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# Following the sun: A brief history of solar trackers

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What do hot air balloons, Robin Williams, and African poaching patrols have in common? They're all part of the rich history of solar tracker technology, as well as the legacy of solar tracker pioneer Array Technologies Inc. (ATI). Adapting to the twists and turns of the "solar coaster" is what has shaped ATI through the years, ultimately creating a robust company culture of innovation and reliability.

Array was founded by CEO Ron Corio in Albuquerque in 1989 to pursue opportunities presented by the then-nascent solar power sector. Early on, Corio and his team had developed an innovative approach to concentrator photovoltaic module systems that minimized reliance on expensive silicon. Those early efforts attracted interest from a number of investors, including the U.S. Department of Energy, to develop a high-accuracy tracking system

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for the concentrator. ATI's resulting 1 kW prototype of a concentrator on a tracker got high ratings in a DoE review, but political red tape prevented the necessary funding to move on to pilot production.

ATI did an early version of the now familiar “pivot” of early-stage companies, and set its sights on the remote home market, positioning its dual-axis, single-pole tracker as an efficient solution for powering remote homes with solar energy. This time, acclaim for ATI's product came from the *Home Power* magazine in 1991, which tested ATI's solutions and covered it in a “Things That Work” article. The company's continued innovation led to a number of unique applications.

“We did a lot of interesting projects through the years,” Corio said. “We provided Robin Williams’ house in Napa Valley with artistic trackers. When Steve Fossett first tried to go around the world in a balloon, we built a tracker that hung from his balloon with a flexible PV array, so as the balloon rotated the tracker would keep the modules posted at the sun. We did poaching patrol trailers for Africa that had an array that would fold out and open up and track the sun – it was their personal mobile power station, and they would stay out for about a month at a time.”

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Tracker technology continued to develop as a viable alternative to fixed-tilt for utility-scale solar plants, though there was much debate through the early 2000s about whether it was better for utilities to stick with the well-known standard fixed-tilt option or switch to a lesser known technology to boost production. One of the big considerations about implementing trackers was about maintenance: How often do these moving parts fail? How much does it cost per watt to service these systems over 30 years?

For the entirety of its 27 years, ATI has continuously evolved tracking systems, optimizing to reduce component requirements. By minimizing motors, controllers and sensors, the company promotes a hands-off operations and maintenance approach. The arrays reflect an engineered simplicity, are easier to install and still protect against wind and other weather events over their 30-year design lives without relying on stow.

ATI put about 20,000 solar trackers into homes as the home market grew. But it remained a niche market. Then, in 2001, BP Solar granted ATI its first utility-scale project, to install a 250 kW solar tracker system. This contract itself led to further innovation of the ATI solar tracker.

“When we moved into the utility-scale market, we moved from a dual-axis tracker to a horizontal axis tracker,” Corio said. “To do a

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large field with dual-axis tracking, you lose a lot of density of the system because it's shaded in both directions. If you do a horizontal-axis tracker, it only shades in one direction and you can get your density — your watts per square meter — up on the field.”

Today, there is widespread consensus on the benefits of solar trackers for utility scale projects – which is why the tracker industry is seeing such rapid growth domestically and internationally. ATI continues to evolve and expand its solar tracker product line in installations around the world. As implementations dictate, ATI adapts the design of its system — from how it's manufactured to how it's delivered to the site to how easy it is to install. The company's unparalleled history informs the engineering decisions.

“We've worked really hard for 27 years. We've taken all our experience and poured it into our product design, and today our tracker is unique in the market,” Corio said. “The key is to focus on intense integration of function to minimize complexity and maximize the reliability of the system.”

For ATI, quality control, reliability and performance are first and foremost — all with the goal of maximizing the profitability and reliability of solar. “Solar is a very simple technology,” Corio said. “The best possible outcome for solar is that you install a system

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and you don't have to do much with it — it just produces power for 30 years.”



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