Exact Technology ● Exact Solution ● Exact Quality

Solar Scada

Easy access
to information

Optimized
Performance

AI Powered
Analytics

KPI
Monitoring

One-click
for all detail

All portfolio
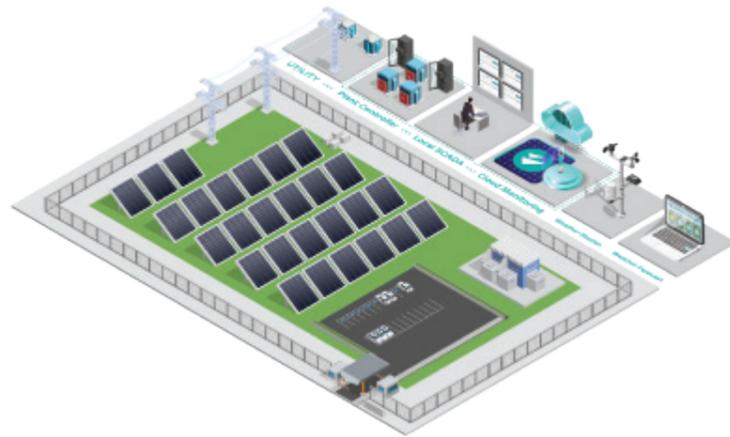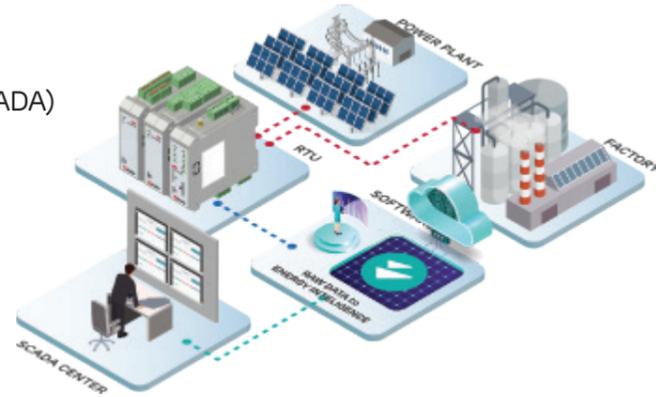on a single map

Exactly Endoks

Endoks

Endoks | Solar **Scada**

What is **SCADA?**

Components
- Supervisory Control and DataAcquisition (SCADA)
- Remote Terminal Units (RTU)
- Intelligent Electronic Device (IED)
- Communication
  - GSM, Ethernet, Fiber
- Protocols
  - IEC61850, IEC60870-5-104, Modbus, IEC62056-21

One-stop **shop**

- Local SCADA.
- Power Plant Controller (PPC) .
- Performance Monitoring (powered by inavitas).
- Power quality improvement.
- Grid compliance study and applications.

Solar Power **Plants**

Local SCADA
State-of-the-art and full redundant SCADA architecture

Power Plant Controller
Complying with utilities' grid code requirements and improving system efficiency.

Energy Intelligence
Real time performance monitoring with AI backed-up analytics (powered by inavitas).

Power Quality
Avoiding power quality related problems.

inavitas **SCADA**

- Accessing from anywhere/any device thanks to its web-based design.
- Real-time monitoring and control.
- Advanced data analytics powered by inavitas artificial intelligence tools.
- Modular and flexible design enabling expansions easily.
- We care for your data – improved cyber security and system back-up/redundancy.

Why inavitas **SCADA?**

Architecture
Architecture, it is easy to scale up because of its modular and flexible design. There is no limitation on the number of device and user.

Protocol Support
It supports all common industrial communication protocols as well as the ones used for IoT applications.

Intelligence
inavitas SCADA provides a deep and quick insight by processing data and converts it into insights by custom-developed AI tools.

Solar Scada **Features**

Monitoring all parameters
Monitoring of all Electrical and environmental parameters from DC strings up to MV point.

Auxiliary Systems Control
Air conditioning etc. with all LV, MV electrical units. control of systems.

Performance Management
Monitoring of performance indices as per IEC61724.

Smart Notifications
Information driven alarm architecture enables logical operations on data.

Weather Data
Ready-to-use weather data from different hardware and forecast platforms.
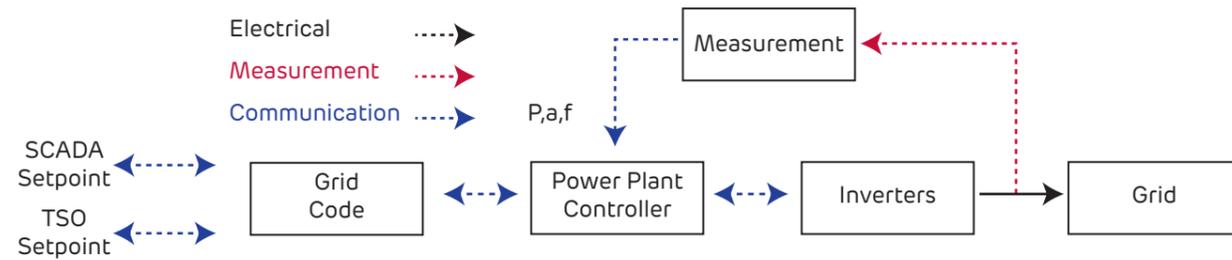
AI Based Data Analytics
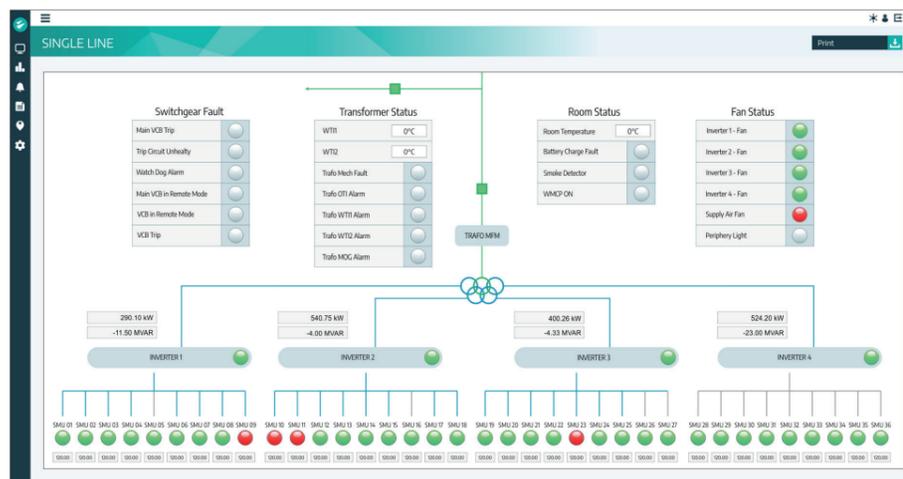Get informed on time about failures by AI powered analytic tools.

Endoks | Solar Scada

What is PPC?

PPC enables the integration of the solar power plant to the grid in compliance with the national grid codes by processing the set points commanded by the network operators.

Electrical
Measurement
Communication

Measurement

SCADA Setpoint
TSO Setpoint

P,a,f

Grid Code → Power Plant Controller → Inverters → Grid

Operation Modes

Reactive Power Control
Constant or dynamic reactive power control for reactive power support to the grid.

COS(P)   Q

Active Power Control
Dynamic continuous control of the active power as per the grid code requirements.

P   Rerserve   F

Dynamic Demand Control
Dynamic control of output power of the inverters, to control the demand for any need.

P

STATCOM Mode
Complying with the grid codes by working as a STATCOM in parallel with passive filters to reduce installation cost.

Im   Re

Sample Screen

SINGLE LINE

Switchgear Fault
- Main VCB Trip
- Trip Circuit Unfaulty
- Watch Dog Alarm
- Main VCB in Remote Mode
- VCB in Remote Mode
- VCB Trip

Transformer Status
- WTI1 0°C
- WTI2 0°C
- Trafo Mech Fault
- Trafo OTI Alarm
- Trafo WTI1 Alarm
- Trafo WTI2 Alarm
- Trafo MOG Alarm

Room Status
- Room Temperature 0°C
- Battery Charge Fault
- Smoke Detector
- WMCP ON

Fan Status
- Inverter 1 - Fan
- Inverter 2 - Fan
- Inverter 3 - Fan
- Inverter 4 - Fan
- Supply Air Fan
- Periphery Light

290.10 kW / -11.50 MVAR — INVERTER 1
540.75 kW / -4.00 MVAR — INVERTER 2
400.26 kW / -4.33 MVAR — INVERTER 3
524.20 kW / -23.00 MVAR — INVERTER 4

User Experience

MK TUZLUKCU 1

Active Power	3.353 kW
Rated Power	4,35 kWp
Plant	6
Last Communication	3 Minutes Ago
Alarm	3 0 0

Production (MWh) 10,14 | Performance Ratio (%) 81,4 | AVAL(%) 99,5 | Income 12.761

PLANTS

Name	DC (Mwp)	Power(kW)	Radiation	Production (MWh)	Alarm	Communication	Last Comm.
AEM_1000	1,20	800	728	2,17	●	✓	1 Minutes Ago
AEM_500	0,60	394	728	1,05	●	✓	1 Minutes Ago
BSM_500	0,60	400	728	1,08	●	✓	1 Minutes Ago
BSM_850	0,98	643	728	1,74	●	✓	1 Minutes Ago
Makasci_1000	1,20	803	728	2,18	●	✓	1 Minutes Ago
Makasci_500	0,60	398	728	1,07	●	✓	1 Minutes Ago

INVERTER

Makasci-1 GES INV01 ... Makasci-1 GES INV16

Benefits

Grid Compliance
Compatible with many countries' grid codes by its flexible control engine
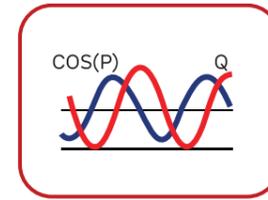
Power Plant Control
Real time monitor and control of solar inverters – vendor independent data engine
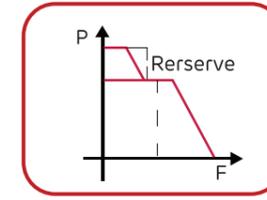
Increased Efficiency
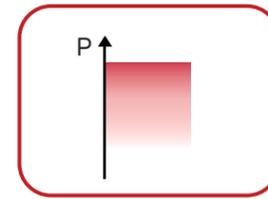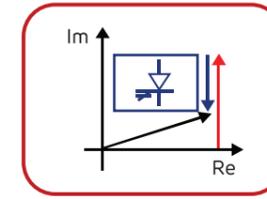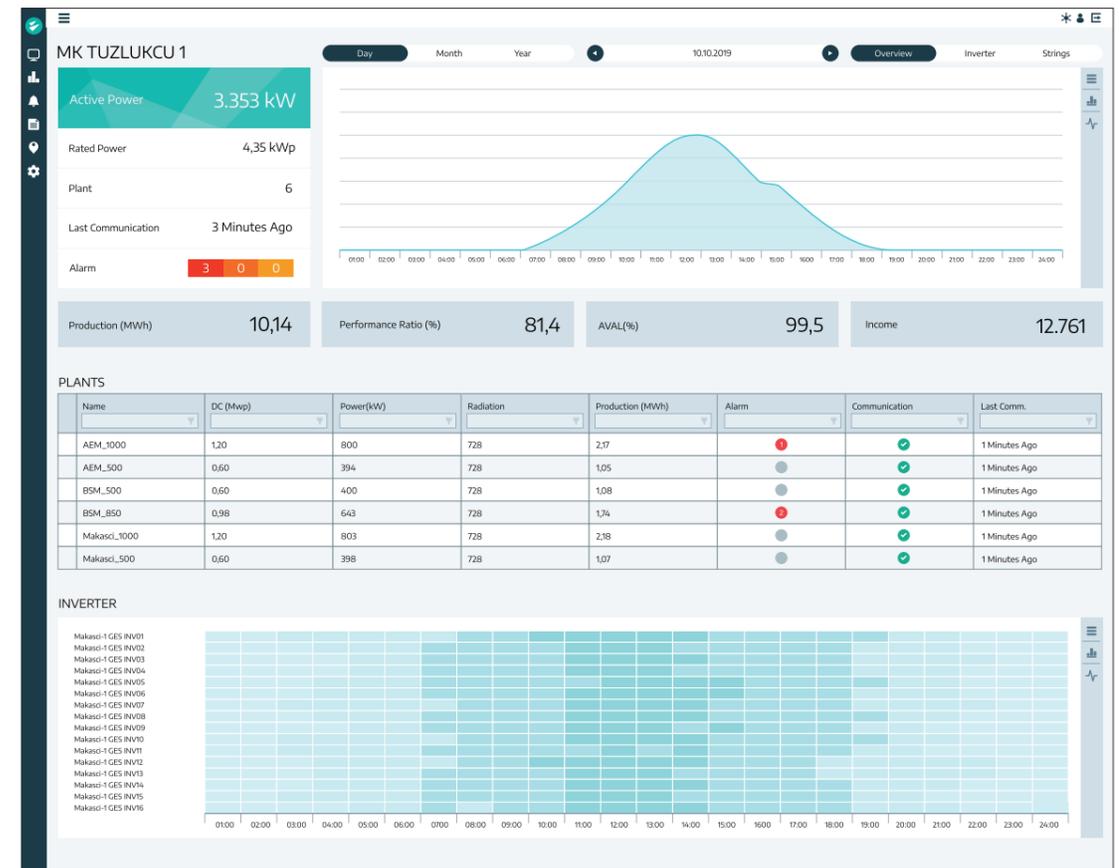Increasing overall system efficiency by dynamic and individual demand control

You can make right decisions on time by effortlessly accessing all information you need (from company level down to DC strings) with novel dashboards of inavitas