

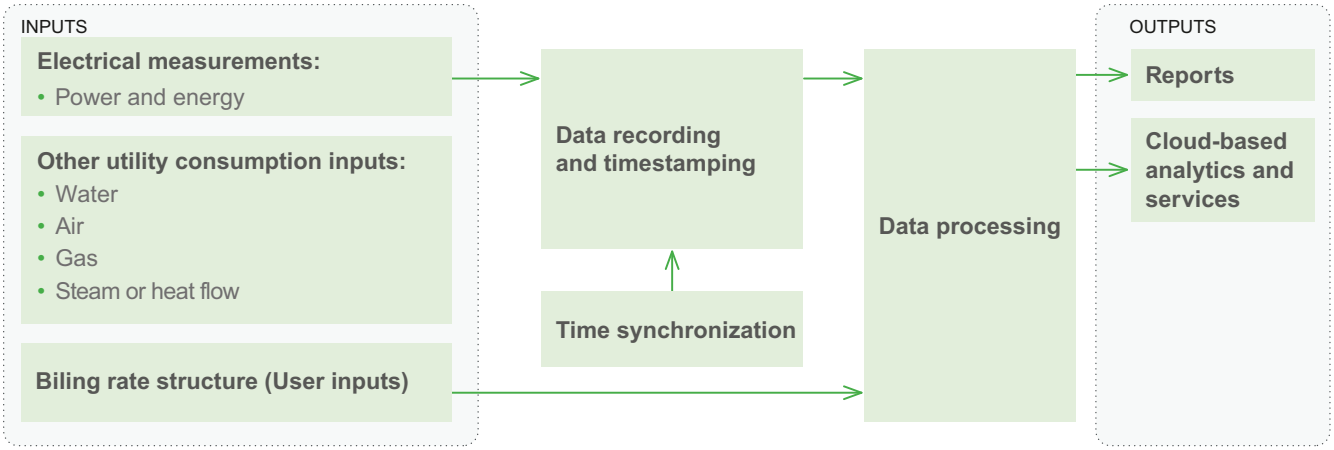
The recommended digital architecture for the application is shown below:



System Description

Data Flow

The Utility Bill Verification application can be broken down as follows:



Inputs

The following data is required:

Electrical Measurements

Power and energy

All power values (kW, kVAR, kVA) and energy values (kWh, kVARh, kVAh) must be measured by certified utility-grade energy meters (PowerLogic ION9000/ PM8000). These meters have an equal or better accuracy than the utility meter to achieve appropriate shadow billing accuracy.

PowerLogic ION9000

PowerLogic PM8000

Other Utility Consumption Inputs

- Water
- Air
- Gas
- Steam or heat flow

These can be acquired via digital/analog inputs on meters or directly via Modbus from third-party devices.

Billing Rate Structure (User Inputs)

The rate structure imposed by the utility is configured in the system so that the shadow bill reflects all aspects of the actual utility bill.

Data Recording and Timestamping

For the Utility Bill Verification application, a timestamp accuracy of ±1 second is sufficient.

The above energy measurements are recorded and timestamped by onboard smart meters such as PowerLogic ION9000/PM8000.

PowerLogic ION9000

PowerLogic PM8000

For other WAGES[1] **transducers,** the signal can be recorded by EcoStruxure Power Monitoring Expert or Power Operation.

EcoStruxure Power Monitoring Expert

EcoStruxure Power Operation

NOTE: For devices without onboard logging, there is a risk of data loss in the event of a communication interruption.

For a comprehensive overview of device recording and timestamping capabilities, refer to Time Synchronization Capabilities of EcoStruxure Power Connected Products.

Time Synchronization

To achieve accurate timestamping of all power and energy data, the date and time should be accurately distributed to connected products and data loggers.

Time synchronization can be performed through various technologies (PTP, NTP, SNTP, etc.). An external master clock is recommended and connects to a GPS antenna to reach the expected time precision.

TimeSync Clock

1. Water, Air, Gas, Electricity, Steam

Data Processing

Shadow Billing

A comparison bill is established based on demand (power) and energy measurements.

The rate engine supports many different rate structures to take into account all contractual aspects of the utility billing:

- Tiered rates
- Time of use
- Power factor rate
- Demand limits
- Reactive power

Outputs

Display of outputs is performed by EcoStruxure Power Monitoring Expert or Power Operation.

EcoStruxure
Power Monitoring Expert

EcoStruxure
Power Operation

The optional Billing module of EcoStruxure Power Monitoring Expert and Power Operation must be deployed to benefit from these features.

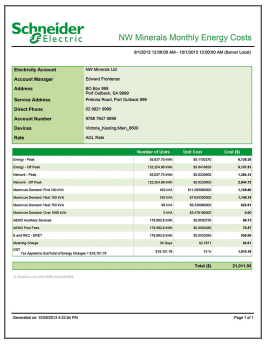
Reports

The following report can be displayed or automatically sent by email:

Billing Report

Based on certified energy measurements, the shadow bill will reflect the utility bill with the following line items:

- Energy registers reading (start/end of billing period)
- Energy consumption charge
- Transmission charge
- Line maintenance charge
- On peak and off peak usage charge
- Peak demand charge
- State tax
- Daily charge
- Processing fee
- Recycling fee
- Etc.



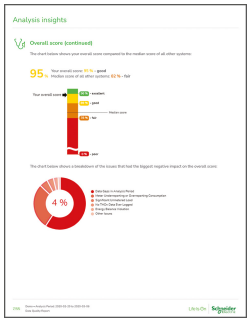
Billing Report

Cloud-Based Analytics and Services

As an option, EcoStruxure Service Plan powered by EcoStruxure Power Advisor provides data quality analytics with recommendations from our Schneider Electric service experts. Data quality means data accuracy; it helps ensure the reliability of shadow bills.

For further information, refer to Data Quality Management.

EcoStruxure Service Plan Powered by EcoStruxure Power Advisor Platform



EcoStruxure Power Advisor Electrical Health Report - Overall Score

EcoStruxure Power Advisor Electrical Health Report - Device Details by Issue

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