PRESSEMITTEILUNG • PRESS RELEASE • COMUNICADO DE PRENSA

New NREL Three Year and DLR Test Data Establishes Performance Benchmarks for Aluminum Front-Sided Mirrors for Solar Applications

Independent tests show Alanod-Solar metal mirrors have longest sustained durability and performance for aluminum mirrors and are well suited for CSP applications

Ennepetal, Germany – Dec. 01, 2009 – Recently released measurement and accelerated weather testing data from both the National Renewable Energy Laboratory (NREL) in the United States and the German Aerospace Center (DLR) show that Alanod-Solar metal-based mirrors are well suited for concentrating solar power applications because of their proven durability and sustained level of specular reflection.

NREL subjected Alanod-Solar metal mirrors to accelerated weather testing over a period of three years where they have maintained their initial reflectance. Further, DLR testing showed that with a documented direct reflectivity of between 0.868 and 0.883 (within an acceptance angle >25 mrad), Alanod-Solar mirrors are well suited to concentrating solar power (CSP) applications.

“Taken together, these tests set new benchmarks for levels of specular solar reflection over time,” said Andrew Sabel, North American market manager for Alanod-Solar. “Our proprietary production process results in a superior mirrored surface that can outlast foil products and other alternatives while providing solar technologies with higher performing, longer lasting and overall more efficient surface components.”

Alanod-Solar is a worldwide leader in the manufacturing of advanced flexible reflecting and absorbing solar surfaces on aluminum. The performance of these surfaces leads to higher efficiency, better durability and an overall lower cost of systems for solar technologies. Solar surfaces are the first part of any solar system to make contact with the sun, and must establish a high threshold of performance and durability for the balance of the system.

NREL Test Results

Alanod-Solar metal-based mirror samples of MIRO-SUN® were tested outdoors at three separate NREL facilities in Golden, Colorado; Phoenix, Arizona; and Miami, Florida over a period of three years. During that time, the mirrors showed an average drop of between less than one and one percent in specular reflectance measured within a 25-mrad cone angle.

Alanod-Solar GmbH & Co. KG • Egerstr. 12 • 58256 Ennepetal • Germany
Phone: +49 2333 986-500 • Fax: +49 2333 986-525 • info@alanod-solar.com • www.alanod-solar.com

These samples were also exposed to NREL accelerated weather tests using both an Atlas Ci5000 Weather-Ometer and a BlueM damp heat oven.

The Weather-Ometer exposes samples to a continuous condition of Xenon-arc light, 60 degrees Celsius, and 60 percent relative humidity. It accelerates weathering by roughly six times, meaning that in this 15-month test, Alanod-Solar metal mirrors were exposed to an equivalent of seven and one half years of light. Over that time, the mirror performance declined between less than one and 2.3 percent in specular reflectance.

The BlueM oven applies an even more intense testing protocol, exposing samples to a continuous condition of 85 degrees Celsius and 85 percent relative humidity without light. Over the accelerated test period, which may simulate as much as 25 years of real world exposure, the samples maintained a very high specular reflectance value.

Overall, the test results demonstrated an outstanding degree of consistency and high-level performance during rigorous real world and accelerated weathering tests. There are no known similar results for any other anodized aluminum front surface mirrors, making Alanod-Solar metal mirrors the definition of performance for this category.

DLR Test Results

DLR measured Alanod-Solar metal mirrors for spectral specular reflectance using a Perkin-Elmer Lambda 950 spectrometer with a Universal Reflectance Accessory (URA). Absolute measurements were taken in three positions, rotated each time by 45 degrees. The average and standard deviations of the three measurements was used for further evaluation. The results were weighted with the solar spectrum of ASTM G173-03 at air mass AM 1.5 to produce the solar weighted specular reflectance in the range from 250-2500nm.

According to the DLR report:

“The measured samples show solar weighted direct reflectance values of 0.868 – 0.883 as measured with the [URA within an acceptance angle >25 mrad] in the spectrometer. The optical analysis of the beam spread distributions shows furthermore that most of the reflected energy can be captured within a radius determined by a standard deviation of 0.67 – 1.20 mrad, corresponding to a target radius of 2-4 mrad. This shows that the analyzed materials can be used in [concentrating solar power] applications.”

"Metal based mirrors provide basic material advantages over traditional glass or newer glass products," continued Mr. Sabel. "They are lighter weight and more formable, and now they are proven to have a consistent specular reflectance over time that makes them ideal for concentrating solar power applications."

Complete testing results are available under the Resources heading at the Alanod-Solar website (http://www.alanod-solar.us/press.php) or by contacting Alanod-Solar directly. For more information on solar surface components or to learn about Alanod-Solar's complete line of reflecting and absorbing surfaces for solar applications, please visit http://www.alanod-solar.us or call 1-888-52-SOLAR.

About Alanod-Solar

Alanod-Solar is a division of Alanod Aluminum Veredlung, a thirty-year leader in surface solutions based in Ennepetal, Germany. Alanod-Solar leverages the world's most advanced development labs and production lines to create superior reflective and absorptive surface solutions. The company's long history of excellence and reliability set it apart in the industry, with the performance of its products leading to higher efficiency, better durability and an overall lower cost of systems for solar technologies.

###

Alanod-Solar GmbH & Co. KG • Egerstr. 12 • 58256 Ennepetal • Germany
Phone: +49 2333 986-500 • Fax: +49 2333 986-525 • info@alanod-solar.com • www.alanod-solar.com