SunPath™

Increase your system's energy production up to 6% with smart controls

WHY SUNPATH?

Standard solar tracker control systems position modules perpendicular to the sun with the aim of maximizing energy output. In many cases, however, this is not optimal for power production.

Single-axis trackers often cast shadows on neighboring rows in early morning and late evening hours, especially on sloped sites. Also, with excess atmospheric particulates, such as sandstorms, clouds or smoke, the direct irradiance from the sun drops and the portion of scattered light increases.

The Solution

SunPath ensures maximum output in two ways:

1. Terrain Based Backtracking - modifies the tracking angle of each row individually to limit the impact of shadow casting.
2. Diffuse Light Optimization - empirical models are used to optimize tracking angles during diffuse light conditions.

PRODUCTION BOOST, UP TO 6%

SunPath eliminates losses from row-to-row shading and optimizes capture of diffuse light, increasing the system yield up to 6% versus the standard Voyager controller.

MODEL-BASED

Model-based control secures immediate, predictable, and robust performance gains in row-to-row shading and diffuse light events.

NO NEW HARDWARE

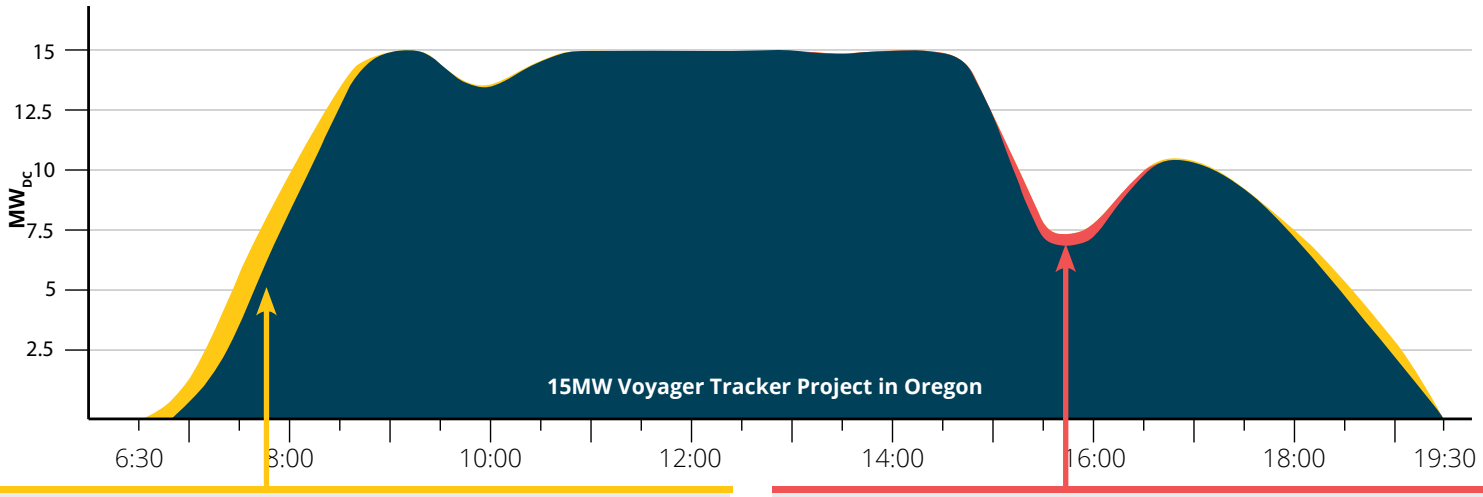
SunPath works on every Voyager installation and does not require additional sensor or controller hardware installation, leaving O&M requirements unchanged.

SATELLITE BASED CLOUD PREDICTION

SunPath harnesses the predictive power of satellite imagery to forecast diffuse light conditions, triggering immediate system response and eliminating the need to install and maintain localized sensors.

Modified Tracking Angle During Early Morning Operations

UP TO 6% ENERGY GAIN ANNUALLY



TERRAIN BASED BACKTRACKING

SunPath reduces losses from row-to-row shading on terrain where the slope is greater than 1%. The new controller feature uses photogrammetric mapping (via drone) to measure topography and assess elevation changes between rows. It then models potential shadow casting. This is intended to result in enhanced accuracy and flexibility, particularly on sites with sloping or undulating terrain.

Mathematically predicting the presence of shade on every row at each point in time, SunPath rotates trackers to the optimal angle. With this model-based approach, SunPath increases energy production from the moment it is installed, using predictable methods to make its calculations.

DIFFUSE LIGHT OPTIMIZATION

SunPath uses satellite-based forecasting to determine when cloud cover or other weather conditions will impact production. In such conditions, the direct normal irradiance from the sun drops increasing the ratio of diffuse light. SunPath will then rotate Voyager trackers to the angle that maximizes production.

The use of satellite imagery allows SunPath to predict conditions, rather than react. This enables the system to rotate the trackers to their ideal angle when clouds appear, without remaining in suboptimal positions for an unnecessary amount of time. positions. It also works in reverse, enabling Voyager to quickly return to regular tracking as diffuse light conditions clear.

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