



Irrigation System

Easy Reference Architecture Guide

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Schneider
Electric

Objective

The purpose of this document is to provide architectural guidance for the design and implementation of electrical distribution system for irrigation system 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 Irrigation System projects.

Typical Characteristics of Irrigation System

Building configuration

- Supply water to around 60 km² of land
- 300,000 m³ of water to be diverted per day
- 4.5 to 6.0 m³/s water diversion capacity

Network configuration

- RMU 24 kV
- MV/LV transformer of 650 kVA
- Main LV switchboard

Optimized Performance by Fit-for-Purpose Design

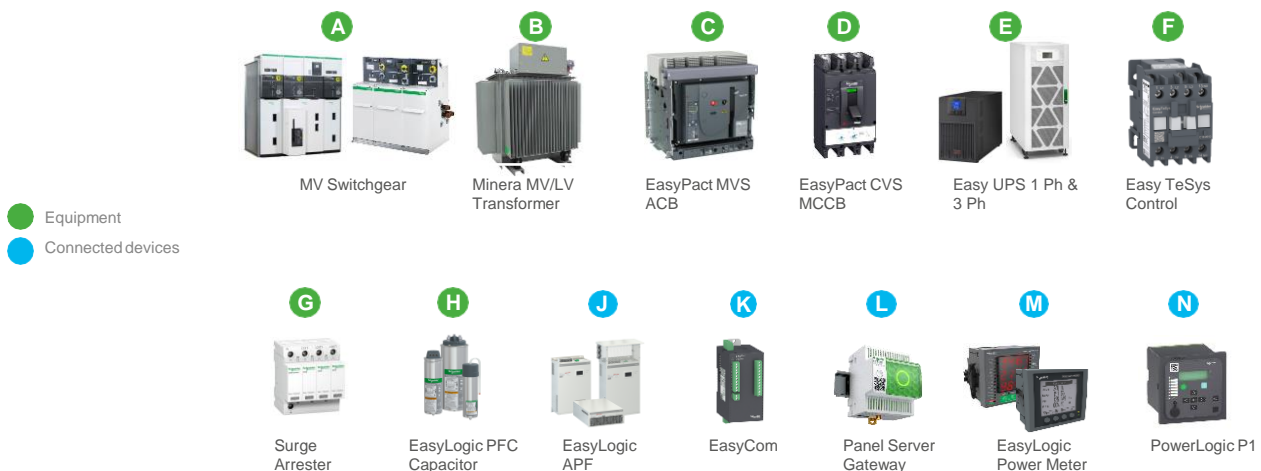
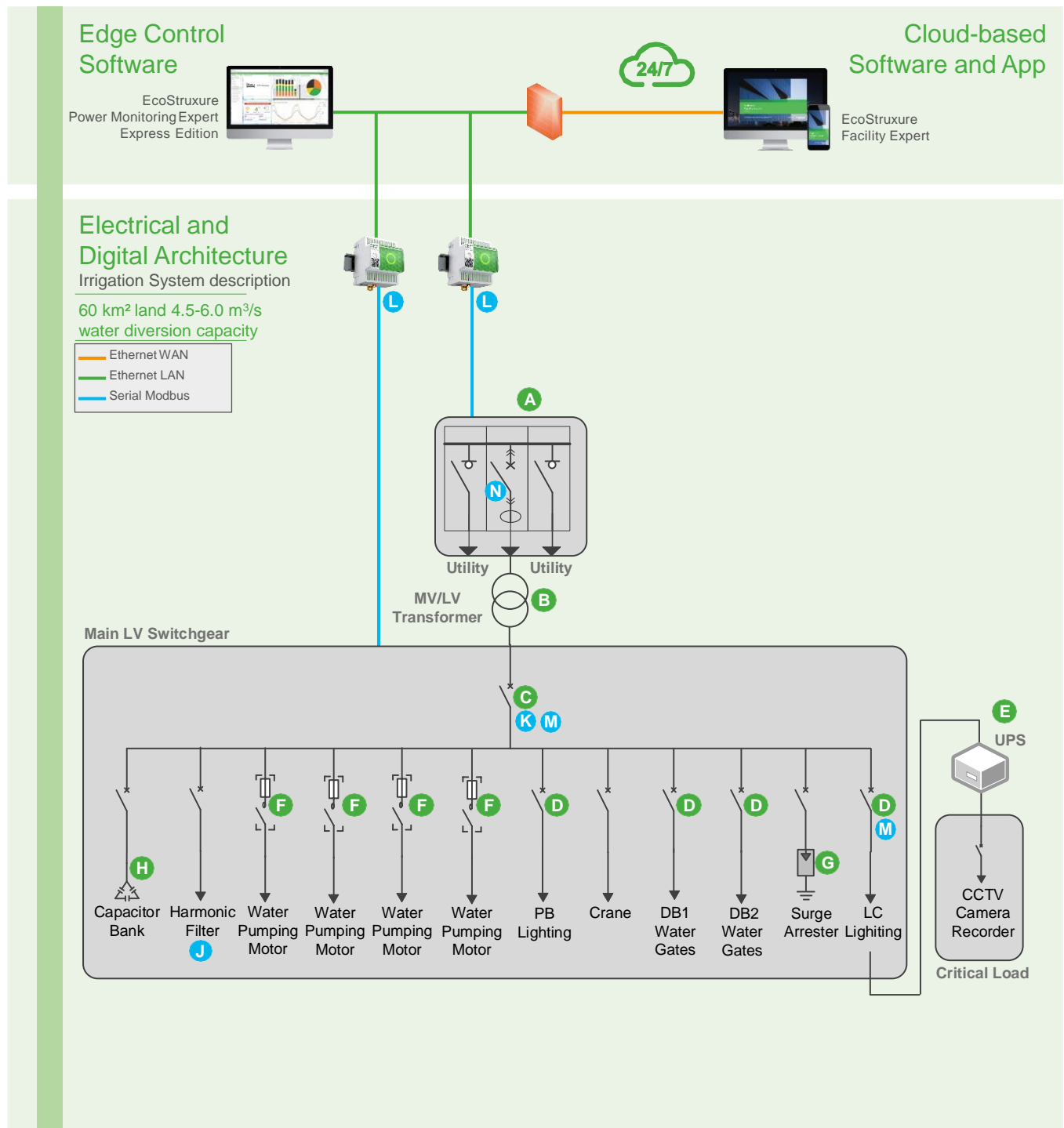
Electrical Network

With the 'fit-for-purpose' design intentions in mind, this cost-effective power system also complies with international standards. The electrical demands of water-supply pumping station for irrigation system are supplied through public utility and received through an RMU and transformer. In this proposed architecture, the power distribution is realized in various levels; the main switchboard feeds irrigation service loads such as water pumps and sub-distribution boards for flood gates and facility lighting. For services where no power interruption is permitted, such as CCTV, usage of UPS is recommended. For higher availability, these systems are generally designed with a redundant main water pump. For more optimized, motor-starting solution, star-delta starting method and Fuse plus Contactor solution with Type-1 Coordination are chosen.

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

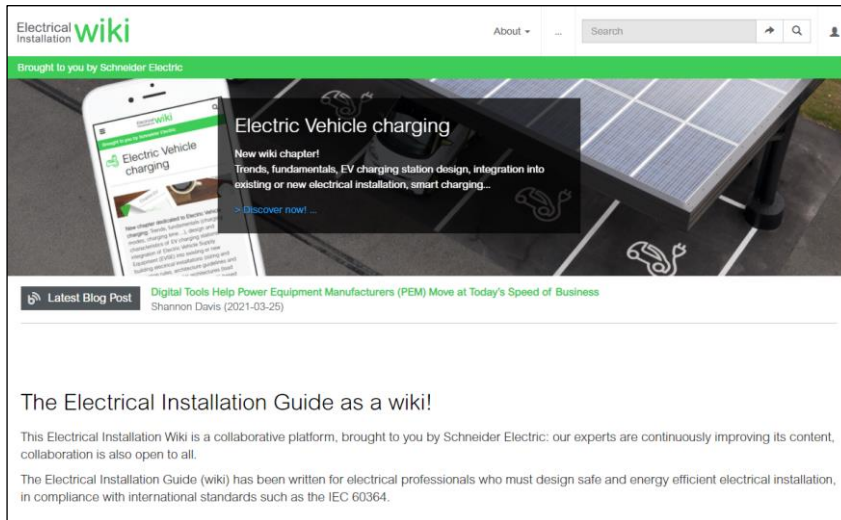


Schneider Electric Offers

Products		
Panel Type	Description	More Information
MV Switchgear	Medium Voltage Switchgear	Link
MV/LV Transformer	Description	More Information
Minera	Oil-Immersed transformer, ground mounted, up to 3.15 MVA – 36 kV	Link
Circuit Breakers	Description	More Information
EasyPact MVS	Air Circuit Breaker 630 A to 4000 A	Link
EasyPact CVS	Molded Case Circuit Breaker 16 A to 630 A	Link
UPS	Description	More Information
Easy UPS Single Phase	Uninterruptible Power Supply 1 Ph	Link
Easy UPS Three Phase (3S)	Uninterruptible Power Supply 3 Ph, 10-40 kVA	Link
Easy UPS Three Phase Modular	Uninterruptible Power Supply 3 Ph - Modular, 50-250 kW	Link
Contactors	Description	More Information
Easy TeSys Control	Contactors up to 630 A for AC3 and 1000 A for AC1 applications	Link
PFC / Capacitors	Description	More Information
EasyLogic PFC Capacitor Banks	Smart low voltage capacitor banks	Link
EasyLogic PFC Capacitor	LV Capacitors for power factor correction	Link
Surge Arrester	Description	More Information
Acti9 iPRD	Modular Surge Arrester Type 2 or 3, from 8 kA to 65 kA	Link
Harmonic Filter	Description	More Information
EasyLogic APF	Active Harmonic Filtering for commercial buildings, light industry etc.	Link
Communication Module	Description	More Information
EasyCom	Communication module for EasyPact MVS	Link
Power Meters & Gateways	Description	More Information
EasyLogic PM1000H	Digital Panel Meter, both LCD and LED displays available	Link
EasyLogic PM2000	Digital Panel Meter, both LCD and LED displays available	Link
EcoStruxure Panel Server	Serial to Ethernet, Cloud Connectivity, Data logger, Energy Server	Link
Protection Relay	Description	More Information
PowerLogic P1	Overcurrent, Earth Faults and Voltage Protection Relays	Link
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.	Link
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.	Link

Useful Tools and Documentation

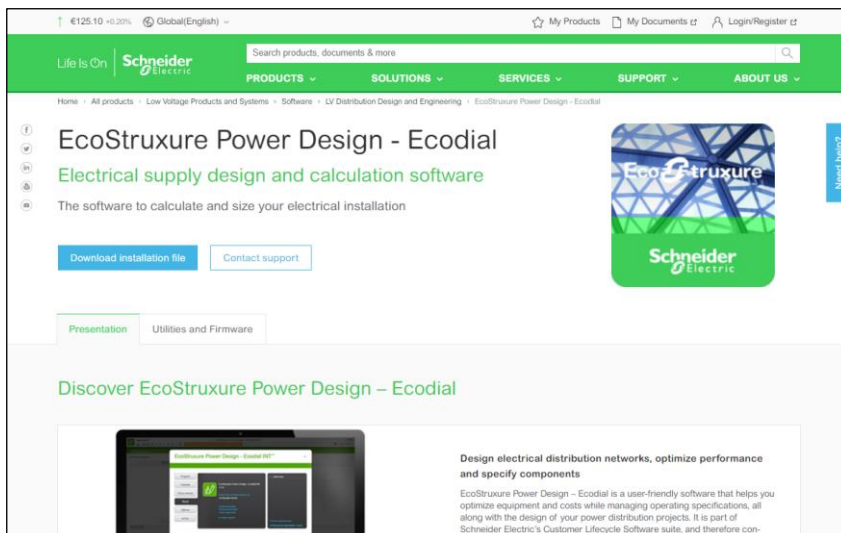
As part of the full engineering package, accompanying this reference architecture guide are single line diagram (SLD) in both CAD and PDF formats and EcoStruxure Power Design project file in EAC format.



Electrical Installation

Guide

[Electrical Installation Guide](#)



EcoStruxure Power Design

Ecodial

Electrical supply design and calculation software

The software to calculate and size your electrical installation

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Presentation Utilities and Firmware

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Design electrical distribution networks, optimize performance and specify components

EcoStruxure Power Design - Ecodial is a user-friendly software that helps you optimize equipment and costs while managing operating specifications, all along with the design of your power distribution projects. It is part of Schneider Electric's Customer Lifecycle Software suite, and therefore con...

[EcoStruxure Power Design](#)

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