SAE MALAYSIA
200501006853 (683900-A)

ISO 9001:2015
Quality Management System
Certificate FS808004

SAE PPC POWER PLANT CONTROLLER

Control at the core. Build around it.

A modular control solution for solar PV, storage and hybrid plants.



PPC + SCADA + DIS + METERING
WEB GSO + BESS + OT SECURITY

SAE Malaysia Sdn Bhd
Malaysian engineering. Integrated plant control.

One controller.
A coordinated power plant.

SAE PPC translates plant and utility requirements into coordinated control at the agreed point of interconnection.

PPC is the core

SAE Malaysia combines its plant-control application with SAE-IT technology, engineering and local support. Select the surrounding modules to suit your plant, existing systems and delivery scope.

01 CONTROL POWER

Active-power dispatch, curtailment, ramping and fast deload functions.

02 SUPPORT THE GRID

Reactive-power, power-factor, voltage and frequency-response functions.

03 CONNECT THE PLANT

Coordinate agreed inverter, meter, RTU, SCADA and BESS interfaces.

04 ENGINEER THE DELIVERY

Configure, integrate, test and commission the agreed control philosophy.

For new plants and retrofits. Function settings, OEM response, licensing and grid acceptance are confirmed for each project.

Start with PPC.
Add what your plant needs.

Choose individual modules or an integrated package. Each module has a defined interface, scope and acceptance plan.

A SCADA & OPERATIONS

Local HMI, alarms, events, trends, historian and engineering workstation.

B DIS / UTILITY INTERFACE

Plant data and control integration with SPPIF / TNBIF RTU and agreed utility links.

C METERING & TIME

PQM / DPM / revenue-meter interfaces, SAE SMG and GPS/NTP time.

D WEB GSO & FORECAST

Weather / MMF data, forecast integration and utility web-service exchange.

E BESS & PLANT SUPPORT

BESS, capacitor-bank and AVR integration where included in the design.

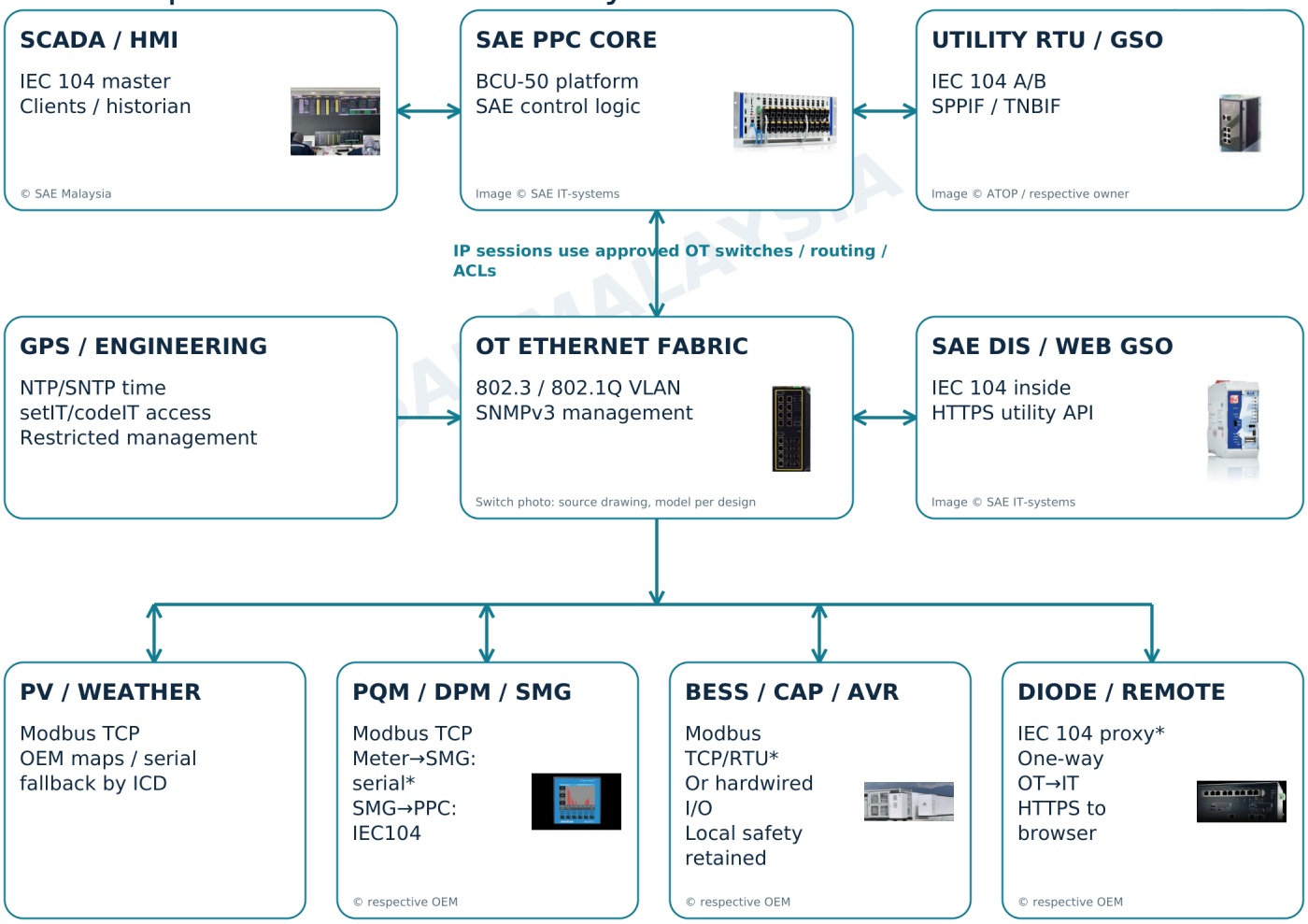
F OT CYBERSECURITY

Network design, security review, segmentation and controlled access.

PPC integration does not automatically include supply of every connected device. Final selections follow the agreed scope of supply and interface matrix.

Real products.
Defined protocol paths.

SAE PPC and DIS product images connect the control architecture with the protocol used at each system interface.



SAE MALAYSIA · IP WATERMARK

Reference / proposed connections, not an as-built or final ICD. * Confirm OEM interface / proxy; not all devices support every option. Third-party product images remain IP of their owners.

PROTOCOLS WITH A DEFINED ROLE

IEC 104 utility / SCADA links · Modbus field interfaces · NTP/SNTP time · HTTPS web services. The A3 architecture includes the full 22-interface schedule.

Proposed logical scheme: final OEM interfaces, redundancy method, data-diode proxy and network rules require an approved ICD. Product images remain IP of their respective owners.

From dispatch command to plant response.

Control modes and limits are configured around the approved operating philosophy and the capabilities of connected equipment.

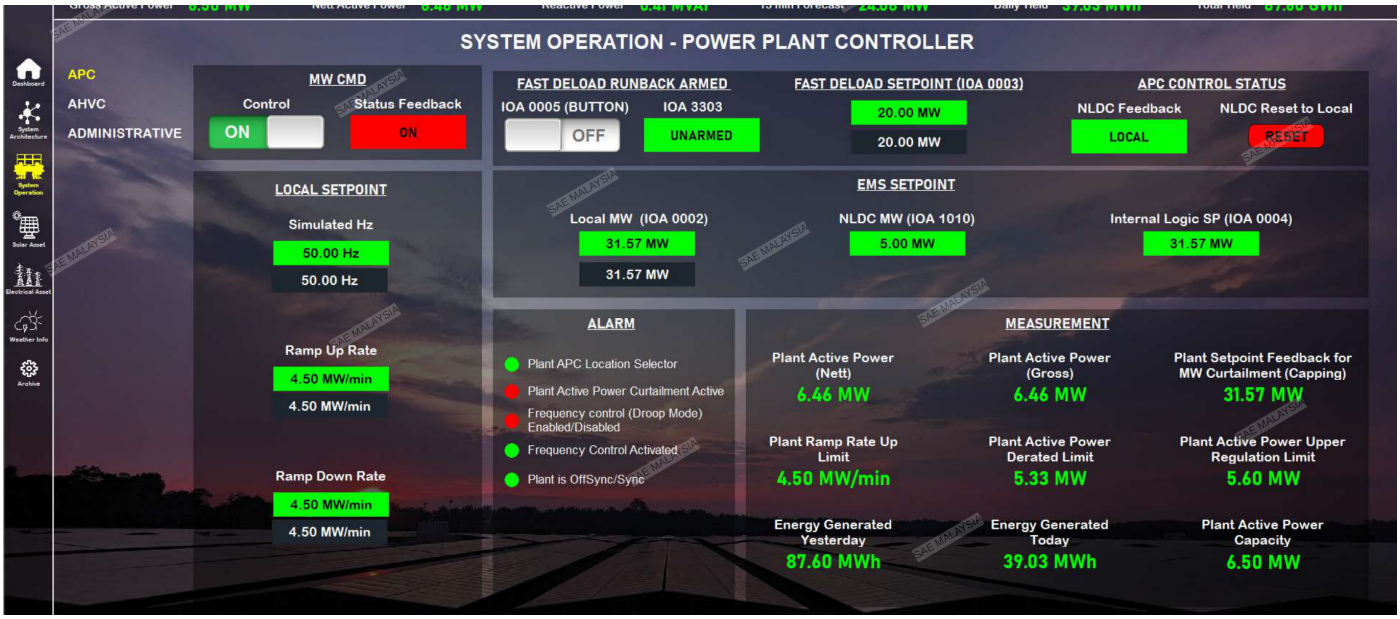
FUNCTION	WHAT IT ENABLES
Active-power control	Track the agreed plant MW setpoint.
Automatic power curtailment	Limit output against the approved cap.
Ramping facility	Apply configured rise / fall rates.
Fast deload	Reduce output on the defined trigger.
Frequency control	Apply the configured MW response.
Reactive-power control	Coordinate the requested MVAr output.
Power-factor control	Regulate the agreed power-factor target.
Voltage regulation / AHVC	Coordinate voltage-control actions.
Remote dispatch & mode control	Manage local / utility command authority.

Response times, droop, deadbands, setpoint priority and equipment limits are agreed and tested. Grid compliance testing by others unless specifically contracted.

See the plant.
Understand the response.

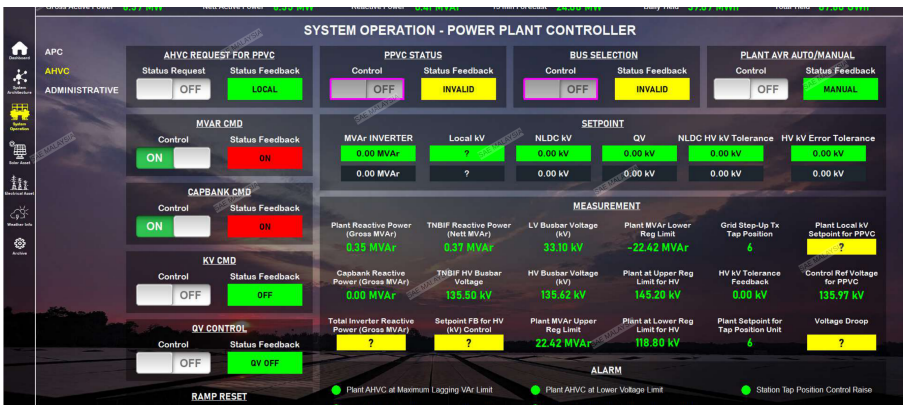
Clear operating views connect PPC modes and setpoints with plant measurements, equipment status and event history.

AUTOMATIC POWER CONTROL



SETPOINTS • RAMPING • FAST DELOAD • CONTROL AUTHORITY

VOLTAGE / REACTIVE CONTROL



Voltage and reactive-power commands, feedback and control-state views.

Representative SAE application views extracted from the supplied architecture. Final graphics, functions and available data follow the approved design.

Protect the control path. Support plant continuity.

SAE Malaysia’s OT cybersecurity team can design and review the network around PPC, SCADA and utility interfaces.

DESIGN & SEGMENT

- Asset and interface review
- OT zones, VLANs and traffic flows
- Firewall rules and service restrictions



CONTROL ACCESS

- Role-based operator access
- Approved remote maintenance path
- VPN or data diode where specified

VERIFY & HAND OVER

- Configuration and security review
- Findings, actions and test records
- As-built network and access matrix

Design references include applicable IEC 62351, ISA/IEC 62443, NIST, NERC CIP and IEEE guidance cited by TNB’s public cybersecurity statement. This is not a product certification claim.

Engineering you can see. Delivery beyond the drawing.

SAE combines controller engineering, field integration and OT cybersecurity experience in utility operating environments.



PPC HARDWARE & FIELD INTEGRATION

Cabinet integration and solar-inverter field work from SAE's supplied project portfolio.



SOLAR INVERTER INTEGRATION

Photo: solar-inverter field activity. OT assessment reference EXPC_2608_021: PPU Tasek Tambahan, Ampang and Pulau Tioman.

Images enhanced for presentation; originals retained. The OT field-work photo on page 7 is general SAE activity; its precise site is not independently established.

A controller in the plant. A model in the study.

PSS®E v33 / v34

SAE-declared compatibility for the required project build. The available plant validation report identifies SAEHPPC_V34.

SITE & MODEL COMPARISON

Use recorded site responses to assess frequency, reactive-power, QV, voltage-control and fault-ride-through behaviour.

DOCUMENTED TEST CLOSURE

A GSO letter dated 27 February 2026 confirms closure of the referenced outstanding test items, except Simulation Model Validation.

PROJECT-SPECIFIC ACCEPTANCE

Final compliance follows the approved plant configuration, OEM models, settings, test results and closure of remaining validation requirements.

Engineered for applicable TNB GSO control requirements. The supplied records do not establish unconditional approval across all plants or all model versions. Confidential letters and model details are not reproduced.

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Build your PPC package. Let SAE connect the pieces.

Define the plant. Select the modules.

Share plant MWac/MWdc, SLD, POI voltage, inverter models, grid-control requirements, protocols, cybersecurity and redundancy needs. We will define the control philosophy, interface matrix and delivery scope.

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Grow Together

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Hardware, software and module scope are confirmed in the final design.