

Array Scanner

String-level performance improvement

Alerts & identification of potentially malfunctioning array

Comparison with previous days

Identification of not generating arrays

Brief & comprehensive overview of problems

Detailed report for each park with identified alarms





Product Brief

Problem statement

The need for optimal solar PV plant performance monitoring and evaluation has led to a continuously increasing number of arrays being monitored by CMS. Specifically, for utility-scale solar plants this number typically lies in the range of 1000 to 8000 leading to a high difficulty in handling and efficiently analyzing all monitored data manually with traditional means. No matter the total number of arrays, visualizing their performance evolution from day to day while quickly identifying potential arrays' faults through numerous alarms becomes a piece of cake with the updated Array Scanner analytics tool by Inaccess Analytics & Reports.

Array Scanner

Array Scanner is an intelligent analytics tool for evaluation of solar plants arrays' operation. It enables plant operators to identify problems in array operation: communication issues, not generating arrays, arrays whose performance is diverging from the expected one and arrays' performance degradation.

Array Scanner comes to meet the increasing operator needs for solar plant data quality, accurate performance analysis and asset health evaluation, built on top of the standard integrated arrays monitoring offered by Inaccess. The Array Scanner report includes all details required by the user in order to quickly determine the status of all arrays in the plant and focus on actions required on the arrays truly facing a performance issue.

Solution overview

Array Scanner runs for a specific time period per solar plant (e.g. for seven consecutive days, monthly or as requested), performs a highly advanced statistical analysis and notifies the user for the issues detected with a detailed report.

Table 1 - Basic features of the Array Scanner along with their benefits for the user.

| FEATURE | BENEFIT |
|---|---|
| Detect communication issues | Notifying the user when an array has no data acquisition/fully missing data issue. No array current data available for the specific date. Partly missing data |
| Detect low irradiance day | Identification of days that arrays performance evaluation should be avoided |
| Detect diverging array performance (outliers) | Identification of a potentially malfunctioning array: current significantly lower/higher than it should be. |
| Detect array degradation | Comparison with previous days |
| Detect outages | Identification of not generating arrays |
| Scheduled report, Overview sheet | Provides a brief and comprehensive overview of the plant problems |
| Scheduled report, Results notations sheet | A detailed report is generated for each park presenting all the alarms identified by the algorithm for each day of the test period |

Table 1 – The issues identified by the Array Scanner algorithm along with their notations and a brief explanation.

| CATEGORY | NOTATION | MEANING |
|--------------------------|----------------|---|
| Irradiance | Low Insolation | POA irradiance below 300W/m ² , no reliable analysis can be performed |
| Communication error | Comm.Err. | No data available |
| Not generating | Outage | The array current is below an Outage threshold of 0.05A for at least 6 recording periods |
| Performance Low | Low | The performance of the array is lower than the expected one based on its characteristics, POA irradiance etc. Correlation with other panels is performed. |
| Performance low/ shading | L/Shading | The performance of the array is lower than the expected one based on its characteristics, POA irradiance etc. The deviation profile matches the one of a heavily shaded array |
| Performance decrease | Decrease | The array has a significantly worse performance than the previous day. |
| Performance High | High | The performance of the array is significantly higher than the expected one based on its nominal maximum power current and POA irradiance |
| Normal operation | OK | No issue was identified by the Array Scanner algorithm for this day |

Array Scanner is provided through Inaccess cloud-based new generation Analytics platform, integrated with Inaccess Centralised Monitoring System.

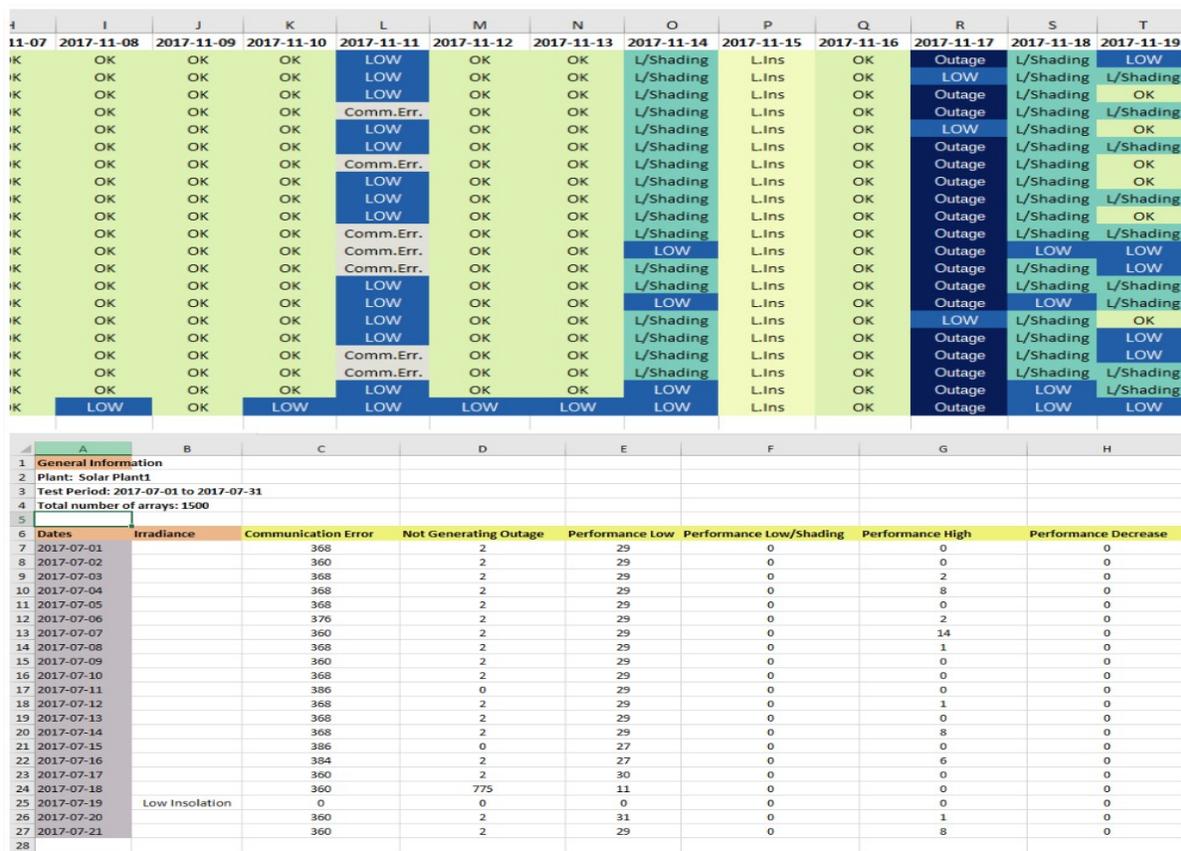


Figure 1 – Sample report. Results notations and Overview sheets



Corporate HQ :
 Berkeley Square House,
 London, W1J 6BD, England
 Tel: +44 2035190998

US - West:
 2880 Zanker Road, Suite 203,
 San Jose, CA 95134
 Tel: +(408) 757 0333

R&D Center:
 12 Sorou Str, Maroussi,
 Athens Greece 15125
 Tel: +30 210 6802300

Melbourne office:
 Level 10, 555 Lonsdale
 Street, Melbourne VIC 3000
 Tel: +61 38 578 4760