PcVue

LET'S ENGINEER

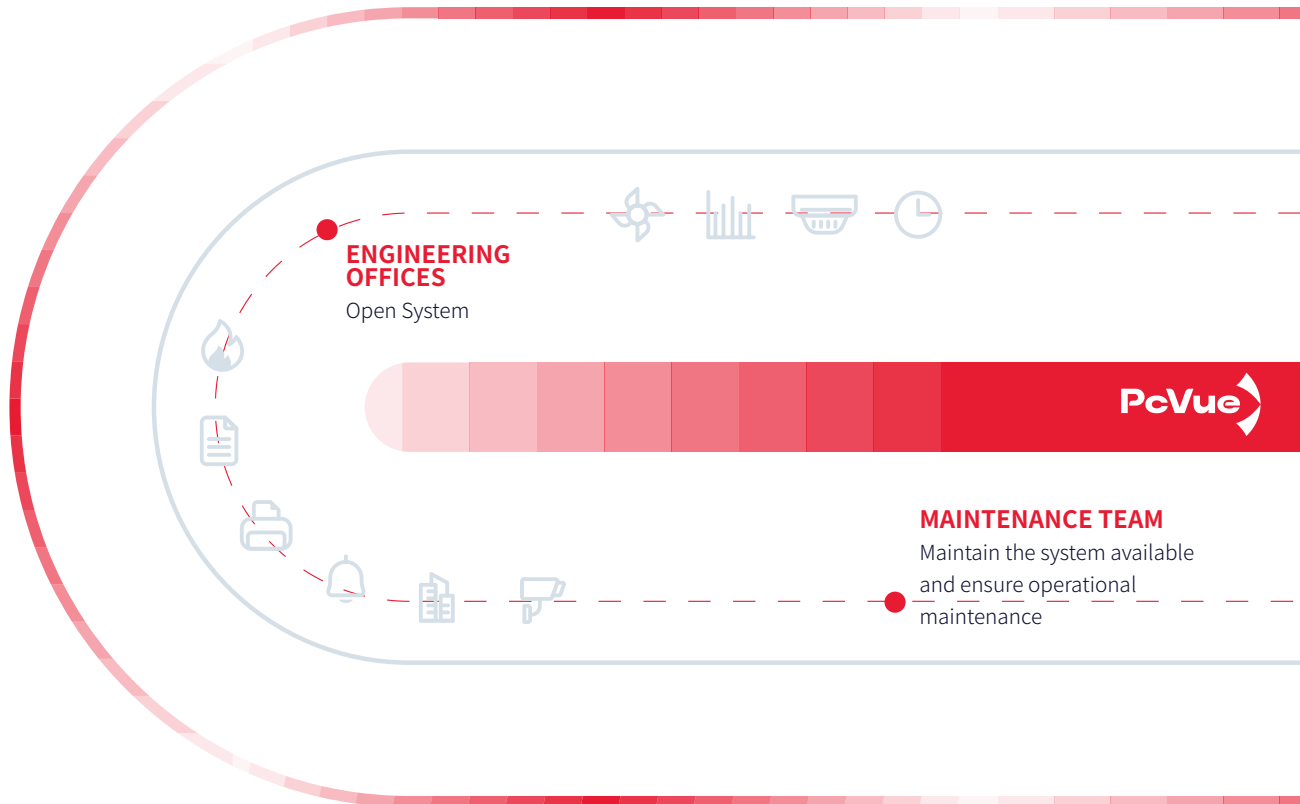**Open connectivity SCADA software platform**

SOLUTIONS FOR SOLAR PV PLANTS

Asset management, Operations and Maintenance

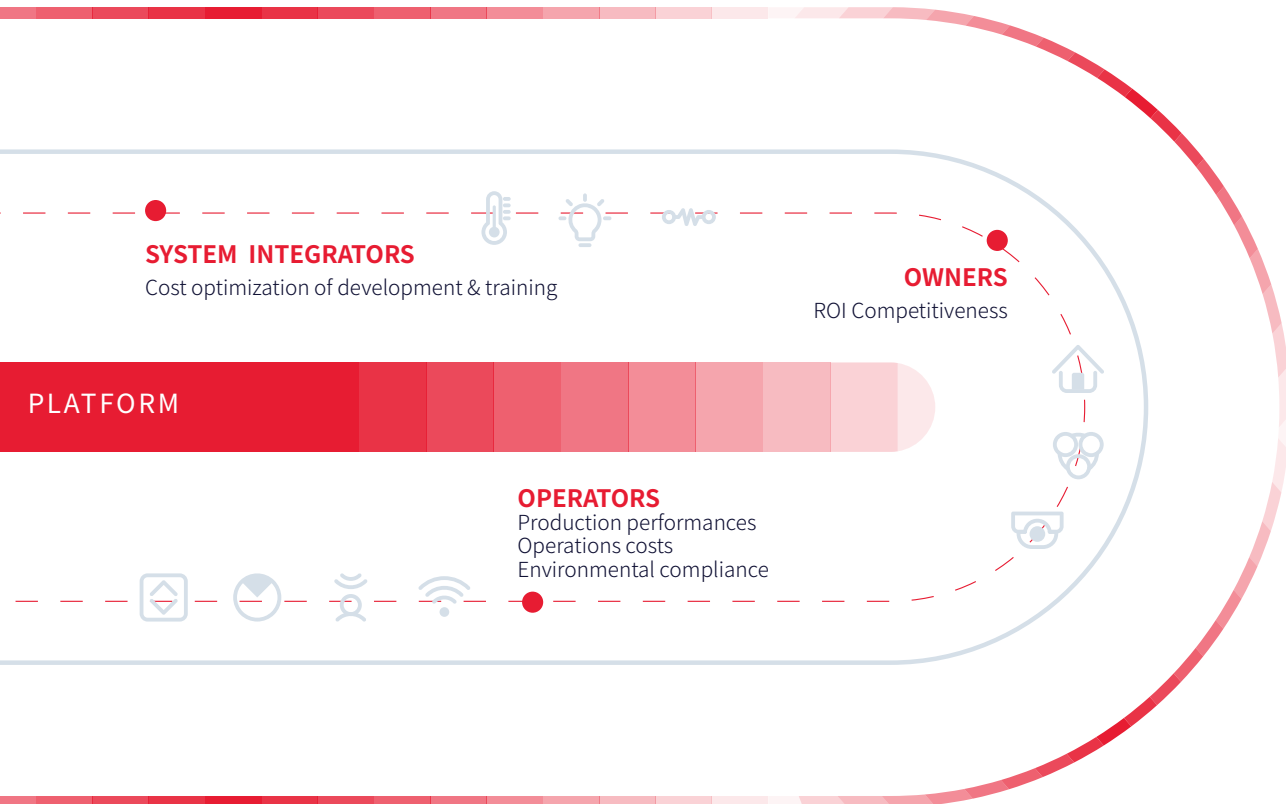![PcVue]

FEATURES

- A single platform from stand-alone station to high availability distributed systems

- A high-end graphic interface

- Mobile remote assistance solution

- Real-time events and alarms management

- KPI, Dashboard, production reporting tools

- SOLAR objects built-in library

- 150+ built-in drivers such as DNP3, IEC61850, IEC60870, Modbus IP, OPC, ICCP, Webservices, MQTT,…

ENGINEERING OFFICES
Open System

PcVue

MAINTENANCE TEAM
Maintain the system available and ensure operational maintenance

BENEFITS

- A unique centralized platform for monitoring widespread solar production sites

- Interoperability with multiple connected players, their devices and their systems

- Energy consumption and loss monitoring optimizing ROI

- Improving maintenance and reducing costs of operations

- Save time and cost with a flexible and scalable open platform that adapts to system changes

- Platform designed to reduce integration time and the risks of errors

A software platform dedicated to monitor and control PV plants which is efficient for optimizing performances and costs.

SYSTEM INTEGRATORS
Cost optimization of development & training

OWNERS
ROI Competitiveness

PLATFORM

OPERATORS
Production performances
Operations costs
Environmental compliance

PcVue platform for SOLAR PV is easy to implement yet scalable featuring real-time monitoring system, built-in drivers to connect any devices, a predefined library for SOLAR PV and full reporting capabilities to meet the SOLAR PV plant needs.

PCVUE FOR SOLAR PV UNIFIES SOLAR PLANTS

PcVue for SOLAR PV is a full software platform for monitoring & controlling any kind of SOLAR plants. With an intuitive interface, an event and alarming management system, reporting capabilities and remote intelligent assistance solutions it fits the needs for operations and maintenance and help to optimize energy monitoring and ROI.

PcVue for SOLAR PV can be deployed at several levels, from stand-alone station to high availability distributed systems allowing a full hypervision of sites geographically spread on large areas.

The platform connects various manufacturers devices and systems with a large connectivity allowing to supervise heterogeneous assets.

PcVue for SOLAR PV is easy to implement and intuitive to use, designed to reduce integration time and the risks of errors. It's also scalable adapting seamlessly to changes over the time, if new sites must be monitoring for example.

As large-scale photovoltaic (PV) solar projects become an integral part of utility portfolios across the country, managing these assets for optimum performance - physical and financial - has become a high priority for a range of stake-holders. Specifically the industry requires more overlap of asset management (AM) and operations and maintenance (O&M) capabilities.
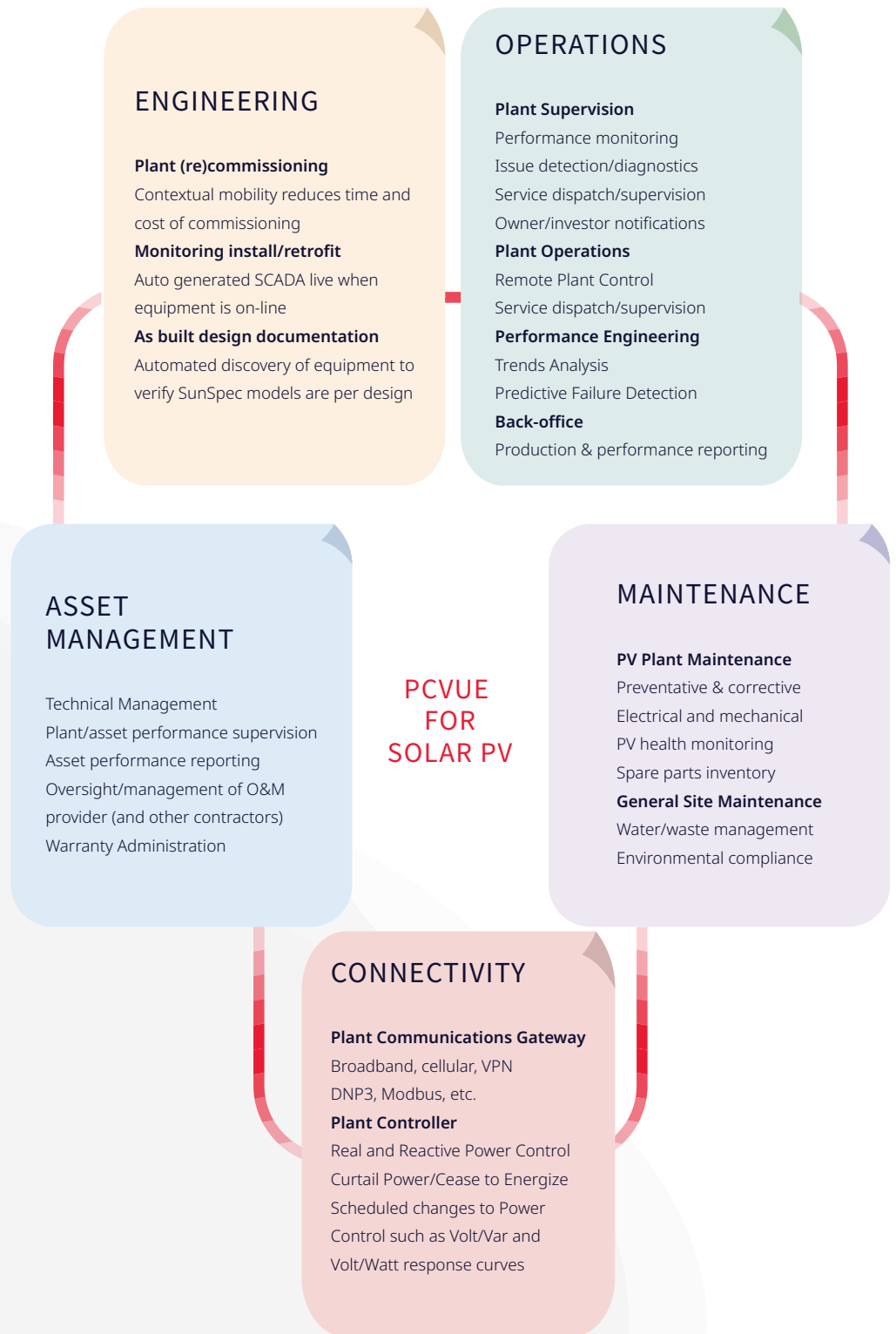
Solar Electric Power Association

SOLAR PV READY

A platform covering all the needs for SOLAR PV generation

ENGINEERING

Plant (re)commissioning
Contextual mobility reduces time and cost of commissioning
Monitoring install/retrofit
Auto generated SCADA live when equipment is on-line
As built design documentation
Automated discovery of equipment to verify SunSpec models are per design

OPERATIONS

Plant Supervision
Performance monitoring
Issue detection/diagnostics
Service dispatch/supervision
Owner/investor notifications
Plant Operations
Remote Plant Control
Service dispatch/supervision
Performance Engineering
Trends Analysis
Predictive Failure Detection
Back-office
Production & performance reporting

ASSET MANAGEMENT

Technical Management
Plant/asset performance supervision
Asset performance reporting
Oversight/management of O&M provider (and other contractors)
Warranty Administration

PCVUE FOR SOLAR PV

MAINTENANCE

PV Plant Maintenance
Preventative & corrective
Electrical and mechanical
PV health monitoring
Spare parts inventory
General Site Maintenance
Water/waste management
Environmental compliance

CONNECTIVITY

Plant Communications Gateway
Broadband, cellular, VPN
DNP3, Modbus, etc.
Plant Controller
Real and Reactive Power Control
Curtail Power/Cease to Energize
Scheduled changes to Power Control such as Volt/Var and Volt/Watt response curves

A UNIQUE CENTRALIZED PLATFORM FOR MONITORING WIDESPREAD SOLAR PV PLANTS

Connect and monitor & control
any kind of SOLAR PV systems

**IEC 101** PcVue

SMART GRID READY PcVue

IEC 104 PcVue

CONNECTIVITY

☑ Interoperability with multiple connected players, their devices and their systems

☑ A single platform from stand-alone station to high availability distributed systems

☑ Extended range of built-in drivers and standards including IECs, OPC, webservices, SQL bridge, …

REAL-TIME MONITORING & CONTROL

☑ Display remote assets status in real-time

☑ Interactive geo map

☑ Control devices

☑ Defaults location
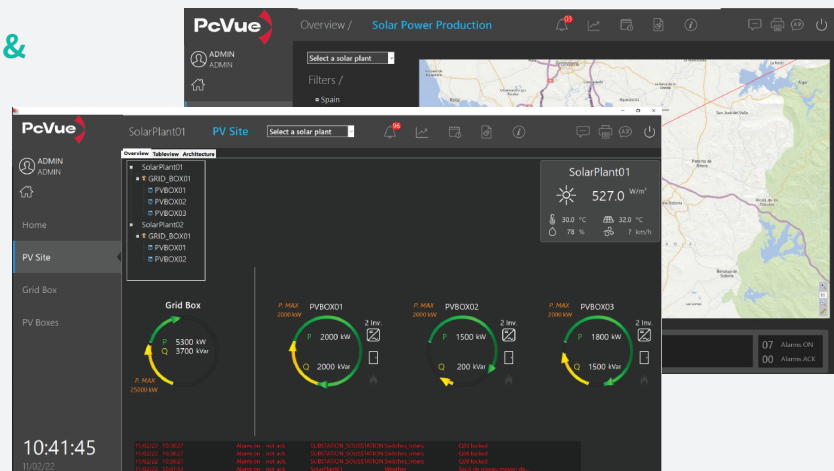
REMOTE ASSIST SOLUTION

Help remote workers to connect
with the SOLAR PV system

- ⊘ Location & role based mobile app providing relevant information
- ⊘ Intuitive app reducing training cost
- ⊘ Smart bot companion for field operator guidance on maintenance procedures
- ⊘ Built-in messaging system for operators and control centers to communicate and exchanges in real-time
- ⊘ Events & alarms notifications
- ⊘ Web based monitoring & control
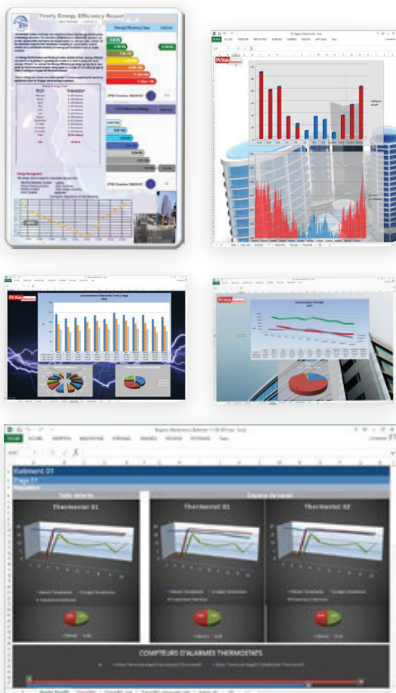
ENERGY CONSUMPTIONS AND LOSS MONITORING, ROI OPTIMIZATION

Control of performances, operating costs and regulatory compliance

MONITORING AND ANALYSIS OF ENERGY PERFORMANCE

- ⊘ Production reports
- ⊘ Customizable dashboard
- ⊘ KPI calculation
- ⊘ Consumption balance sheets by period
- ⊘ Archiving data in local database or in the cloud

PcVue

ENSURING PRODUCTION SITES AVAILABILITY WHILE REDUCING COSTS OF OPERATIONS

Improve preventive and operational maintenance
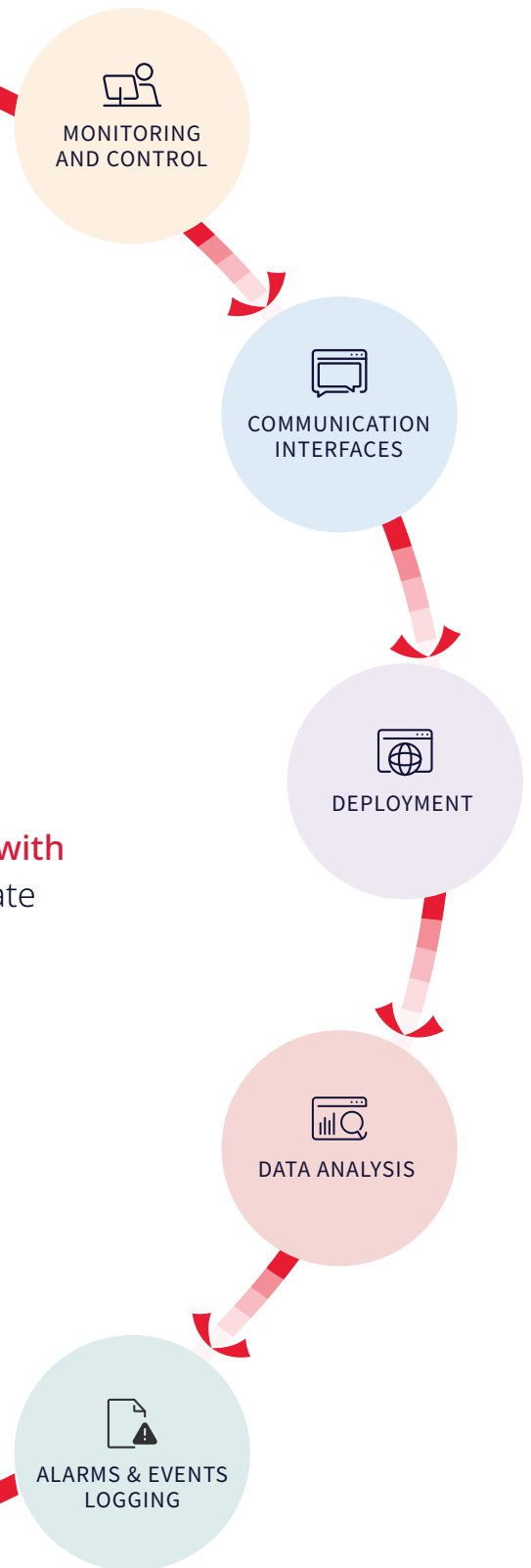

ALARMS, EVENTS LOGGING, TRENDS

- ⊘ Full featured viewers
- ⊘ Real-time alarm filtering and masking
- ⊘ Sequence of events for fault analysis
- ⊘ User system activity logging
- ⊘ Real-time and historical trends
- ⊘ Direct export from trend to Excel

A PLATFORM EASY TO IMPLEMENT, DESIGNED FOR SCALABILITY

Design.Deploy.Repeat.

Reduction of development cost and risks of errors with a low code configuration environment and a template approach that allows to reuse objects across multiple projects and a **predefined library for solar power system needs.**

Flexible and scalable deployment that adapt to changes from stand-alone station on field to high availability distributed architectures and centralized control center.

MONITORING AND CONTROL

COMMUNICATION INTERFACES

DEPLOYMENT

DATA ANALYSIS

ALARMS & EVENTS LOGGING

![PcVue]

MONITORING AND CONTROL

Monitoring
2D / 3D graphic libraries
BUSBAR Coloring
GIS MAP Control
Ready-to-use graphic animations
Load shedding & peak shaving monitoring

Control
Command Processing
Online / Offine Simulation

COMMUNICATION INTERFACES

Power System Automation Drivers
IEC 61870-5-104 Client/Server
IEC 61870-5-101 Client
IEC 61850 Client
IEC 60870-6/TASE.2 - ICCP
DNP3

Modbus IP
OPC (DA/UA)
SNMP Manager/Agent

100+ Built-in Drivers

Open Connectivity
WebServices (RESTful)
Cloud access

DEPLOYMENT

Versatile Architectures
Stand-alone
Client-Server
Distributed

Mobility
Mobile App
HTML5 WEB client
Remote access

Safety and security
Secure HTTP (HTTPS)
Integrated Windows® authentication

DATA ANALYSIS

Microsoft SQLServer Data Archives

Universal data connector : SQL bridge to connect any ADO.net providers- ERP - MES - CMMS - ...

KPI and Generic Dashboard Reporting Tool

ALARMS & EVENTS LOGGING

Smart Generators
Import tool for mass configuration from third party software or external configuration platform (PLC platforms, CAD software, 3rd party SCADA, proprietary software).
- IEC61850 - support for SCL & off-line configuration

- BACnet
- OPC
- SIEMENS TIA portal
- Schneider Unity®
- ...

Alarms Management
Filtering & masking
Alarm flood prevention
Suppression by dependency

Events Management
System & User Activity Logging
Sequence Of Events
Notification by email

PcVue)

SOLUTION FOR MONITORING AND CONTROL OF SOLAR PV FARMS DOWN TO THE STRING LEVEL WITH PCVUE

Solar Electric Photovoltaic System

THE COMPANY

STAER SISTEMI

BUSINESS CHALLENGES

- ☑ Understand Maintain PV system conversion efficiency

- ☑ Respond immediately to any degradation of system performance

As designer of PV plants monitoring systems Staer Sistemi, conducted tests on many industrial SCADA meeting requirements as fast sampling speeds, flexibility, scalability, ease of use and programming, selecting PcVue of ARC Informatique. This choice allowed designers to be confident to effortless manage data streams in the range of several thousand measures per second and concentrate on the most specific aspects of the application. PcVue capabilities allow monitoring and controlling of all the various plant component and subsystems operations, including trackers, inverters, grid substations and meters. The PcVue based system logs any problem and triggers alarms so that the engineering staff can fix or change components or fine-tune the process of plant operation.

The automatic comparison between the calculated and the real production figures (supplied by the data logger) provides a precise indication of the plant performance or plant health every minute or less. Today monitoring and performance analysis of solar PV plants has become extremely critical due to the increasing cost of operation and maintenance as well as reducing yield due to possible performance degradation during the lifecycle of the plant equipment.

SUCCESS KEYS

- ☑ Fault detection, localization, isolation and load restoration (FDIR)

- ☑ Minimize fault duration and extent while maintaining safety

- ☑ Improve SAIDI and SAIFI indices for customers on the feeder

- ☑ Monitor equipment loads and thermal limits to enable safe load transfers

- ☑ Scalable to several thousand measures per second with capability to automatically filter to most critical aspects of the system

- ☑ Monitor and control trackers, inverters, grid substations and meters

- ☑ Log operations and provide alarms for maintenance and fine-tuning of plant performance

- ☑ Track real-time production versus predicted production and provide real-time performance metrics

REFERENCES

SOME SNAPSHOTS OF A FEW OF OUR INTERNATIONAL REFERENCES

SWELECT ENERGY SYSTEM / India
Solar farm monitoring

DESCRIPTION

59400 Modules, 90 String combiners or string blocks, 15 Inverters from Brand SMA (model CP900) and the PV have a tilt angle of 20deg
TECHNICAL ASPECTS
The PcVue architecture implemented is based on 2 redundant servers and webclients with 65,000 tags

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AVANGRID RENEWABLES / USA
PV plant monitoring

DESCRIPTION

Iberdrola group — through Avangrid Renewables uses PcVue for the Lund Hill photovoltaic plant, Washington state's biggest solar project. Located in Klickitat County, the plant has an installed capacity of 193 MW. The project, which will require capital expenditure of more than US$100 million, will cover an area of approximately 1,800 acres
TECHNICAL ASPECTS
· More than 65 000 tags
· 2 PcVue scada stations/1 PcVue Client station/ 5 WebVue Clients
· OPC and DNP3 drivers

IBERDROLA RENEWABLES / Spain
CAMPO ARAÑUELO III PV plant monitoring

DESCRIPTION

Located in the Almaraz region (Cáceres), the Arañuelo I, II and III plants - of 50 MW each - will be made up of 12,514 fixed structures and 366,180 solar panels
TECHNICAL ASPECTS
· 80 000 tags
· 1 PcVue scada station/1 PcVue Client station
· OPC and Modbus drivers

IBERDROLA RENEWABLES / Spain
Nunez De Balboa solar plant

DESCRIPTION

500MWdc (391MWac) PV power plant in the Badajoz province, Extremadura, Spain. It is considered to
be the biggest PV project in Spain and one of the biggest in Europe. It produces 832GWh of clean electricity
a year for 250,000 people, while offsetting the emission of 215,000 tons of CO_2 a year
TECHNICAL ASPECTS
· 135 000 tags
· 2 PcVue redundant scada stations
· 1 PcVue Client Modbus TCP/IP drivers

PcVue

OPEN CONNECTIVITY SCADA SOFTWARE PLATFORM

In business for over 40 years, ARC Informatique is a forward-thinking industrial software editor with **16 offices worldwide**. Using the latest technologies, ARC Informatique develops **PcVue,** a reliable, secure, and robust SCADA platform, dedicated to monitoring and control applications.

To answer the needs of performance, robustness and security for power system operators, **PcVue** delivers an efficient platform to monitor and control any kind of heterogeneous and distributed assets. With a cutting-edge UI, extended built-in drivers for power including IECs and DNP**3**, versatile architectures and full real time monitoring, data processing and reporting capabilities, **PcVue** ensures the reliability and availability of power from generation to distribution.

With **160+ dynamic team members**, we are both physically very close and culturally compatible with our user base, thereby facilitating responsive customer care. Our **ISO 9001, 14001 and 27001** certifications ensure quality, sustainability, and security in our development processes from design to delivery.

CUSTOMERS
TECH SUPPORT
R&D
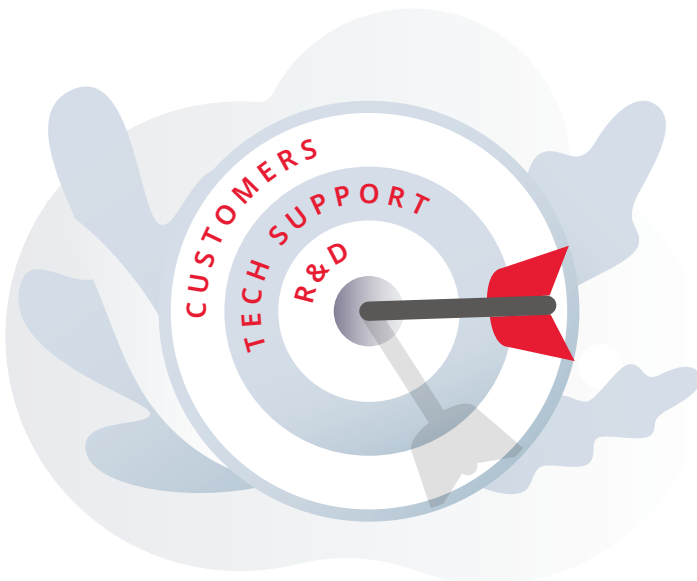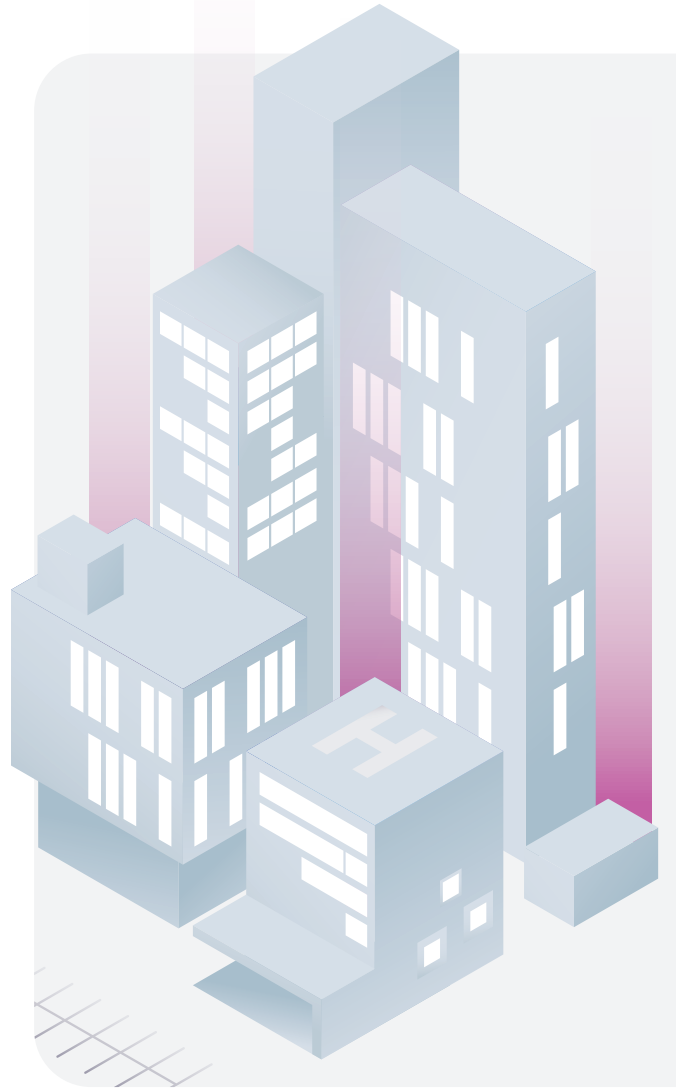
A CUSTOMER-ORIENTED APPROACH

Listen to and answer our customers
Develop and adapt our solutions via R&D
Responsive technical support.

GLOBAL PLAYER
LOCAL APPROACH

16
SUBSIDIARIES

50+
VAR
WORLDWIDE

200+
LOCAL SI
PARTNERS

CONTINUOUS QUALITY
IMPROVEMENT

Microsoft
C E R T I F I E D
Partner

swiss safety center
ISO 9001
ISO 14001
ISO 27001
certified system

ARC Informatique is ISO 9001,
ISO 14001 and 27001 certified

OPC
FOUNDATION
MEMBER

Solutions for
#Solar PV Plants

ARC Informatique is ISO 9001,
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