Dr. Frank Schlichting
CEO
Solar-Log™

"Today monitoring and performance analysis of solar plants has become extremely critical due to the increasing cost of operation and maintenance as well as reduced yield due to performance degradation during the lifecycle of the plant equipment. This means that the use of a monitoring system becomes essential to ensure high performance, low downtime and fault detection of a PV plant. This is especially valid for the very dynamic Indian market, where often quality is compromised by very tight time constraints."

Energetica India discusses the product portfolio of Solar-Log™ and the company' progress in India with CEO Dr. Frank Schlichting.

ENERGETICA INDIA: **Congratulations on winning the Gold Award in the category India's "Solar Monitoring Company of The Year". How has been the journey in India so far?**

DR. FRANK SCHLICHTING: Thank you very much. We at Solar-Log™ really feel honored to be granted this important award. We see it as a gratification for our hard work, dedication and commitments to the Indian market. Certainly our product quality, price-performance ratio, technical supports and local stock facility helped us to achieve this award. The energy transition in India is fully underway. We are determined to support this fantastic development also in the future with all means we have at our disposal.

So far, our journey in India is very satisfying. We all know, the Indian Government is very much focused on the solar sector. We are very pleased to see the response from the Indian market & will continue to work in direction to fulfill the Indian market expectations.

In February last year we have started our operations in India. Currently we are monitoring 1500+ sites here and have a total market-share of more than 15 percent in rooftop monitoring.

Solar-Log™ Dashboard + Data Logger

ENERGETICA INDIA: **Why is monitoring PV plants so fundamentally important, especially in India?**

DR. FRANK SCHLICHTING: Solar Energy is an important source of energy all over the world and especially in developing countries like India. Therefore it is very important that PV plants are working smoothly.

Only with a professional PV monitoring system errors and malfunctions at PV plants are immediately detected and can be resolved quickly. This helps to minimise yield losses and therefore protects your PV investment. For example, failure of one or several inverters, cable damage, faulty installation and/or wiring, dirt and grime on the modules all cause yield losses and need to be corrected as soon as possible. Furthermore, expert monitoring is the basis for precise optimised consumption of self-produced energy, i.e. true energy management.

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In short: A professional monitoring system protects your PV investment.

ENERGETICA INDIA: **What products & services do you offer in India?**

DR. FRANK SCHLICHTING: The products we are offering in India are

Solar-Log™ Hardware/ data loggers:

- Solar-Log 250- suitable for monitoring of PV Plants rating up to 10 Kwp
- Solar-Log 300- suitable for monitoring of PV Plants rating up to 30 Kwp,
- Solar-Log 1200- suitable for monitoring of PV Plants rating up to 250 KWp and
- Solar-Log 2000- suitable for PV Plants rating up to 2000 Kwp

Solar-Log™ WEB "Commercial Edition":

This qualified software working tool helps EPC and project companies to save time and money. With this portal, several PV plants can be monitored and controlled at the same time. The software platform does provide detailed analysis on what happens on the plant, offering an integrating ticket system, remote configuration, logbook and individual reports.

Solar-Log Sensors and other accessories:

- Sensor Basic & Sensor Box Professional, which delivers the irradiance values as well as the module temperature.
- Sensor Box Professional plus with optional accessories like wind sensor & ambient temperature sensor.
- Sensor Box Professional Plus also has the option to connect an ambient temperature sensor and window sensor in addition to inbuilt irradiation & module temperature sensor.

Feed-In Management Solutions:

"X%" Regulation: The function "X Percent Fixed Regulation" with the calculation of self-consumption offers an innovative solution to minimize losses that results from the fixed regulation.

Zero Export limitation: Solar-Log™ will ensure that no amount of power will feed-in into the grid.

eControl Box (PV-Hybrid System):

This product (eControl-Box) is used for PV-Hybrid Plants where it manages in-parallel operations of a photovoltaic system and a diesel generator. This box can also be used in situations where it is not allowed to feed any power back into the grid as the protection system.

Solar-Log™ APP:

The Solar-Log™ App visualizes: plant information yield overview (day / month / year / total), consumption overview (day / month / year / total), CO^2 overview (total), current values, slideshow mode, sub-consumer view etc. over the Android/ iOS devices.

Solar-Log™ APP on Apple watch

ENERGETICA INDIA: **How can solar developers calculate pay-back on solar monitoring systems?**

DR. FRANK SCHLICHTING: On PV plants, investment returns depend on actual generation of PV power & performance of PV plants. Regularly monitoring will not only increase the performance but also reduce the downtime of PV plant.

Based on a study with focus on the question, "Which losses occur with PV plants when various components fail", we have verified the advantages of installing a professional monitoring system.

An example from this analysis: partial failure of one or several inverters

PV PLANT DATA	
Total Power	52.38 kWp
Inverter Power (INV 4+5)	20.16 kWp
Percentage INV 4+5 w / plant	38.5 %
No. of inverters	7
Performance of inverters	2x4; 2x6. 3x10 kW
Location	Germany
Plant completion	June 2006

Two of the seven inverters were not working for 31 days in August 2015.

CALCULATION	
Total yield August 2015 all inverters	7,442 kWh
Yield August 2015 (INV 4+5)	2,904 kWh
Average yield per day (INV 4+5)	93,70 kWh
Breakout time of the PV Plant	Energy loss
31 days	2,904 kWh
5 days	468 kWh
Difference / saving	2,436 kWh

The plant owner had a loss of 2,904 kWh since two of the plant's inverters were offline for 31 days and the failure was not immediately detected, reducing the actual PV production greatly.

With a professional monitoring system like Solar-Log™, failures like this can be detected instantly. Within about five days, the installer can fix the failures. In this case, the loss would have then only been 468 kWh, preventing a loss of 2,436 kWh.

This example shows that an investment in a Solar-Log™ Energy Management System is worthwhile in any case.

Solar-Log™ hybrid eControl-Box

ENERGETICA INDIA: **What is so unique about Solar-Log™ hybrid eControl-Box?**

DR. FRANK SCHLICHTING: The hybrid eControl-Box is a solution which allows an actual follow up of the production and consumption of a site and a management of the PV production as per two predefined scenarios:

- In grid use, the hybrid eControl-Box will make sure that the installation does not export to the grid or depending on conditions can allow a full or partial export.
- In generator use, the eControl-Box will be the conductor of the installation and will make sure that the PV production will only be the difference between the minimum threshold configured for the genset (advice 40%) and the consumption.

In case of failure, the hybrid eControl-Box will switch to the security mode and stop the solar production. The hybrid eControl-Box switches back to normal mode after all parameters returned to normal conditions..

ENERGETICA INDIA: **It will also be helpful to learn some more on company's global background 20.**

DR. FRANK SCHLICHTING: Solare Datensysteme GmbH (SDS), based in the German city of Geislingen-Binsdorf, is one of the leading companies in the areas of solar monitoring, smart energy, and feed-in management with global service for operators and installers. Since August 2015, SDS is a subsidiary of BKW AG (Bern, Switzerland) - a global company for energy and infrastructure.

SDS specializes in developing and distributing monitoring systems for photovoltaic plants, with core competencies that include innovative products with short development cycles and the best price-performance ratio.

SDS has developed and distributed their Solar-Log™ product range since 2007, currently installed in 100 countries - monitoring almost 260,000 plants with a total output of 11.57 GWp. SDS solutions make an important contribution to the successful integration of renewable energy into an intelligent power grid and help to make the successful transition to clean energy a reality.