



www.st-ingegneria.com





Who we are

ST Engineering is born in 2005 by the will of the Eng. Simone Tarantini, electronic engineer, with the strong passion for the renewable energies. Since then active in the field of photovoltaic system, we have designed and realized more than six hundred installations mainly in the South of Italy.

The know-how acquired during our decades of experience has enabled us today to operate in a strategic sector as delicate as is that of the analysis and the maintenance of large-scale renewable energy installations. Our specialized analyses carried out with sophisticated electronic instrumentations are offered to the public and private clients who want to have a valid support on the territory for the study and the analysis of the technical problems found on their own photovoltaic installations due to breakdowns or components deterioration.

Mission

Our mission is to offer an advanced technical analysis services based on the issues related to the photovoltaic installation such as faults and performance deteriorations and we offer simple and complete check-up of all the electric and electronic installation components (including modules and inverters).

Long been engaged in the alternative energy installation design, we are now focused on the research and development and on the study of the main problems such as the PID (Potential Induced Degradation) through instrumental measurement campaigns carried out by highly skilled technicians. Our work experience and the applications on the field are for us source of continuous study and in-depth technical and allow us to achieve a greater degree of awareness of problems related to the largescale of alternative energy installations.



Our engineering firm is able to perform the following instrumental checks on photovoltaic installation:

- Performance analysis of the modules with I-V curve tracer and series resistance (Rs and Shunt) measurement
- Detailed thermal analysis modules, also with the drone, survey of manufacturing defects and hot-spot
- Measuring the insulation resistance of DC and AC on electrical panels, electrical lines, photovoltaic modules, inverters and photovoltaic modules strings
- Electroluminescence on strings and modules for relief cell cracks, PID and broken bypass diodes
- Complete photovoltaic installation testing according to the Norm CEI EN 82-25
- Performance measurement of centralized inverters (PR%) for large photovoltaic installations
- Analysis of the parameters of AC power supply (detection of disturbances, voltage spike, holes etc.)



February 2025

N.3 PHOTOVOLTAIC PLANTS FOR TOTAL 53,4 MWp (CAGLIARI - CA)



- I-V curve measurement on a 100% of DC string, Voc/Isc test on a 100% of DC string
- Digitization of the plant by means of high resolution drone aerial photogrammetry
- Performance testing of centralized inverters with power of 1000 kW each.
- Drone thermography with Radiometric Thermal Orthomosaic reconstruction of the entire photovoltaic plant

13,5 MWp PLANT (SIRACUSA - SR)



- I-V curve measurement on a 100% of DC string
- DC string insulation measuremen on 100% strings
- Digitization of the plant by means of high resolution drone aerial photogrammetry
- Geo-referenced survey of the serial numbers of approximately 29,000 photovoltaic modules



February 2025

33,78 MWp PLANTS (BASILICATA, MOLISE, MARCHE, ABRUZZO, PUGLIA)



- Analysis of photovoltaic modules efficiency and I-V curve tracer (IEC/EN60891)
- Photovoltaic installation test and electrical/functional check inverters performance ratio measurement (PR%)
- Thermography on photovoltaic modules with thermal defects, hot-spot and PID detection
- Electroluminescence Analysis (P.I.D., Cell Crack, Diodes)

3,5 MWp PLANT (MONCALIERI - MC)



- Analysis of photovoltaic modules efficiency and I-V curve tracer (IEC/EN60891) and DC insulation resistance (CEI EN 62446)
- Visual inspection of the photovoltaic plant
- Plant test by PRp% (Power Ratio %) measurement (CEI 82-25)
- Thermography on photovoltaic modules with thermal defects, hot-spot and PID detection
- MT Transformer and inverters thermography





February 2025

3,37 MWp PLANT (ASCOLI PICENO - AP)



- Analysis of photovoltaic modules efficiency by I-V curve tracer (IEC/EN60891) and DC insulation resistance (CEI EN 62446)
- MT transformer thermography and connection inspection
- Plant test by PRp% (Power Ratio %) measurement (CEI 82-25)
- Thermography on photovoltaic modules with thermal defects, hot-spot and PID detection

6,2 MWp PLANT (VALMONTONE - RM)



- PID effect study (Potential Induced Degradation)
- Analysis of photovoltaic modules efficiency by I-V curve tracer (IEC/EN60891) and DC insulation resistance (CEI EN 62446)
- Night Electroluminescence in field
- Thermography on photovoltaic modules with thermal defects, hot-spot and PID detection



February 2025

4 MWp PLANTS (LENTINI - SR)



- Analysis of photovoltaic modules efficiency by I-V curve tracer (IEC/EN60891) and DC insulation resistance (CEI EN 62446)
- Visual inspection and Thermography of modules and DC string-box
- Plant test by PRp% (Power Ratio %) measurement (CEI 82-25)
- Overall plant performance evaluation by complete Due Diligence

3,7 MWp PLANT (NARDO' - LE)



- Plant test by PRp% (Power Ratio %) measurement (CEI 82-25) on n.13 inverters of 250 kWp
- DC string-box, first and second parallel box insulation resistance measurement and DC connection to inverters test
- Thermography on photovoltaic modules with thermal defects, hot-spot and PID detection
- Analysis of photovoltaic modules efficiency by I-V curve tracer (IEC/EN60891)



February 2025

4,6 MWp PLANT (LIZZANO - TA)



- PID effect study (Potential Induced Degradation)
- Night Electroluminescence in field

4,0 MWp PLANT (POGGIORSINI - BA)



- Compliance to Law 21-June- 2017, n. 96, art. 57-quater
- Electrical continuity and connection between modules verification Check the grounding of masses and unloaders
- Visual inspection of the photovoltaic plant Insulation of the electric circuits from the masses and unloaders verification
- Strings Working current measurement Strings Short circuit current measurement



February 2025

15 MWp PLANT (FOGGIA - FG)



- Plant test by PRp% (Power Ratio %) measurement (CEI 82-25) on n.13 inverters of 250 kWp
- DC string-box, first and second parallel box insulation resistance measurement and DC connection to inverters test
- Thermography on photovoltaic modules with thermal defects, hot-spot and PID detection
- Analysis of photovoltaic modules efficiency by I-V curve tracer (IEC/EN60891)

7,5 MWp PLANTS (TERAMO - TE)



- Plant test by PRp% (Power Ratio %) measurement (CEI 82-25) on n.13 inverters of 250 kWp
- DC string-box, first and second parallel box insulation resistance measurement and DC connection to inverters test
- Thermography on photovoltaic modules with thermal defects, hot-spot and PID detection
- Analysis of photovoltaic modules efficiency by I-V curve tracer (IEC/EN60891)



1,97 MWp PLANT (CALTANISSETTA - CL) SURVEY OF SERIAL NUMBERS - OCR PROCESSING METHOD



- Survey of 20.750 serial numbers of photovoltaic modules with OCR processing method
- OCR processing of the screen-printed serials without Bar Code or QR Code
- Geo localization with exact position for any serial numbers in photovoltaic plant

18,2 MWp PLANT (ROMA - RM)

Z5-V40		Z6-V32	77-78
Z5-V39		Z6-V31	7747
Z5-V38		Z6-V30	77.06
Z5-V37		Z6-V29	
Z5-V36		Z6-V28	
25-V35		Z6-V27	S
Z5-V34		Z6-V26	771/2
Z5-V33		Z6-V25	
25-V32		Z6-V24	27-91
Z5-V31		Z6-V23	
Z5-V30		Z6-V22	
25-V29		Z6-V21	
Z5-V28		Z6-V20	
25-V27		Z6-V19	B B BSS
25-V26		Z6-V18	
25-925		Z6-V17	
25-124		Z6-V16	
25-V23		Z6-V15	
75-122		Z6-V14	
		Z6-V13	
25-V20		Z6-V12	1 Starter 19
25/19		Z6-V11	
75-118		26-V10	B. S. MARCELLE C.
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- Survey of about 75.000 serial numbers of photovoltaic modules with Bar Code optical scan processing method

- Use of proprietary software for real-time processing on servers for serial code interpretation
- Geo localization with exact position for any serial numbers in photovoltaic plant





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OUR "SMART" WEB PLATFORM PV-SCAN

PV-SCAN is the Smart platform for Photovoltaic Performance analysis, Reporting, Measurements data processing, Energy production prediction and Due Dligigence web cloud, for O&M Company and Owners. Use PV-SCAN for monitoring performance trend of your PV plant park. *Join PV-SCAN on <u>www.pv-scan.com</u>!*





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