AT A GLANCE

METERING & MONITORING

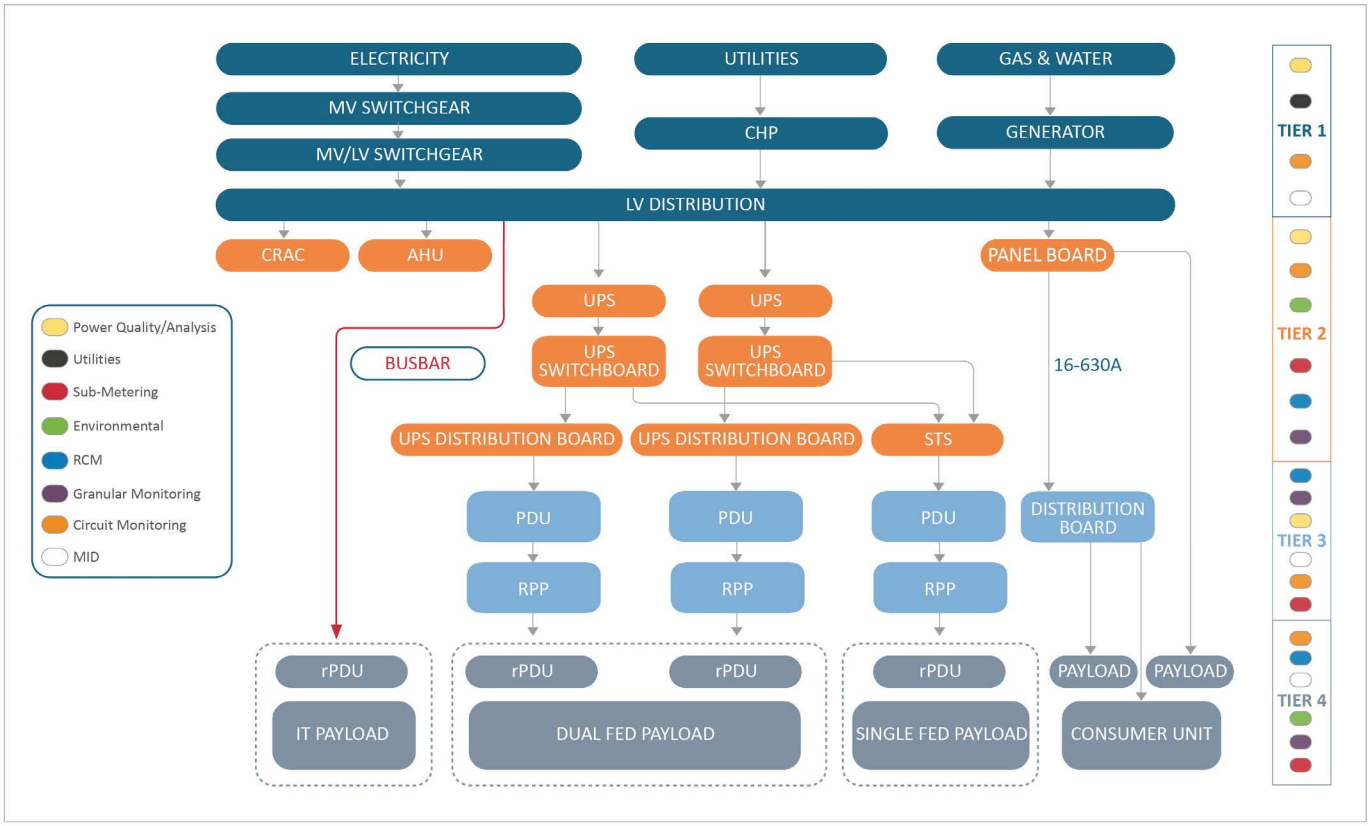
Introduction

Any meaningful Sustainability Programme must encompass the measurement, reporting, understanding and continuous improvement in the efficiency of all power and energy related parameters across the entire Estate. Power Quality should be treated with equal importance, as related issues can have significant and wide-ranging impacts on various aspects of industrial operations, equipment performance, and overall productivity. These impacts can lead to increased costs, reduced efficiency, equipment damage, and disruptions in production processes.

MPL has developed a fully scalable estate wide metering solution applicable across the entire Electrical Power Monitoring System (EPMS), from building point of entry through to an individual payload.

This 4-tier approach simplifies the understanding and specifying of the most appropriate metering solution across each EPMS tier, avoiding costly over specification whilst ensuring all relevant and necessary monitoring data is captured to empower the client to make informed decisions.

The accuracy of reported data is paramount, as it directly influences the ability to drive operational efficiencies, reduce costs, and ensure compliance with legislative requirements. Given its critical importance, there can be no compromise in the precision of measurements.



The 5 Key Steps Defined

Step 1. Identify Utilities to be monitored (electricity, gas, water, solar)

Step 2. Power Quality of incoming feeds

Step 3. Identify Sub Metering Requirements across Distribution Boards, Sub Distribution, RPP's, Bus Bar, Panel Boards and MID

Step 4. Granular monitoring of payloads

Step 5. Visualisation and reporting, scalable beyond kWh and CO^2

To further elaborate, the first two steps focus on measurement and reporting of utilities at the building point of entry whilst also establishing the quality of voltage supplied by public electricity networks in accordance with BS EN 50160. The third step monitors energy distribution across the estate focusing on plant equipment and sub distribution level, whilst step four identifies when and where energy is consumed, focusing on the granular monitoring of individual payloads.

MPL Meter Types

MPL offer four generic groups of PMD (Performance Monitoring Device), Meters:

- Power Quality Analysers
- PMD including Power Quality and Residual Current Monitoring (RCM)
- PMD Sub Metering
- PMD MID

Meter Standards & Certification

- BS EN 50160: Power Quality
- IEC 61557-12 (PMD)
- IEC 62053-21/22/23 (kWh)
- BS EN 61000 Harmonics
- BS EN 50470 Measuring Instrumentation Directive (MID)
- Underwriter Laboratories UL

Metering Strategy

Tier 1:

Utility Monitoring focuses on power quality analysers and the metering on the main incoming feed/point of common coupling. These power quality meters perform as a multifunction network analyser, actively assisting the electrical system to run continuously and at optimised rates.

With this system, clients can improve overall efficiency of the facility, reduce production losses, optimise running costs whilst reducing maintenance costs. An analyser will measure all electrical parameters and analyse the quality of energy.

Assess Existing Utility Meters, identifying communication protocols (i.e. pulse output), location, and accessibility.

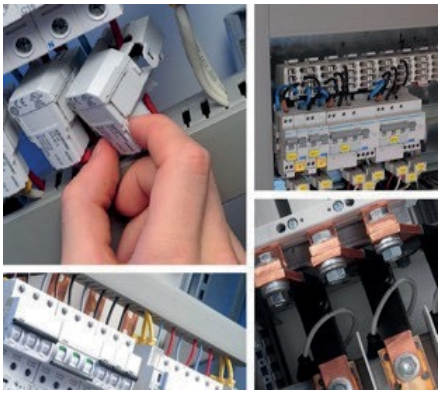
Solar Monitoring to maximise operational efficiencies and provide early detection of any failures. To achieve this, MPL monitor the AC power at the inverter, DC voltage and current at the combiner or recombiner boxes as well as Power Quality metering of electricity loads consumed by the estate and potentially fed back to the grid.

Tiers 2 and 3:

Sub Metering utilising PMD metering across plant equipment and sub distribution. Monitoring of energy data, electrical parameters, basic power quality (Total Harmonic Distortion THD) and MID.

Tier 4:

Monitoring of Payloads utilising PMD metering. Monitoring of energy data (kWh), electrical parameters, basic power quality (Total Harmonic Distortion THD) and MID.



Individual Circuit Monitoring

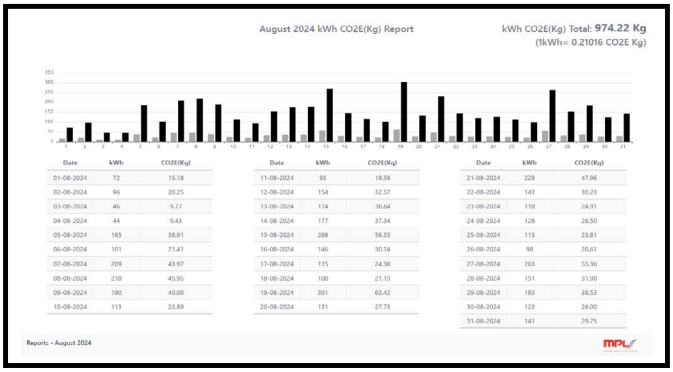
MPL offers a scalable and modular approach to address multi circuit power and energy management for both AC and DC applications (AC to 6000A, DC to 5000A). This truly market neutral solution is suitable for single and three phase circuits, delivering centralised reporting of Volts, Amps, kVA, kW, kWh and PF and Power Quality of the incoming feeds. Key features include:

- Scalable, pre-configured 'ready to run' enclosures to reduce on-site installation costs, space, and time. The enclosures can be deployed in a master/slave arrangement to facilitate the monitoring of multiple panels across or between floors
- Industry leading accuracy – Class 0.5 for global measurement chain (10-120% of load) – IEC 61557-12 refers
- Non-invasive current sensor technology utilising 'plug and play' connectivity into multiple current measurement modules to simplify site installation
- EN50160 certified voltage module per feed for PQ of incoming feeds
- Centralised data collection via the N-GEN Gateway datalogger (single IP address)
- Choice of SNMP, MQTT, SIM, LAN, or Wi-Fi outputs
- Instantaneous alerting and alarming against user defined thresholds for any monitored parameter.

Visualisation & Reporting

MPL has developed its N-GEN management platform to provide the visualisation of highly accurate real time and historical reporting information combined with advanced alerting and alarming of any measured power, energy, or environmental parameter. Intuitive 'single click navigation through tiered views enabling the user to navigate from global estate overviews through to more granular data relating to individual sites, buildings, circuits, or payloads in a matter of seconds.

N-GEN Estate provides the visualisation of the EPMS infrastructure (site wide views of utilities, total consumptions, plant equipment, sub distribution and payloads), offering unrivalled levels of scalability, functionality, and reporting.



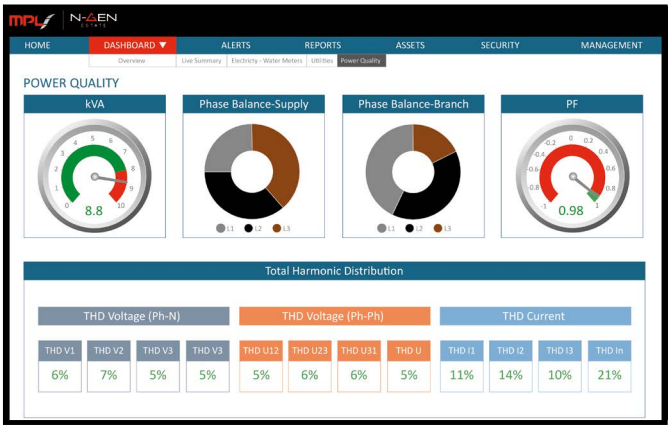
N-GEN Estate leverages time series databases for comprehensive date range driven reporting of all key parameters from building point of entry through to an individual payload, giving immediate access to date range driven graphs coupled with the ability to schedule management reports to support evolving business requirements.

Furthermore, the N-GEN platform has the ability to centralise reporting from third party platforms offering client's a single pane view of their estate, supporting SLA and legislative reporting requirements.

Intuitive dashboards have been designed to simplify the presentation of granular data, delivering 'easy on the eye' visualisation of monitoring data, alerts and PQ events.

Understanding Product Features

(Reference MPL CPD No. A032813 - Why is Power Quality so Important)



Why focus on Power Quality

Power Quality disturbances cause 30-40% of business downtime and accounts for 4% of annual turnover in the industrial sector. Imbalanced voltage and current, poor Power Factor, Harmonic distortion and other PQ events can have a significant detrimental effect on energy efficiency and its associated costs, reduce the life expectancy of electrical equipment and introduce unplanned breaks in operations.

Why use a Power Quality Analyser

Power quality analysers are used for the continuous measurement and monitoring of voltage quality according to international standards such as EN50160 and IEC61000. PQ Analysers will monitor electrical parameters like voltage, current, power factor, and total harmonic distortion. Furthermore, they will assess the quality of power in electrical systems, identifying issues such as surges, sags, short-time and long-time flicker, voltage dips, peaks, and transients.

Why focus on Residual Current Monitoring

Leakage current to earth is a natural phenomenon in every installation. IEC 60050 refers to the current that flows from a live part or conductor to earth without a fault. However, leakage current can slowly increase due to the ageing of wire insulation (i.e. excessive temperatures caused by harmonics or over currents) or through the degradation in the quality of the earth connection. Fault currents present a real threat of electrocution of personnel or electrical fire.

Continuous Residual Current Monitoring is the only method to detect dangerous fault currents at an early stage, thereby avoiding damage to the power system and the unwanted tripping of RCD's, whilst eliminating the requirement for insulation resistance testing/mains power disconnection.

Why deploy MID certified product

MID metering (applicable to electricity, water and gas meters) tends to be used in tenant sub-billing or electricity generation where there is a direct correlation between a meter reading and an invoice. MID is applicable to instruments for domestic, commercial, and light industrial use. BS EN 50470 only refers to metering and not the CT's.

ESTATE MANAGEMENT BY MPL TECHNOLOGY GROUP

We define an Estate as the collective name for all client's facilities which contribute to their overall power and energy consumption.

Our Estate Technology Energy Programme provides a fully integrated power, energy and environmental management solution, delivering a holistic view of the estate from the building point of entry through to individual payloads.

The key elements of our solution support Sustainability, Decarbonisation and Energy Efficiency programmes across single or multiple site locations.

VISUALISATION AND REPORTING VIA N-GEN ESTATE

Our N-GEN Estate platform provides the visualisation of highly accurate real time and historical reporting information combined with instantaneous alerting across the entire estate.

N-GEN Estate centralises information across the EPMS infrastructure offering site wide views of utilities, total consumptions and the granular monitoring of plant equipment, sub distribution and individual payloads. Power Quality reporting is an integral part of the reporting capabilities of N-GEN Estate.

N-GEN Estate adopts a multi-tiered approach to visualisation and reporting of an estate to facilitate and meet the needs of multiple roles within an organisation from Board Level reporting requirements through to more granular operational day-to-day management information.

N-GEN Estate provides the single pane view for clients which can be deployed as an on-premise or Cloud based solution.

MPL
Delivering Simplified Business Intelligence

CPD MEMBER The CPD Certification Service

CERTIFIED ISO 14001:2015 COMPANY

CERTIFIED ISO 9001:2015 COMPANY