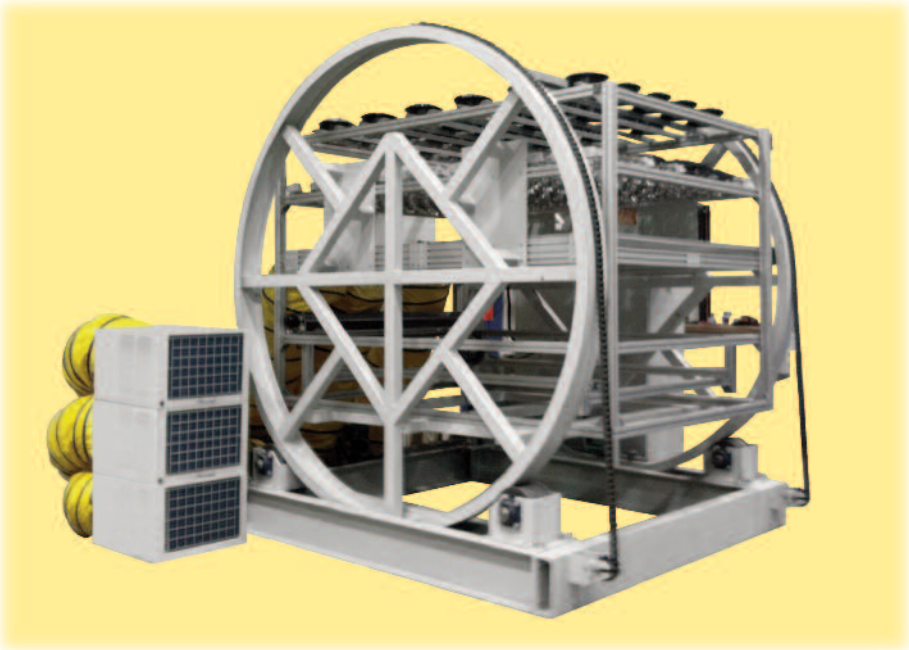
STEADY-STATE SUN SIMULATORS

for Thermal Collectores and Photovoltaic Modules

Our steady-state sun simulators are ideal for many different investigations. They are easy to build, working safely and are simple in maintenance. Because of their modular structure, combining a large number of lamps with best lighting data we receive not only best values concerning local and temporal inhomogentity but also the possibility of an extension for larger areas. We are planning and building the sun simulator just as you want to have it.



Description of Function

To measure the output performance of solar thermal collectors (efficiency curves) and photovoltaic modules (I-V curves) independent of weather conditions sun simulators are a good solution. There are two principle possibilities for producing simulated sunlight:

- Flashing lights
- Steady-state sun simulatores

The basic advantage of steady-state sun simulatores is their easy, cheap and rugged construction. For PV these simulators make it possible to measure even cell materials with higher response times than crystalline pn-silicon. Very easy to measure is nominal operating cell temperature (noct).

And for testing of solar thermal collectors there is no indoor alternative to steady-state sun simulation.

The simulators are good for development in research instituts and quality assurance in the PV module production as well as for educational aspects. Our simulators are built meeting VDE 0100 concerning safety low voltage and can be used for solar thermal collectors and for PV modules as specified in DIN IEC 61215 and IEC 60904-9 for terrestric PV modules.

As another part of our steady-state simulator family the Mini-SuSi has been developed. This complete device is a simple and cheap possibility to provide a stable light source with solar spectrum. It is suitable for measuring I-V curves of PV cells in combination with our cell adaptor for the I-V curve analyser PV-KLA.

We plan Your steady-state sun simulator for easy building at Your local site. Therefore we make a concept, based on Your requirements (enlighted area, maximal inhomogenity of irradiance in test plane), which then will be realized by the experts of our company.

INGENIEURBÜRO
Mencke & Tegtmeyer GmbH

Meßgeräte für die Solartechnik

INGENIEURBÜRO
Mencke & Tegtmeyer GmbH

Schwarzer Weg 43A
D-31789 Hameln
Phone: +49 51 51 40 36 99 - 0
Fax: +49 51 51 40 36 99 - 19
email: info@ib-mut.de
http://www.ib-mut.de

Banking Account:
Stadtsparkasse Hameln
(BLZ 254 500 01)
Konto 5 22 33

UID-Nr. DE258133277

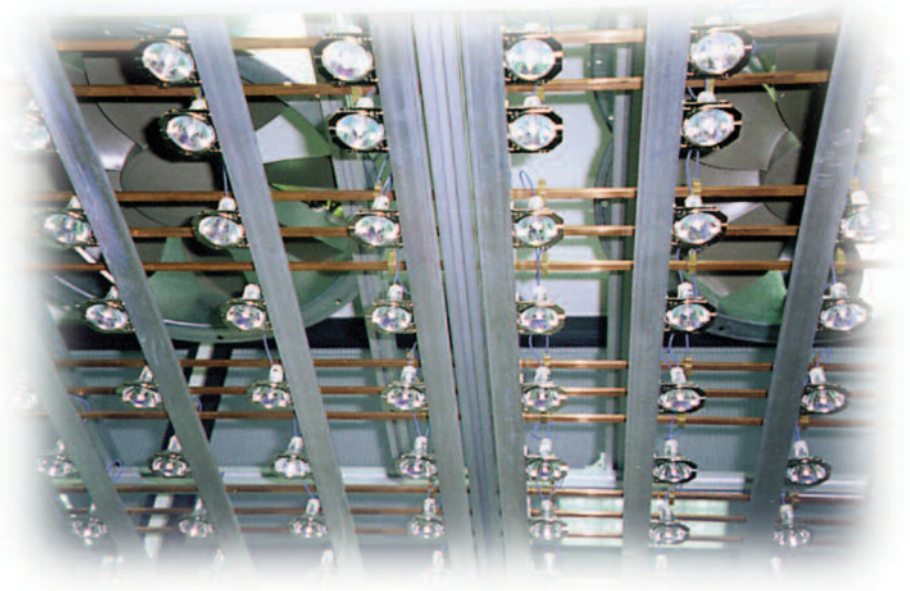
Customs no: DE6018572

County Court Hannover
HRB 202636

SUSI
Steady-State Sun Simulator

Technical Data

- Spectrum: AM 1.5 or AM 2.0 (class C)
  Upgrade to class B or A on request
- Temporal inhomogenity (long and short term): Better than ±0,2 % (Class A)
- Local inhomogenity: Better than ±5,0 % (Class B)
- Irradiance within sample plane: 1.000 W/m²
  (every other irradiance on request, also variable, low irradiance test)
- Possibility of implementing a “cold sky”
- Possibility of wind simulation
- Lamps used: Halogene reflector lamps
- Nominal Operating voltage: 17 V
- Lamp power of one lamp: 150 W
- Lamps used for spectrum upgrade: High-power LED, current driver for 3 LED
- Power supply: Low voltage DC via switching power supply (RS232 or RS485 port)
- Maximum value for enlighted area:
  (nearly) unlimited (Mini-SuSi also for measurement of PV cells)
- Control and display: Manually and via software SuSi Control



REFERENCES

Forschungszentrum Rossendorf
Fachhochschule Flensburg
Antec Solar GmbH, Rudisleben
Fachhochschule Gelsenkirchen
Solara Sonnenstromfabrik Wismar GmbH (now Centrosolar Sonnenstromfabrik GmbH)
Austria Solar Innovation Center (ASIC), Wels, Oberösterreich
Centro Nacional de Energías Renovables (CENER), Pamplona, Spanien
Fachhochschule Ingolstadt
CIS Solartechnik GmbH, Hamburg
Avancis GmbH, München
Bangkok Solar, Thailand
Transilvania University of Brasov, Romania
Intertek Semco, California, US
Signet Solar GmbH, Dresden
General Electric Solar, Newark, US
University of Warwick, United Kingdom
WATT, Sosnowiec, Poland