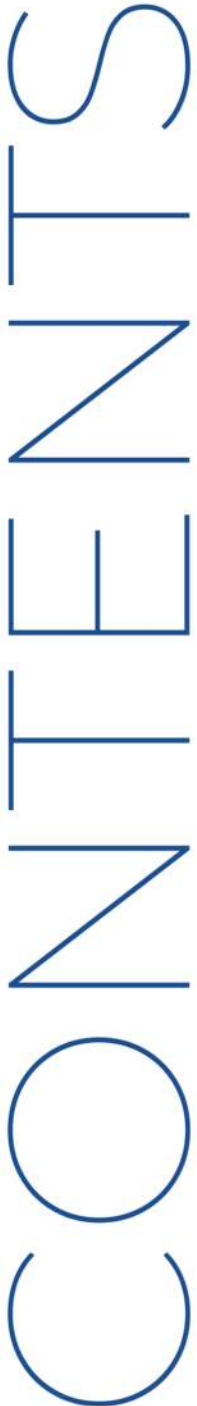




Improving Solar-PV Operations and Maintenance with AustinGIS™

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THE AUSTINGIS SMART SOLAR APPLICATION

Smart Solutions for Solar Energy Management

Smart energy management is essential to maximize return on investment on Solar-PV assets that are intermittent in nature. At AustinGIS, we want to help our clients harness the environmental, economic, and societal benefits that solar energy offers. To that end, we have created leading-edge, smart energy applications for the solar management sector.

The AustinGIS smart solar application is designed for operations and maintenance teams that focus on solar-PV installations, maintenance, and optimization. We work closely with manufacturers who offer O&M services, third-party O&M providers, and energy service companies that offer O&M services.

Smart Solar Benefits

With the AustinGIS Smart Solar Application, solar installations can benefit from the following results:



- 5% or more increase in energy production
- Faster fault identification for improved uptime
- Root cause analysis with AustinGIS AI/ML technology

- Single pane of glass with SCADA and sensor agnostic system
- Dashboard with asset and contract specific parameters
- Easy integration with third party workflow and field management solutions through APIs



TECHNOLOGY CHALLENGES WITH SOLAR INSTALLATIONS



Companies tasked with solar installations must overcome a wide variety of hurdles. The most obvious one is the intermittent nature and variability of solar technology. Production is dependent on weather conditions and the time of day. Cloudy days, nighttime, and seasonal changes cause fluctuations in energy output. As we can't control the weather, we can control how the system stores and reacts to weather changes for optimal solar output. At AustinGIS we tackle the technical issues to ensure the entire project is affordable and efficient. This ultimately speeds up deployments and performance.

At AustinGIS, we solve the technical challenges around O&M of solar-PV assets with a **holistic** approach. This results in improved performance and a **higher ROI**.

Siva Balasubramanian
EVP Utilities & Energy

Technology Challenges with Solar Installations

Companies tasked with solar installations must overcome a wide variety of hurdles. These technical challenges include:

01

Energy Storage

Storing excess solar energy for use during low-production periods or at night is a significant challenge. While advancements in battery technology have improved energy storage options, cost-effectiveness and scalability still need to be addressed.

Grid Integration

Integrating solar generation can impact grid stability, requiring advanced grid management and balancing techniques to ensure a consistent power supply.

02

03

Maintenance and Reliability

Solar panels require regular maintenance to ensure optimal performance. Dust, debris, pollutants, and other environmental factors can reduce efficiency over time. Ensuring the long-term reliability and durability of solar installations is crucial.

Energy Conversion Efficiency

Solar panels have limitations in converting sunlight into electricity efficiently. Innovations can help enhance conversion efficiency of solar cells while keeping costs reasonable.

04

05

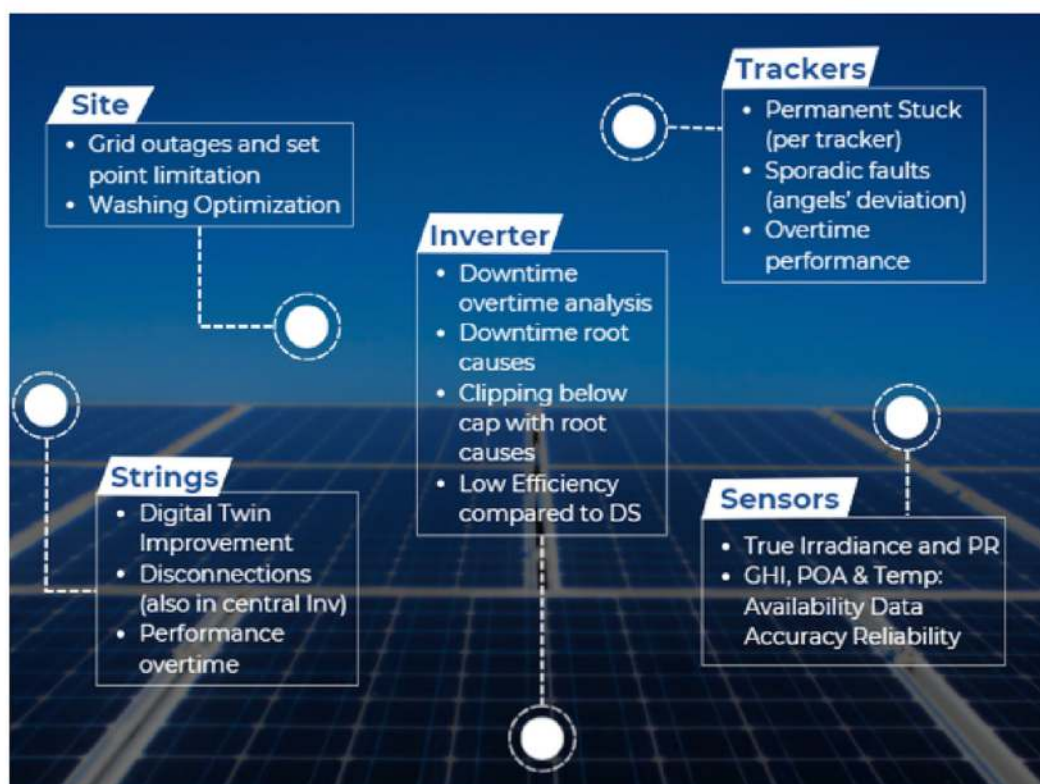
Technical Expertise

Installing and maintaining solar systems requires specialized technical knowledge. A shortage of skilled professionals in the field can hinder the widespread adoption of solar energy.

AustinGIS Delivers 14 Unique Metrics to Track Availability and Performance of Solar Assets

The AustinGIS Smart Solar application helps ensure sensors are clean and the entire system is efficient with real-time monitoring. For example, AustinGIS delivers fourteen unique metrics for performance analytics. These analytics are quantified with megawatt cost factors for a full understanding of expense and savings. The metrics are tied to faults or incidents classified at different levels of granularity. For example, the metrics could extend to sites, inverters, strings, trackers, and/or sensors. For each fault or incident identified, the analytics provides quantifications on power loss tied to a particular fault or power gains that could be achieved if the faults were fixed.

14 *AustinGIS delivers fourteen unique metrics for performance analytics.*



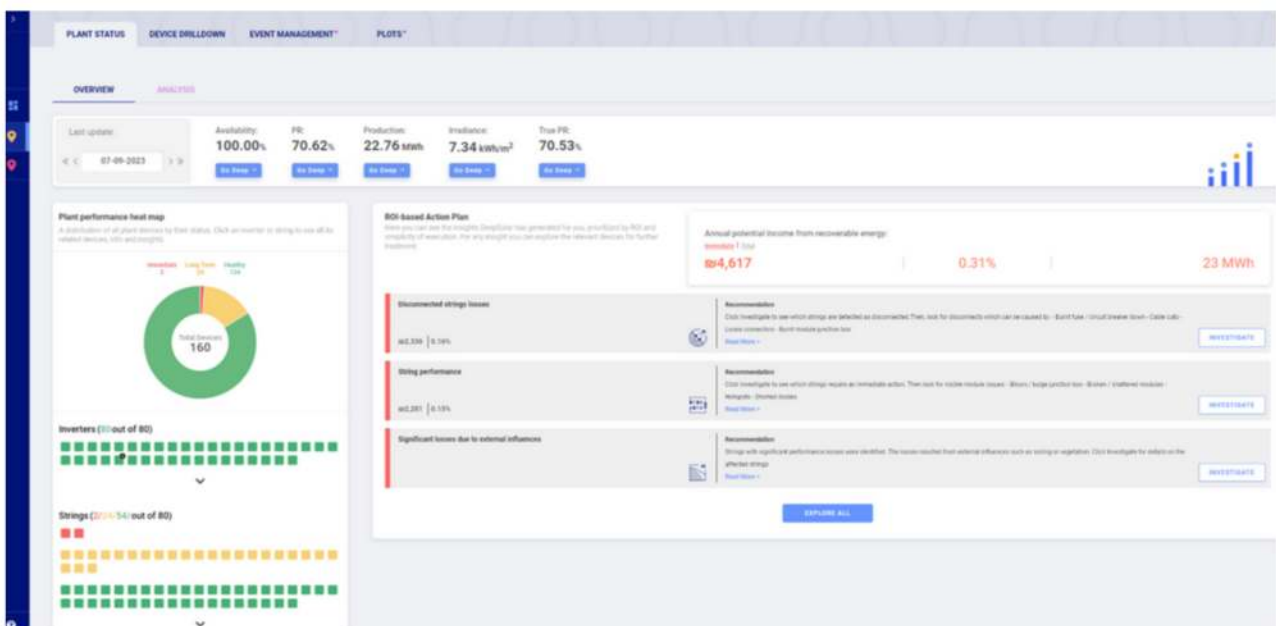
AustinGIS Smart Solar application improves solar efficiency by tracking critical performance metrics coupled against MW/\$ detail.

AustinGIS Smart Solar Operational Dashboard Provides a Single Pane of Glass Across Multiple Sites



With one dashboard, solar power plant operators can check on their solar installation health across multiple locations. With the classis RYG system, panels that are down or experiencing issues are instantly flagged for triaging.

These dashboards not only provide efficient and effective monitoring, but the system can also measure expected versus actual production to ensure performance SLAs are being met.

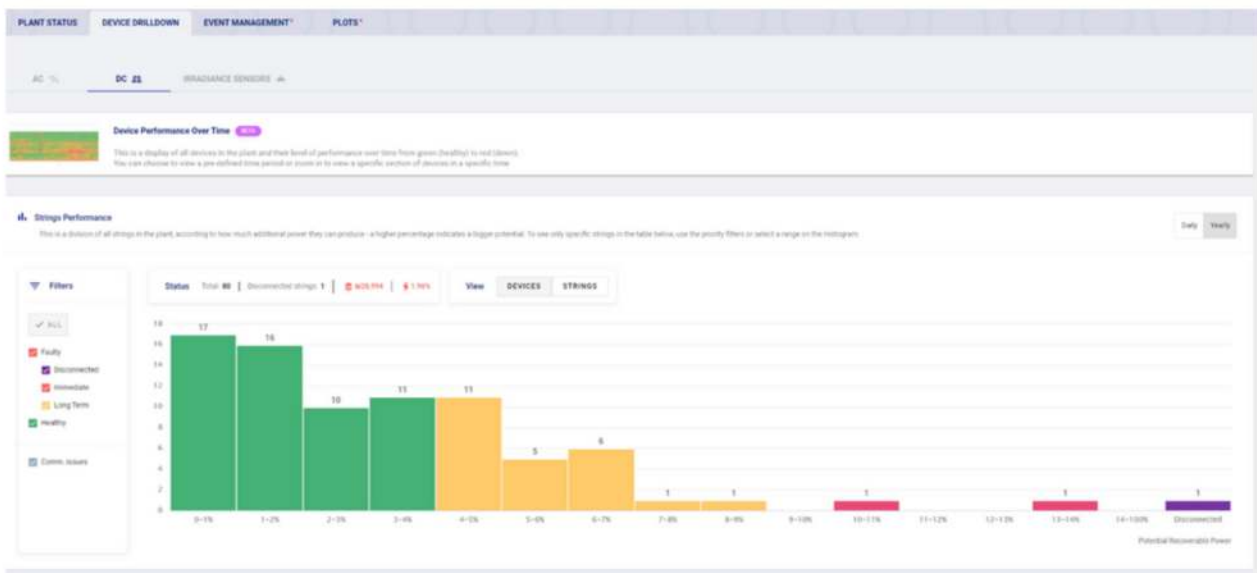


Understand site status quickly to triage and diagnose issues.

AustinGIS Uses Digital Twin Technology to Calculate Long Term Solar Performance



In urban planning and manufacturing, digital twins help model energy consumption, optimize efficiency, and identify potential bottlenecks. At AustinGIS we can demonstrate solar power value years ahead of current rates by measuring digital twin performance.



AustinGIS Smart Solar application improves solar efficiency by tracking critical performance metrics coupled against MW/\$ detail.

THE MOVEMENT TO SMART SOLAR TRANSFORMATION

With Smart Solar applications from AustinGIS, solar installations are fully automated, delivering better performance with increased efficiency. AustinGIS is helping companies migrate from an antiquated, manual process to an automated one. For example:

Prior to AustinGIS Smart Solar

High level analysis of suspicious points.

Must send technicians for manual checks site by site

Site checks not quantifiable. Cannot triage based on performance, cost, and revenue gained/lost.

Fault tracking rudimentary. Simple alerts with no detail or ability to double click to location.

Multiple, disjointed workflows – monitoring, analytics, and reporting

After AustinGIS Smart Solar

High-level gap analysis with last-day report and micro-detailed root cause.

Site issues reported automatically by emails and via dashboard

Event management with ROI prioritization

Accurate fault tracking with full site layout/maps

One portal for all workflows and dashboards with complete data synergy.

AustinGIS Leads the Way for Smart Solar Applications

At AustinGIS we believe in unlocking smart city potential to benefit residents, communities, and businesses. Improving the deliverability and performance around renewable energy such as solar is just one way that AustinGIS looks to advance our ability to bring lasting results. Visit our website and contact one of our smart energy experts to learn how we can bring our insights and technology to your projects.

Unlocking Smart City Potential

LET'S GET STARTED



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