



# Petrol Station

Easy Reference Architecture Guide

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### Objective

The purpose of this document is to provide architectural guidance for the design and implementation of electrical distribution system for petrol station with focus on fit-for-purpose solution using Schneider Electric's cost-optimized range of products.

### Target Audience

This reference architecture guide is intended for Contractors and Panel Builders who are responsible for Petrol Station projects.

### Typical Characteristics of Petrol Station

#### Plant configuration

- 3 Dispensing lines with a shop area of 150 m<sup>2</sup>

#### Network configuration

- RMU
- MV/LV transformer of 250 kVA
- Main LV switchgear

#### Alternative power supplies

- A genset is proposed as back-up power source
- UPS to proposed to maintain critical loads supply

### Optimized Performance by Fit-for-Purpose Design

#### Electrical Network

The petrol station's electrical distribution system is designed to receive electrical power through local distribution utility. This architecture is a radial configuration with one transformer (250 kVA) feeding various loads within the petrol station premises. Emergency diesel generator (250 kVA) is provided as an alternative option to power the entire facility during loss of utility power for extended periods. For services where no power interruption is permitted, such as CCTV, voice alarm, IT and billing equipment, and critical lighting, usage of UPS is recommended.

#### Digitalization

With the Agile approach of 'just enough design', the selection of cost-conscious digital metering (EasyLogic PM2000 series for incomers and PM1000H series for major loads) together with simple, bundled power monitoring system (EcoStruxure Power Monitoring Expert – Express Edition) to form the foundation of an energy management infrastructure that is scalable, expandable and future-ready. Additionally, with the concept of easy to deploy, easy to use and easy to maintain, this basic but powerful energy and power monitoring system: drives energy usage awareness by turning metering data into actionable information; presents energy usage and consumption through easy-to-interpret graphical dashboards and reports that help kick off the sustainability journey; and identify areas of abnormal power consumption and highlight possible areas of improvement in order to reach energy efficiency and conservation goals. Optionally, it is cloud-ready for EcoStruxure Facility Expert SaaS.

## Electrical Distribution and Digital Architectures and System

### Edge Control Software

EcoStruxure  
Power Monitoring Expert  
Express Edition



### Cloud-based Software and App

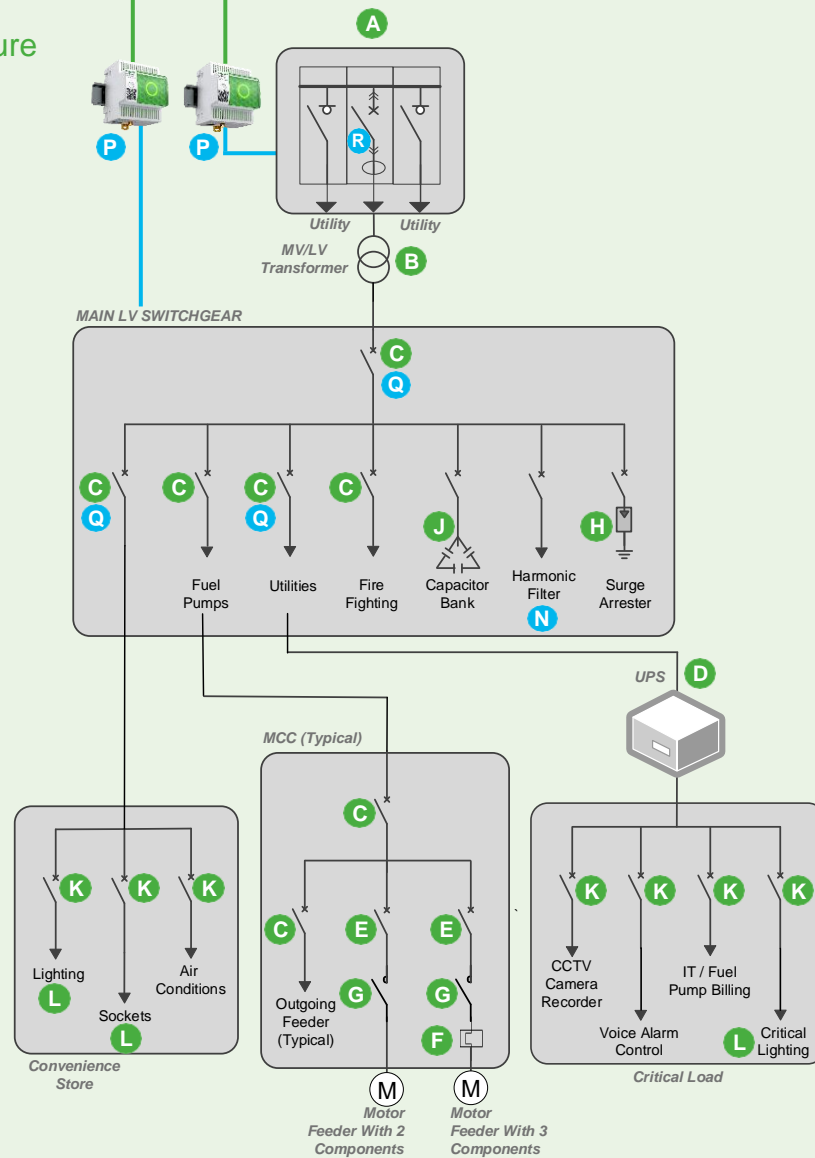
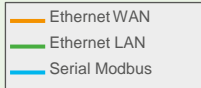
EcoStruxure  
Facility Expert



### Electrical and Digital Architecture

Petrol Station description

3 Dispensing lines w/shop



MV Switchgear



Minera MV/LV  
Transformer



EasyPact CVS  
MCCB



Easy UPS  
1 Ph & 3 Ph



Easy TeSys  
Power



Easy TeSys  
Protect



Easy TeSys  
Control

● Equipment

● Connected devices



Surge  
Arrester



EasyLogic PFC  
Capacitor



Easy 9



Wiring  
Devices



EasyLogic  
APF



Panel Server  
Gateway



EasyLogic  
Power Meter



PowerLogic P1

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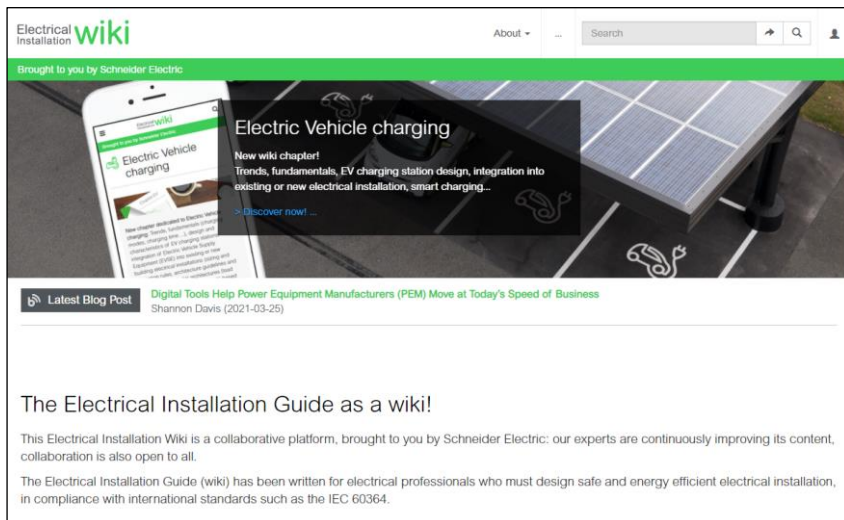
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## Schneider Electric Offers

Products		
Panel Type	Description	More Information
MV Switchgear	Medium Voltage Switchgear	<a href="#">Link</a>
MV/LV Transformer	Description	More Information
Minera	Oil-Immersed transformer, ground mounted, up to 3.15 MVA – 36 kV	<a href="#">Link</a>
Circuit Breakers	Description	More Information
EasyPact MVS	Air Circuit Breaker 630 A to 4000 A	<a href="#">Link</a>
EasyPact CVS	Molded Case Circuit Breaker 16 A to 630 A	<a href="#">Link</a>
EasyPact EXE	Vacuum Circuit Breaker up to 17.5 kV	<a href="#">Link</a>
Easy TeSys Power	Thermal-magnetic motor circuit breaker up to 15 kW	<a href="#">Link</a>
UPS	Description	More Information
Easy UPS Single Phase	Uninterruptible Power Supply 1 Ph	<a href="#">Link</a>
Easy UPS Three Phase (3S)	Uninterruptible Power Supply 3 Ph, 10-40 kVA	<a href="#">Link</a>
Easy UPS Three Phase Modular	Uninterruptible Power Supply 3 Ph - Modular, 50-250 kW	<a href="#">Link</a>
Overload Relay	Description	More Information
Easy TeSys Protect	Thermal overload relays from 0.1 to 630 A	<a href="#">Link</a>
Contactors	Description	More Information
Easy TeSys Control	Contactors up to 630 A for AC3 and 1000 A for AC1 applications	<a href="#">Link</a>
PFC / Capacitors	Description	More Information
EasyLogic PFC Capacitor Banks	Smart low voltage capacitor banks	<a href="#">Link</a>
EasyLogic PFC Capacitor	LV Capacitors for power factor correction	<a href="#">Link</a>
Final Distribution	Description	More Information
Easy9	MCB, RCD, Switches and Surge Protection Devices	<a href="#">Link</a>
Wiring Devices	Light Switches and Electrical Sockets	<a href="#">Link</a>
Surge Arrester	Description	More Information
Acti9 iPRD	Modular Surge Arrester Type 2 or 3, from 8 kA to 65 kA	<a href="#">Link</a>
Harmonic Filter	Description	More Information
EasyLogic APF	Active Harmonic Filtering for commercial buildings, light industry etc.	<a href="#">Link</a>
Power Meters & Gateways	Description	More Information
EasyLogic PM1000H	Digital Panel Meter, both LCD and LED displays available	<a href="#">Link</a>
EasyLogic PM2000	Digital Panel Meter, both LCD and LED displays available	<a href="#">Link</a>
EcoStruxure Panel Server	Serial to Ethernet, Cloud Connectivity, Data logger, Energy Server	<a href="#">Link</a>
Protection Relay	Description	More Information
PowerLogic P1	Overcurrent, Earth Faults and Voltage Protection Relays	<a href="#">Link</a>
Edge-Control and Cloud-based Software		
Software Systems	Description	More Information
EcoStruxure Power Monitoring Expert Express Edition	PME Express Edition is an on-premise solution for basic power monitoring and energy management that can be commissioned in hours. It is built to introduce an entry level of EcoStruxure Power to transactional channels and allows future expansion opportunities to take advantage of the full range of EcoStruxure Power applications and benefits.	<a href="#">Link</a>
EcoStruxure Facility Expert	Facility Expert Energy is a web-application to monitor and analyze energy. The main energy features include energy consumption and costs monitoring (main, usage, zone, meter), alerts on energy consumption over target, multi-site comparison capability, energy site performance versus standards, power demand and power factor monitoring and monthly score cards.	<a href="#">Link</a>

## Useful Tools and Documentation

As part of the full engineering package, accompanying this reference architecture guide are single line diagram (SLD) in both CAD and PDF formats and EcoStruxure Power Design project file in EAC format.



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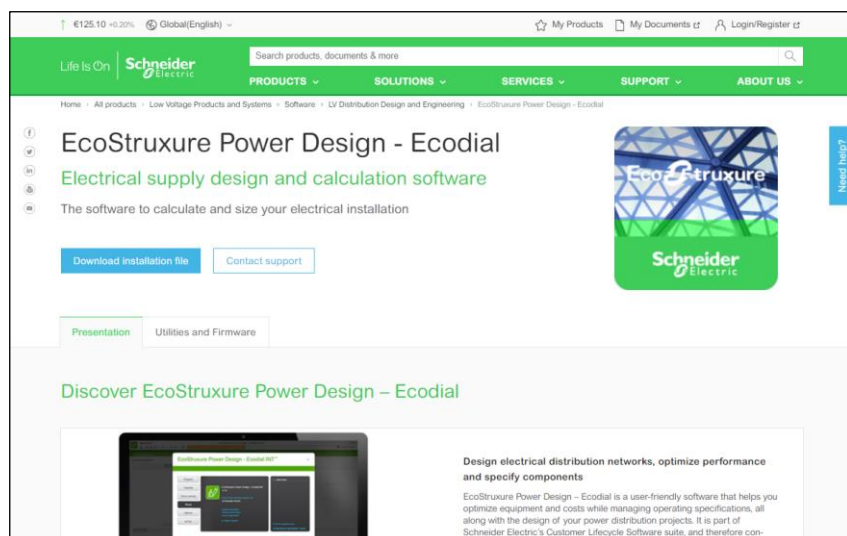
**Latest Blog Post** [Digital Tools Help Power Equipment Manufacturers \(PEM\) Move at Today's Speed of Business](#)  
Shannon Davis (2021-03-25)

### The Electrical Installation Guide as a wiki!

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The Electrical Installation Guide (wiki) has been written for electrical professionals who must design safe and energy efficient electrical installation, in compliance with international standards such as the IEC 60364.

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