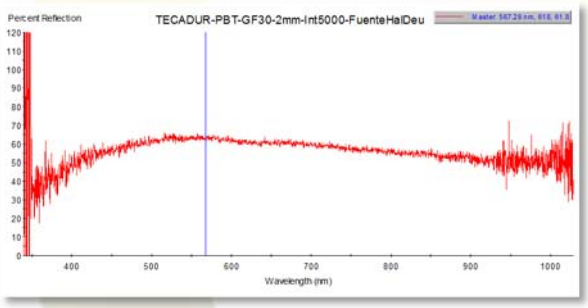
Spectrometric Techniques

Solar field performance and power-sales revenue are directly dependent on mirror reflectivity. Parabolic reflectors are an essential part of solar electric and other concentrating solar power (CSP) systems. Reflectors in CSP systems require a high reflectance over the solar wavelength spectrum and must be durable to outdoor exposure and resist all forms of degradation over time.

It is demonstrated that particle accumulation on solar reflectors causes a significant decrease in their reflectivity. This situation reduces the efficiency of mirror-based solar systems. Economic analyses indicate it is cost-effective to maintain the average field reflectivity above 90%. To accomplish this, frequent reflector washing is required. Washing effectiveness varies according to reflector location (e.g., proximity to high soiling areas, such as roads or cooling towers), time of year and washing methods.



Several **reflectivity** readings with high precision are required to gather the necessary information for rational decisions on washing method and frequency. With a good knowledge of the field reflectivity, customer will be able to perform a detailed knowledge of the washing methods effectiveness. It is possible to apply the results of this work to optimizing cleaning and maintenance procedures for solar reflectors.

The measurement test method implemented by **Ines Optics** in four solar concentration plants (standard of reflectance factor, illuminating and viewing conditions, calculations,..) will be performed in accordance with the CIE (International Commission International On Illumination) recommendations. These recommendations on practical methods for the measurement of reflectance factor are described on German Standard “DIN 5036 - Radiometric and photometric properties of materials; methods of measurement for photometric and spectral radiometric characteristics”. Measurements in reflection according to DIN 5036 can be done using the measuring geometries 45°/0°as well as 8°/d and d/8° including or excluding the specular reflection.

Laboratory and field measurements

- Field measurements of reflectivity in mirrors of solar concentration according to DIN5036 (control of the state of conservation and cleaning of mirrors in solar thermal plants)

- Measures of transmission in filters of protection against radiations according to norm UNE

- Colorimetric measurements on retroreflective vests for European interlaboratory standardization

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