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Press release

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Innovations for Solar Technology from the Hönle Group:

Panacol Adhesives and Hönle Sunlight Simulation Systems

Solar energy can be utilised in many ways. Its conversion to environment-friendly electrical energy in photovoltaic installations is already widespread. The EU Directive on the promotion of the use of energy from renewable sources of April 2009 will accelerate the development of solar technology still further. The Hönle Group – one of the world's leading suppliers of industrial UV technology – already has trendsetting products on the market for this progressive sector: Adhesives specialist Panacol supplies a range of high-tech adhesives, which have already firmly established themselves in the solar energy sector; the Group's parent Dr Hönle AG develops and manufactures solar radiation simulation systems, which are being used with great success for load testing photovoltaic modules in compliance with IEC guidelines.

Bonding solar cells, and conductive adhesives as die bonders

Panacol's adhesives are used, for example, in the new concentrator photovoltaic technology. Two types of adhesive are used here: conductive products as die bonder, and UV curing adhesives for bonding solar cells to glass enclosures. Panacol products can also be used to bond solar cells to enclosures made from other materials. The highly flexible **Elecolit® X-410656** – a thermally curing epoxy resin with 80% silver filler – has proven ideal for this purpose, especially for applications in which vibrations or rapid temperature changes occur. This adhesive can be applied with a dispenser, a stamp or by template or screen printing. A further specialist product for solar cells is the UV curing acrylate adhesive **Vitralit® Y-410566**, which, depending the application, can be cured in just 15 seconds. Because of its low water absorption and acid-free, non-toxic and non-corrosive ingredients, this flexible, elastic adhesive is especially suitable for bonds exposed to extreme moisture. **Vitralit® Y-410566** is also available with a thermal conductivity above 0.8 W/mK.

In combination with Hönle's wide range of UV lamps, Panacol's adhesives offer numerous benefits in production processes.

Hönle sunlight simulation systems

Photovoltaic modules must be able to cope with arduous duty, being expected to function reliably for more than 20 years at constantly changing and often adverse weather conditions. To ensure the required build quality, they must be tested under extreme conditions.

Over the past years, a test certificate based on IEC guidelines has established itself as industrial standard. Dr. Hönle AG has responded by developing irradiation systems for testing photovoltaics modules by various methods, such as light soaking, hotspot or UV preconditioning. Hönle's wide selection of solar radiation simulation systems are manufactured specifically to customer requirements and range from small laboratory test stands to large irradiation chambers.

All of Hönle's **solar radiation simulation systems** are based on the proven, in-house-developed SOL devices, that work with electric discharge lamps containing metal halogenides. These irradiation sources emit an almost continuous spectrum that closely approximates real sunlight. The energy for the lamps can be supplied through conventional choke ballast units or Hönle's own electronic ballast devices. These ballast units offer several advantages, including a highly stable output power, even at fluctuating mains voltage. The electronic ballast increases the lamps' lifespan and can also be used to regulate their emission intensity. In combination with electronic ballast units, all Hönle solar radiation simulation systems fulfil requirements CCA to BBA according to IEC60904-9. On request, CCC solar radiation simulators are also available.

The emission of Hönle's UV irradiation systems is also provided by electric discharge lamps, which have been optimised for a large irradiation field in the UVA and UVB range. With special filter systems the ratio of UVA to UVB can be adjusted to cater for the varying requirements for crystalline PV modules and thin-film modules.