HENSEL

THE ELEKTRO Tipp

Customer information for electro-technical specialists

2/2011

Collection of new ideas in the Electrotechnical Industry

Dear Readers,

As far as we know, no other company in the industry has expanded as systematically into the photovoltaic (PV) market as Hensel.

The requirements for safe PV installation have risen continuously primarily because it has recently been discovered that in many parts of the world some grave errors were made in installation which will have a long-lasting impact on the life cycle and/or the performance of PV plants. We have also heard of damage that has led to the destruction of important components.

In today's Elektro-Tipp, we want to emphasize our expertise in generator junction box solutions for both on-grid as well as off-grid and only grid requirements. We would love to talk to you about the specifics involved. Please call us!

The many and successful projects indicate the enormous amount of trust system suppliers for photovoltaic plants have in us.

F.G. Hensel.
Managing Director
Gustav Hensel GmbH & Co. KG

Published: The new draft of the IEC 60364-7-712!

Requirements for Photovoltaic (PV) power systems

The dynamic development of equipment technology and the expansion of areas where photovoltaic plants are used make it necessary to re-examine the regulations governing their electrical installation.

A lot experience gained in the years since the last edition of IEC 60 364-7-712 in 2002 was introduced in its current version.

The requirements governing lightning and surge protection, protection against electric shock and fire protection were especially important.

In addition to the technical changes already mentioned, photovoltaic equipment is being used in more and more new application areas.

Thus the draft of IEC 60 364-7-712 was expanded for the first time to regulate photovoltaic equipment which may supply as an alternative to a public grid and those supplying an installation which is not connected to public grid (stand-alone) and where no public grid is available.

The following pages will illustrate how the application of this standard shall be implemented on photovoltaic equipment in practice.

These application areas for PV systems are now defined by the new IEC 60364-7-712 (Draft):

Grid-connected operations

GRID System

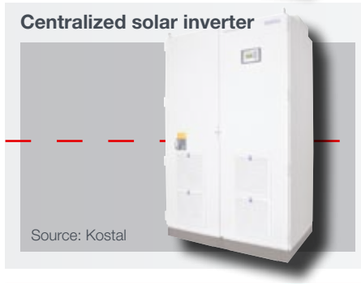
PV system used to provide grid support

„PV systems for supply to an installation in **parallel** with a system for distribution of electricity to the public“

PV generator

PV generator junction boxes

Centralized solar inverter



Source: Kostal

Solar inverter collector

ON GRID System

PV system for consumer power production

„PV systems for supply to an installation in **parallel** with a system for distribution of electricity to the public“

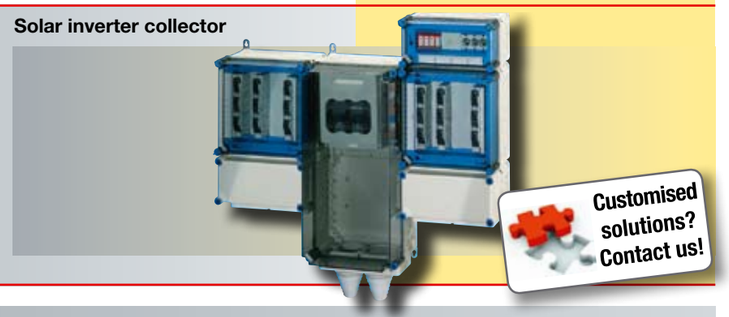
PV generator

PV generator junction boxes

String solar inverter

Source: SMA Solar Technology AG

Solar inverter collector



PV system for consumer power production with power storage

„PV systems for supply to an installation as an **alternative** to a system for distribution of electricity to the public.“

PV generator

PV generator junction boxes

String solar inverter

Source: SMA Solar Technology AG

Solar inverter collector

Customised solutions? Contact us!

Electrical installation or public power supply

direct current

DC

AC

alternating current

Off-grid operations

OFF GRID System

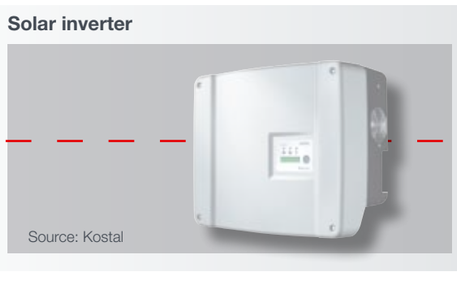
PV system with power storage independently of the power grid.

„PV systems for supply to an installation which is not connected to a system for distribution of electricity to the public (**stand alone**)“

PV generator

PV generator junction boxes

Solar inverter



Source: Kostal

Solar inverter collector

Electrical installation

Power storage

Power storage operate

- in PV systems for consumer power production in **alternative** to a system for distribution of electricity to the public.
- and for **stand-alone** supply to an installation which is not connected to a system for distributi-on of electricity to the public.

Example: Battery

Battery distributor

Stand-alone inverter

Source: SMA Solar Technology AG

ENYSUN photovoltaic distributors from Hensel for DC and AC areas in PV plants work reliably and conforming to standards in all ranges of applications!

Phtotovoltaic solutions from Hensel: safe, conforming to standards, pre-fabricated!

Safe ENYSUN distribution boards of Hensel for the DC and AC area in PV systems for all applications!

All ENYSUN distributors fulfill the requirements of the new IEC 60364-7 - 712 (Draft). High quality materials ensure long-term effective functioning.

- Suitable for the unprotected outdoor installation: UV and korrosion resistant
- Dust and waterproof: Degree of protection IP 54/IP 65
- Impact resistant: IK 08
- Stainless steel external brackets for box fixing
- In accordance with IEC 61 439-1/-2

PV Generator junction boxes

- **Protection class: II** ⧈
- ready for connection
- rated current: up to 400 A
- rated voltage: DC 1000 V ($U_{OC\ STC}$)
- for up to 24 PV strings
- optional with DC overvoltage protective device for PV plants

Battery distributors

- Protection class: II ⧈
- ready for connection resp. complete enclosure sets
- with protective devices for outgoing circuits to solar inverters
- with disconnect switch to disconnect the battery from the distributor
- rated current: up to 400 A
- rated voltage: DC 120 V

Solar inverter collectors

- Protection class: II ⧈
- complete enclosure sets, which can be individually adapted to each environment
- optional with AC overvoltage protection device
- for solar inverters up to 11 kW, 1~ for solar inverters up to 33 kW, 3~
- max. rated operating current: 48 A
- rated power: 70 kW, 140 kW

Would you like to know more about the innovative products by Hensel?
Stay one step ahead … think along new lines …let's meet and talk.

5th RENEWABLE ENERGY INDIA 2011 EXPO
International Exhibition & Conference
Pragati Maidan, New Delhi
10-12 August 2011
Booth 13, Hall 7E

SOLARCON India2011
Solarcon India 2011
Hyderabad
9-11 November 2011
Booth 305

inter solar
Inter Solar India 2011
Mumbai
14-16 December 2011
Booth 1368

Delivery in India via Hensel authorized distributor network spanning 130 cities and industrial centers.

Delivery in South East Asia via Hensel authorized distributor network in all ASEAN countries.

ENYCASE
DK Cable junction boxes
1.5 to 240 mm², IP 54-67

ENYBOARD
KV Small-type distribution boards up to 63 A,
3 to 54 modules, IP 54- 65

ENYSTAR
Distribution boards
Combinable enclosure system with door up to 250 A, IP 65

ENYMOD
Mi Distribution boards
up to 630 A, IP 54-65

ENYFIT
Cable entry systems

ENYCON
Construction board panels
up to 630 A, IP 44-65

ENYSUN
Photovoltaik distributors that meet the standards

R. Rajesh
Managing Director

Hensel Electric India Pvt Ltd
info@hensel-electric.in
www.hensel.in

Hensel Electric India Pvt Ltd
Industrial Electric Power Distribution Systems
35 Kunnam Village
Sunguvachathram - Walajabad Road
4th km behind Samsung/Flextronics
Sriperumbudur - 631 604 · Kanchipuram Dist, Tamil Nadu
Phone: +91-44-3727 0202
Fax: +91-44-3727 0200
Email: info@hensel-electric.in · www.hensel.in