

It's time to get tracking...



RayTracker GC is a single-axis tracker system that significantly increases the lifetime energy yield of a photovoltaic system, improving the return on investment for commercial-scale, ground- or carport-mount installations.

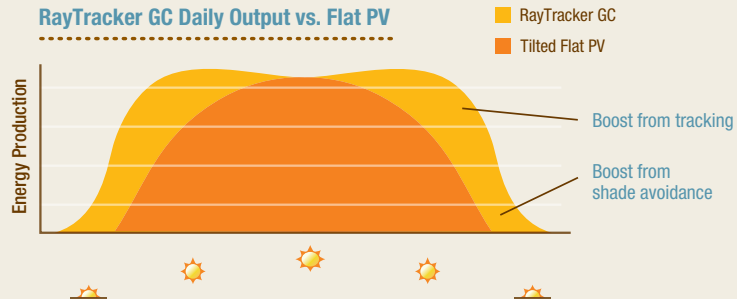
The RayTracker GC robust construction, distributed actuation, and use of standard photovoltaic modules delivers an exceptionally reliable and cost-effective tracking system.



www.raytracker.com

Why RayTracker GC?

RayTracker GC Daily Output vs. Flat PV



Performance

RayTracker GC **improves energy yield** by optimally positioning the solar panels throughout the day. Energy boosts of up to 38% are possible compared to flat-mounted panels. Single-axis trackers outperform fixed-tilt installations most importantly during peak energy demand periods. RayTracker GC achieves this with a simple, low-profile, low-parts-count mechanism.

Technology

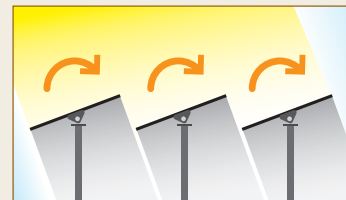
RayTracker GC maximizes energy production with **Shade Avoidance Technology** – a feature that eliminates energy-robbing tracker-to-tracker shading.



Ground-mounted RayTracker GC

Precision

The tracking function is provided by a custom microprocessor controller that uses a GPS time reference and a precise astronomical algorithm to automatically and **accurately point the panels at the sun**. The position of each actuator is monitored by the controller to ensure alignment. One controller serves 12 RayTracker GC units, and is included with the system.



Complete

RayTracker GC is a **complete PV racking system**, supplied with module-specific, pre-drilled panel mounts and hardware. Each RayTracker GC unit is approximately 80' long (24.5m) and accommodates 24 to 32 standard PV modules and will generate between 5.5kWp and 6.5kWp (depending on module type).

Distributed Actuation

The RayTracker GC system features distributed actuation – each unit has an **individual, low-voltage DC actuator motor**. Distributed actuation provides advantages for system reliability, installation, tracking accuracy and plant layout flexibility. This means that RayTracker GC installations are readily scalable – from kilowatts to gigawatts.

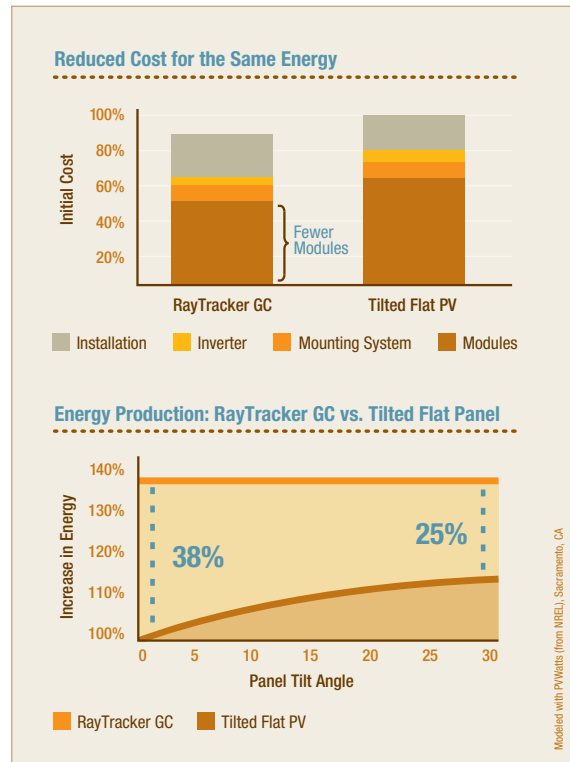
Economics of Tracking

Tracking systems produce more energy from your photovoltaic modules, allowing you to reduce your initial cost for a given amount of energy output, or produce more energy over the solar installation lifetime.

Reduced Initial Cost

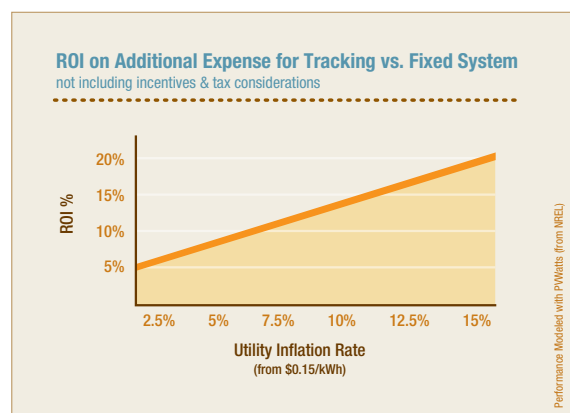
Fixed photovoltaic systems usually have modules tilted toward the arc the sun makes in order to increase the kWh energy production (example: tilt to the south in the northern hemisphere). There is an optimal tilt angle for each location to maximize the annual energy production. While fixed tilt increases energy production, there is more energy available to capture if the modules track the sun throughout the day. Single-axis trackers, like the RayTracker GC, provide a significant energy boost while being low cost and simple.

In the example shown here, RayTracker GC gives you a 38% increase in energy production over non-tilted PV panels, and a 25% increase over flat panels tilted to 30°.



Better ROI

Implementing tracking in your solar installation improves the overall Return on Investment (ROI) due to the additional energy produced by tracking. If we look at the ROI of the additional investment of adding tracking to a fixed-tilt PV system, we see that the ROI is attractive even if utility rates remain constant. If energy prices increase, as they are generally expected to, the ROI on the tracking investment improves substantially.



Low Lifetime Cost

RayTracker GC was designed from the ground up for a 25-year lifetime without scheduled maintenance.

Reliability

RayTracker GC is simple and elegant, with just two moving parts – the actuator and one structural element that rotates on a bearing surface. RayTracker has implemented aggressive accelerated life test programs for these and other critical components. These test programs stress the parts to maximum lifetime loads and cycles.



Custom-built test equipment to conduct stress tests of the bearing design

If an actuator replacement is required, there would be only a small impact on total system availability due to the RayTracker GC distributed actuation design. Actuators are low-cost, compact, can be stocked locally and readily replaced in the field.

Actuator Design

The actuator and motor is custom built by a leading manufacturer to RayTracker's exacting requirements for performance, strength and reliability. The actuator has been subjected to an extensive battery of tests to ensure a long life in the field.



Custom high-performance actuator

The RayTracker GC electronic controller is conformally coated and housed in a NEMA enclosure that ensures a benign environment for all components. Aggressive test routines have been conducted to ensure reliable operation.

In-field Operation & Maintenance

The RayTracker GC controller continuously monitors the actuator and is able to detect when the mechanism is obstructed (for example, by snow or ice) and will stop actuation and retry automatically until the obstruction clears.

RayTracker GC offers an automatic nighttime 10° stowing mode to allow rain and dew to run off, helping to keep the panels clean, and to minimize wind loads during non-tracking hours. Manual stowing modes are provided for inspection, cleaning and ground maintenance.

Solar installations using RayTracker GC do not have mechanical linkages between rows, allowing easy access for grass cutting equipment.

The product features a factory-applied exterior powder coat finish, ensuring long-lasting protection against the outdoor elements.

Quality Control and Manufacturing

RayTracker GC is fabricated using robotic cutting, welding, Computer Numeric Controlled metal processing and rigid quality control. This state-of-the-art automation equipment ensures the highest quality parts are delivered to customer job sites.

RayTracker GC is offered with a standard two (2) year limited warranty on parts. Extended warranty programs are available.



Rapid Installation

RayTracker GC is easy and inexpensive to install. The design has a minimum of parts, most of which are preassembled at the factory.

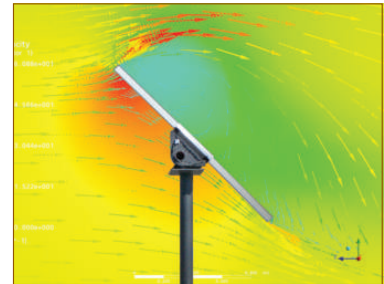
Installation

The installer provides only five vertical steel posts to support the RayTracker GC structure. The post foundations should be designed by a certified local civil/structural engineer to be suitable for the site-specific soil and wind conditions. RayTracker supplies a third-party certified design package for the RayTracker GC mechanism to speed site engineering and permitting.

The tracker mechanism is welded to the vertical posts for a permanent connection and maximum strength. The rest of the tracker is assembled with supplied nuts and bolts. Assembly of the RayTracker GC requires a minimum of labor and does not require specially trained personnel. A comprehensive installation manual is provided.

The PV modules are securely attached at four points using the manufacturer's recommended mounting holes with pre-drilled RayTracker GC brackets and hardware.

Because each RayTracker GC is an independent mechanical unit, the only connections between the trackers and the controller enclosure are simple low voltage wiring.



State-of-the-art stress-response simulation

Field Layout Flexibility

RayTracker GC field layout is straightforward as there are no rigid row/column requirements other than maintaining North-South orientation and consistent row-to-row spacing for the Shade Avoidance Technology function. Trackers can be installed on uneven or even sloping fields, minimizing requirements for field leveling and preparation. Filling out rows or columns for irregularly shaped fields is easily done with individual tracker units.



Bolt-together beams

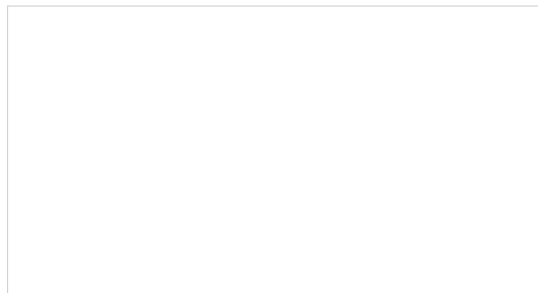


RayTracker GC controller and GPS



RayTracker GC
field installation

For pricing and availability, please call (866) 949-TRAC,
or visit our web site at www.raytracker.com. We would
be happy to provide you with a quote to meet the
specific needs of your project.



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Performance estimates are for reference only. Estimates are generated by Energy Innovations using PVWatts Version 1 Software from the National Renewable Energy Laboratory (<http://www.nrel.gov>, www.pvwatts.org). Site engineers planning to install RayTracker should use their software of choice to estimate performance as results may vary for a particular location and set of environmental conditions. Design process included applying sound engineering, state-of-the-art software tools and 3rd party standards and reviews, as well as accelerated life testing on key components. Field service may be required in some circumstances. The only warranty from Energy Innovations, Inc. is set forth in the express warranty statement that accompanies the product or services. Nothing herein shall be construed as an additional warranty.

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