Unlocking the Power of Flexibility: MLhere Gateway Configuration Manager Platform

In a rapidly changing energy landscape, the MLhere Gateway Configuration Manager (GCM) Platform stands as a beacon of innovation and adaptability, revolutionizing the management of Distributed Energy Resources (DERs) in the grid. Our platform offers a modular and scalable solution that seamlessly integrates renewable power generation and energy storage into grids that were traditionally reliant on fossil fuels. Our primary goal is to design a power system that not only maximizes the return on investment but also ensures a stable, safe, and reliable power supply.

Key Features:

Integration of Renewable Resources: Our platform seamlessly integrates a wide array of renewable resources, including Solar PV, Energy Storage, Fuel Cells, Wind turbine, and more. This integration is orchestrated in real-time to effectively manage load demand and optimize cost-effective generation. You can use our comprehensive communication protocol libraries (Modbus TCP, MQTT, DNP3 Slave/Mater) to communicate with different IDE and RTUs. You can program and modify local control logics for each device and update them over the air. You are able to add new devices with new register maps over the air. GCM allows you to import and run a carefully crafted control block diagrams on your edge controllers. It also allows you to build a master controller for a power plant. The control logic needs to be tested using tools such as PSCAD to precisely model the dynamic behavior of machines, ensuring that your simulations accurately reflect real-world conditions. Our team of experts can assist you to create such control logics.

Dynamic Configuration: MLhere Gateway Configuration Manager Platform supports dynamic configuration, ensuring adaptability to an ever-evolving grid. As Distributed Energy Resources change over time, including variations in efficiency and state of health, our platform ensures that the system remains optimized. This is achieved by carefully integrating our GCM with our iOpie's cloud-based monitoring and intelligent decision-making platfrom.

Integrated Control and Management: Our platform provides support for Multi-grid Control and Management, centralizing information from diverse generation sites and grids. This centralization enables comprehensive system monitoring, analysis, control, and operation. This is critical for the grid with constraints on transmission line and transformer ratings keeping the aggregate generation within contractual limits.

Control Levels:

Local Controller: The MLhere Gateway Configuration Manager offers a unified platform to communicate and control site devices, ensuring that each power plant operates efficiently and safely within its designated parameters.

Plant Controller: Our platform seamlessly coordinates the control of various DERs, allowing for optimized grid-wide operations. This has been possible by running a site controller that is integrated with logics coordinated by grid operators.
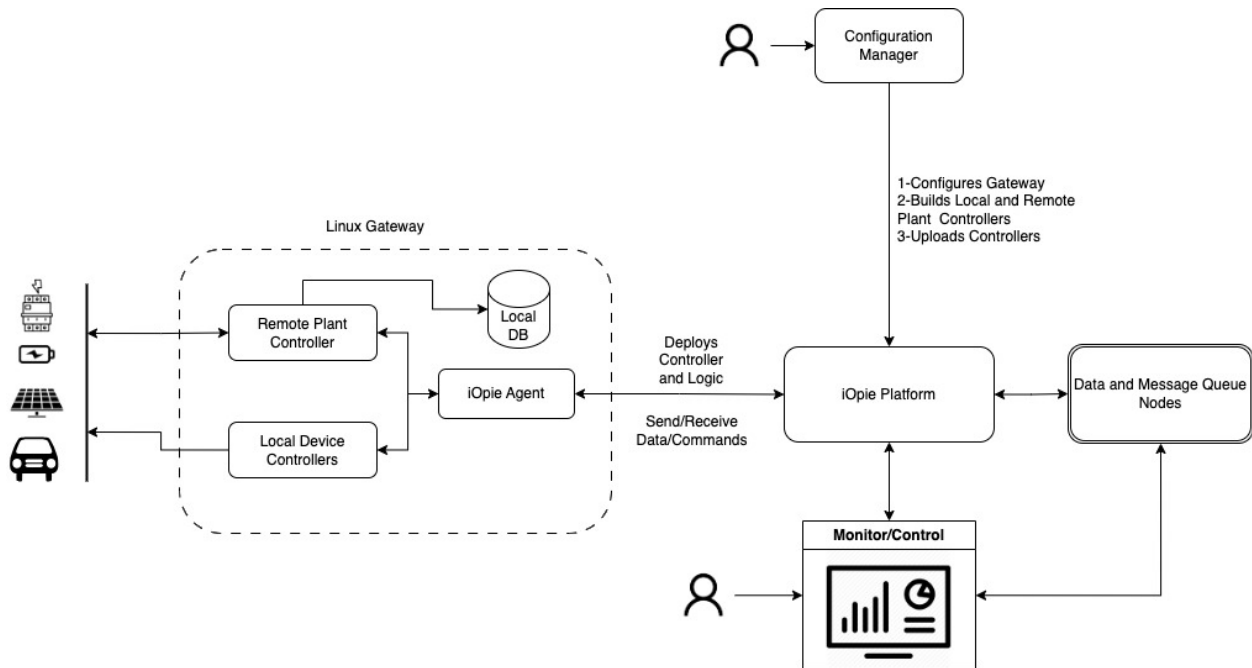
PPC Use case supported by GCM

- **Power Plant Controller (PPC)**: This controller, implemented in a basic form, monitors the overall operations of components like solar farms and battery energy storage systems. It adjusts active and reactive power references, ramp rates limits, priority choices for inverters based on measured values such as voltage, active and reactive powers, and mode of operation at the point of interconnection (POI). It enhances power stability for solar farms and the interconnected network.

- **Integrated PPC**: This component generates power based on multiple PPC in different part of the grid considering operational constraints such as transmission line and substation component's ratings.

With MLhere's GCM, you have the flexibility to fine-tune entire power plants, ensuring your grid's performance and adaptability in complex scenarios.
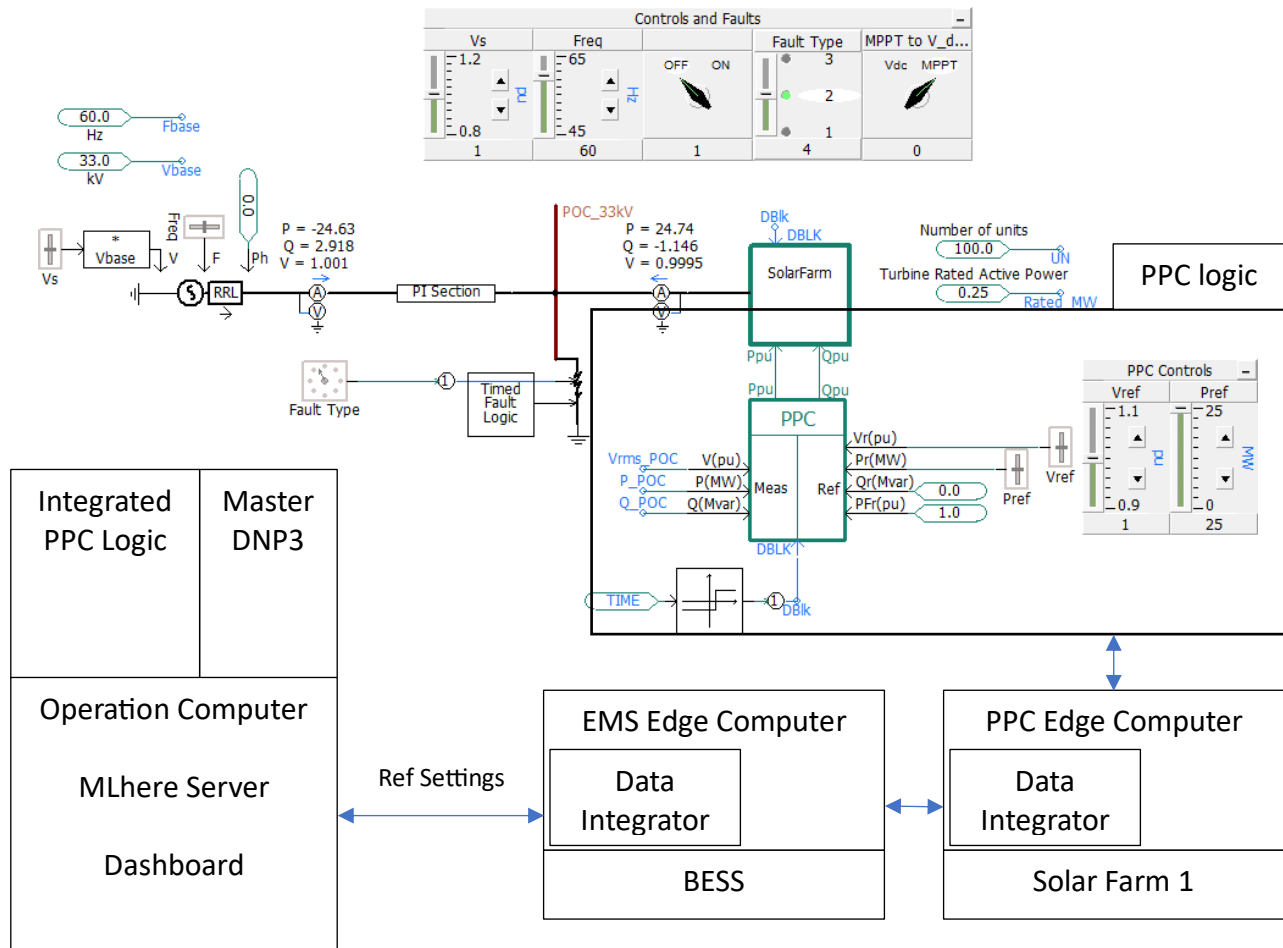
Gateway Configuration Manager platform example via PSCAD