



Markets & Trends

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Head pointed toward the sun

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One way mounting system providers can gain attention for their brands is through advertising high-visibility installations, such as this project by Pacific Gas & Electric, which uses Clenergy's Terrace II mounting system.

Ratcheting up competition

Mounting system industry: Competition among mounting system makers is inspiring more engineering efforts to drive down costs while generating better structures. Companies are pursuing multi-pronged strategies to survive.

Manufacturers of solar racking and mounting systems that compete in the U.S. market are finding increased competition at the same time they are under rising pressure to reduce costs and shorten installation times. To achieve this, their engineering teams are working to streamline frame designs and hardware, to reduce metal content, and to make their products as installer-friendly as possible.

The competition is unquestionably leading to consolidation in the U.S. mounting system industry, much as it has swept U.S. module makers over the past few years. As a result companies are seeking to distinguish themselves through new engineering and certifica-

tions, stronger relationships with installers, high-visibility, and at times charitable, installations, and the targeting of market niches.

Trend toward integration

Among the client demands that mounting system makers are facing is a broad trend toward single vendors supplying complete PV systems. As a result, individual component makers will find themselves competing against more vertically integrated companies with deeper research and development fund pockets. "If you make just one thing well in the market, your company will likely be acquired by a larger company that incorporates it into their portfolio," says Bart

Leusink, the CEO of Renusol America, based in Atlanta. "At trade shows we have been seeing four or five new competing companies at the same time that one or two are missing, so part of the attrition among companies is being replaced. But we've definitely started seeing a bit of a slowdown in the emergence of one-product companies," he says.

Vertically-integrated companies like Solon and SunPower have an advantage in their ability to design racking and mounting systems around their core panel products, so integrated solutions are more cost effective for them to design than single-component manufacturers seeking to make a universally-adaptable product, notes GTM analyst

Photo: Renusol



Renusol is using snap-on clamps for mounting.

MJ Shiao, in Boston. “It’s not trivial to integrate a mounting to a module; there is a lot of testing for loading on the glass, on the mechanical stress, and on water resistance,” he says. And the breakup of vertically integrated companies like Conergy can spin off subsidiaries like Mounting Systems Inc., based in West Sacramento. While much of Conergy has been purchased by Miami-based Kawa Capital, its mounting systems units are still in play.

SunLink, which now provides integrated panel-racking systems – like its Precision RMS – is also moving into the integrated frameless panel market. “The panel makers have taken metal away from the frames, so now we need to put more material in more efficient places,” says Yury Resnikov, the Vice President of products and strategy at the San Rafael-based company. “We are in early conversation with five frameless module manufacturers trying to maximize the advantages of integration. We hear numbers like 15% of total module cost being associated with the frame, so we have some room for savings out of that,” he says. SunLink also is talking with a “multibillion dollar chemical company” about developing the use of polyurethane adhe-

sive to attach panels to frame struts, further reducing metal part use.

Manufacturers of fixed-tilt mounting systems for ground installations also may find themselves in strategic alignment with tracker companies, so that a full portfolio of solutions can be offered to a prospective client. “We are in talks with four or five mounting companies about supplying our tracker under white label to them so that they can sell it under their brand,” says Christopher Connors, the CEO of The Solar Tracker Co., of Hampton, New Jersey.

Less metal, fewer parts

Among other recent design changes that embrace the trends of less metal and fewer parts, A+ Sun Systems’ SunNet design drastically cuts metal volume by utilizing wire rope for most of the structure of its ground or roof mount systems, lines of which can extend up to 200 meters. “The weight is only half of what a traditional metal frame system would be,” says Alberto Di Gaetano, the Managing Director of the company based in San Bonifacio, Italy. The company suggests that a pre-assembled 1 kW system can be installed in 40 minutes by two workers.

Similarly, Mounting Systems in May launched its open terrain PV racking system Sigma I XL, in which the substructure “combines the advantages of the Sigma I single-post racking system with the robust Pi-rail technology of the Sigma II,” the company states. The system is click-based and requires no nuts or bolts. Similarly Ideematec’s safeFix fixed-tilt system is now assembled by only rivets, avoiding screws and clips.

Lydia Hannemann, Manager of Public Relations for Mounting Systems in Rangsdorf, Germany, adds, “New connecting technologies such as Quickstone and Clickstone dramatically reduce the time involved in PV systems assembly and installation and in connecting array components. Integrated bonding features in both Alpha and Alpha+ reduce both material and installation costs. Unique features such as telescoping rail ends eliminate the time and inconvenience associated with cutting rails to length.”

Metal roofs also are gaining trimmer solutions. Renusol recently launched its railless MetaSole system for trapezoidal sheet metal roofs, which is pre-assembled in a fully modular section without separate base, end or top sections. The unit employs one middle clamp and one end clamp for fastening. “We can ship a 5 to 7 kW system by UPS, if need be,” says Leusink. “This is one of our fastest growing lines because of its simplicity,” he reckons. “Some of our competitors’ portfolios of models include 5 to 15 different sized clamps, and rails might come in three to five different sizes – other than length; and by using only one size clamps we are reducing stock keeping units (SKUs) for our distributors and installers,” he points out.

Flat roof tray system vendors are also reducing parts and weight. Leusink notes that the weight distribution of his company’s plastic tray-based ConSole60 flat roof system is so broad that installers have concluded that “there is no true point load, unlike other flat roof systems where weight is transferred.” Similarly, last year, Solon’s SOLquick roof system was selected as the winner of the Intersolar Innovation Award for its use of lightweight material – including Fibrex, a wood and plastic composite made by Andersen Corp. – and its easy installation.

Another low-weight tray-based design is by Sollega, of Markham, Ontario,

whose FastRack is composed of thermoformed high density polyethylene including ultraviolet inhibitors. The product was launched in the United States a year ago.

Targeting installers

Competition for sales to solar integrators can be difficult within a field of seemingly similar products. Thus some mounting companies are seeking word of mouth recommendations from installers to sway purchasing decisions. "It's hard to get installers to change what they are used to, and they are generally not open to switching mounting systems unless there is some amazing price difference," says Kristine Weaver, the Director of Product Management, Quality and Marketing at Centrosolar America, in Scottsdale, Arizona. "So we want to offer them what they want, and our value proposition is the entire system solution. Racking is just a part of it," she says. "We don't focus on the price of racking because our market niche is selling CentroPacks," she says.

So giving installers what they want sometimes means selling a competitor's

KEY POINTS

- The trends are towards less metal, fewer parts, less weight, broad weight distribution, and avoiding screws, nuts and bolts.
- Vertically integrated companies are producing cost-effective integrated solutions.
- Charitable installations can attract even more attention than mere size.
- Designs for a heavy snow load, high soiling, and landfill sites are attractive niches.

product. Centrosolar relies on its U.S. subsidiary Renusol for much of its racking and mounting needs, but the company also is an "elite partner" with Unirac, and offers their products where the fit is what is needed for the sale. "We've looked at other mounting system companies in the past, but this relationship works well now," she adds. In 2011, for example, Centrosolar AG signed a licensing agreement with Zep Solar, of San Rafael, California, for the use of their mounting solutions for photovoltaic systems, which includes a trademarked Zep Frame that is a virtual standard in some markets of the U.S. PV industry.

Touting certifications

Another way that mounting companies are distinguishing themselves from the

competition is through standards certifications, often from multiple international sources.

Clenergy, based in Xiamen, China, for example, was recently issued a certificate from the U.K.'s Microgeneration Certificate Scheme – the MCS 012 roof mounting standard – for fixing solar panels on roofs using the company's PV-ezRack SolarRoof Pro mounting systems. The company had already been accredited through Germany's TÜV Rheinland and RAL Gütegemeinschaft Solarenergieanlagen, under its RAL-GZ-966 standards. Now the company plans to launch the mounting system in the United States in March 2014, according to Alan Roper, the Director of Operations for Clenergy America, based in San Diego. Clenergy has recently built a new factory in Xia-

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Shine WebBox

Photo: A+ Sun Systems



A+ Sun systems' wire rope framing cuts weight in half.

men, so economies of scale will help bring down product cost, he points out.

PanelClaw, of North Andover, Massachusetts, goes a step further, and issues its own mounting system compatibility testing of third party modules through Intertek's ETL listing services, extending the credibility of its own UL 2703 compliance. "PanelClaw is the first U.S. company to achieve listing/classification of its mounting systems and component recognition of its module mounting attachments under UL 2703, 'Rack Mounting Systems and Clamping Devices for Flat-Plate Photovoltaic Modules and Panels,'" the company announced in August.

For integrator assistance further along in the client design process, Tucson-based Schletter in August released a version of its PV Powerhouse flush mount modeling tool that will yield a stamped structural acceptance letter. The tool also is linked to Schletter's online PV components store. A similar design tool released in April is Unirac's UBuilder tool.

Large installs garner attention

Mounting systems are not by definition high visibility components in a PV system.

So one way mounting system providers gain market attention for their brands is through advertising large, high-visibility installations. Clenergy, for example, was touting its supply of PV-ezRack Terrace II mounting at a 39 MW combined project for Pacific Gas & Electric in Cantua and Giffen, California, last year, supporting close to 165,000 panels from Q-Cells.

Similarly, RBI Solar, based in Cincinnati, is working on its first Wal-Mart installation through a partnership with SolarCity, one of the largest residential installers in the United States. Installations with such national developers on national chain clients will help spread mounting system branding across state markets quickly.

Charitable donations stand out

As a subset of high-visibility installations, charitable projects can attract even more attention than their mere size warrants. As a result, many racking and mounting systems makers are offering their products for use in emergency relief donations and other charity projects.

Habdank PV Canada, based in Mississauga, Ontario, for example, recently pro-

vided a system for the Beatitudes Home orphanage project in Kingston, Jamaica, working with engineering firm Virtual Engineers and with the York (Ontario) Regional Police Officers, who did the installation as a public service. The system was touted by the company as able to withstand hurricane-level winds, which have done great damage in the Caribbean over the past two years.

In the same way, Albuquerque-based Unirac donated a SolarMount-E mounting system for a 52 kW PV array at the Zanmi Beni Home for Children last year, just north of Port-au-Prince, in Haiti. The installation was completed in June 2012 with the help of NRG Solar.

Charitable donations of time and money, apart from goods and services, also earn notice for mounting system manufacturers. RBI, for example, has supported Ronald McDonald House Charities for five years, organizing fund raising activities and special lunches. In some cases, the advertising value of being mentioned favorably by a strong charity can be worth far more than a commercially-financed public relations campaign.

Niche market designs

There are a host of market niches that mounting companies are called upon to design their products to serve. However, some products gain more notoriety in some niches than other. Designing for a heavy snow load is one common niche market in the United States that mounting system makers like Habdank and KB Racking are targeting to distinguish themselves from the field of players.

KB Racking, based in Toronto, recently contracted with engineering firm Rowan Williams Davies & Irwin Inc. to conduct an independent study of the company's AeroRack and EkonoRack mounting systems under heavy snow loads on flat rooftops. The study, which the company is now promoting, indicated that the mounting systems decrease the overall volume of snow accumulation because the aerodynamic design shields the roof from snow while the panels melt snow on their surfaces. Featuring integrated grounding, the EkonoRack also permits installers "to ground only once per array, reducing our customers' costs by at least five cents per watt," suggests Peter Aulich, the Chief Operating Officer of the company.

Habdank also recently released its Fa Duo double-pole mounting system, which enables high angle raking, allows for more panels to be installed per frame set, and withstands heavier snow loads than single-pole systems, the company reports. A model installation was completed in Michigan state earlier this year.

Pursuing the high soiling niche, Alion Energy, of Richmond, California, has designed a continuously extruded concrete racking system, including a track-guided cleaning robot, for fixed ground-mounted PV installations in locations like Saudi Arabia. Mark Kingsley, the CEO of the startup, suggests that if mounting systems represent 40% to 50% of total PV system costs, his company's technology can reduce that percentage by 25% to 30%, resulting in a total system cost reduction of about 10%. The use of the company's Rover cleaning robot can drastically reduce soiling shading losses in locations like Saudi Arabia, where a 40% loss level might be typical without intervention.

Landfill sites, where ground penetration is avoided, are another U.S. niche that several companies are targeting. RBI, for example, recently installed

some 40,000 linear feet of mounting for a 5.7 MW Canton, Massachusetts, landfill project. The floating ballast, fixed tilt installation was designed in cooperation with Gemma Renewable Power, and was engineered to resist 55 pounds per square foot (PSF) of snow load and 100 mile per hour (mph) wind speeds. The RBI system is designed for pre-cast or poured concrete.

Renusol also recently installed a 1 MW ballasted system at a landfill in Michigan, Leusink says.

In Europe, Solon in June began construction of a 1.2 MW solar system with its 220/16 modules at the Oberhaugstett landfill, commissioned by AWG Abfallwirtschaft Landkreis Calw, a waste management service provider in the district of Calw; U.S. installations are expected to follow.

Other entrants to the landfill niche include Schletter, which in August released its PvMini, a lightweight, ballasted ground-mounted system for landfills, brownfields, and areas with rocky terrain. "The system's triangle supports our proprietary new ProfiPlus XT rail design, which allows for longer spans and decreased ballast weight," the company says. Similarly, Unirac in July unveiled its Roof Mount ballasted mounting system at Intersolar in San Francisco. Little modification is required to adapt ballasted roof-mounted systems to ballasted ground-mounted situations.

A+ Sun Systems' SunNet design also could be used in landfills or in very steep locations – like the side of a vertically-oriented silo or tank – where only the ends of the wire rope runs need to be secured to the ground, Di Gaetano points out.

Broadening niche pursuits beyond utility and commercial applications, some integrated panel-mounting system players are aiming at the vast do-it-yourself niche market.

Westinghouse, for example, is beginning to market its products through big box home improvement centers, like Lowe's. "We have taken care of a lot of the integration of the balance of system; we are plug-and-play up to the home run," says Roger Pang, the Director of Business Development for Westinghouse Solar, in Campbell, California. His company was one of the first to claim a 50% reduction in installation time for integrated panel-mounting systems. ♦ Charles W. Thurston

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