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Solar-Log™ India - ideal combination of qualified monitored PV plants and grid infrastructure

Namaste!

As you might have learnt from the recent news, India is expected to add more than 9GWp of solar PV capacity this year, but its long-term renewable energy future requires adding transmission capacity and removing bottlenecks immediately, according to the latest quarterly solar market update from Mercom Capital Group. Due to increasing installations in the country, in addition to the existing capacity at present, there are some concerns like transmission issues and that current grid infrastructure might impact handling the PV capacity properly. So please let us take the opportunity today to inform about the Feed-In Management functionalities being provided by Solar-Log™. In addition to this, we are proud to provide you with some more customer information re. our cooperation with Solar-Quest LLP.

Interview with Solar-Quest LLP

Solar-Quest as one of our potential customers in India, has recently been interviewed re. their decision to work with Solar-Log™ products; here is an extract of the interview with Mr. Pranjal Dhariwal (Managing Partner at Solar-Quest LLP):

Solar-Quest LLP is a company focused on providing best in class solutions for roof top solar power plants ranging from 10kW to 1000kW. Since 2013, the company as executed rooftop projects totaling to more than 6000 kW's with smallest plant of 100Watts and largest of 1000kW at single location.

Solar-Log™: what is your motivation to chose different inverters for a single plant?

Solar-Quest: we believe there is no better investment than in knowledge. And with countless products in market to choose from there can never be enough time for trying all products and find out the best. However, to enhance our knowledge of market and to see how under same environment different inverters perform, we proceeded with buying three different make inverters (ABB, Zeversolar & SMA). We want to analyse data which will serve our knowledge as well as will work as a case study for the students in the college we have installed the power plant at (S.A. Engineering College, Thiruverkadu, Chennai (Tamilnadu).

Solar-Log™: what are the challenges you are facing on plant monitoring? How would address the need for an inverter-independent monitoring system?

Solar-Quest: as we installed three different inverters, though all three are already equipped with online monitoring, we would need to monitor all three separately, by logging into their respective servers one by one. This was a huddle and an inefficient way of monitoring at this age of technology. That's when we decided to go with Solar-LogTM which would give us an option of monitoring three different makes of inverters together.

Solar-Log™: performance analysis through Solar-Log™ with different makes of inverter?

Solar-Quest: because of Solar-Log™, we can monitor three different makes of inverter singularly which otherwise we would have to do separately which would have been either expensive or inconvenient. Maintenance of plant is easier, as we can compare output of all inverters real time and any sudden drop is easily identifiable against any particular inverter.The amount of information which we will get from Solar-Log™ is apt and simple. Most likely we will go ahead with Solar-Log™ for all our future projects.
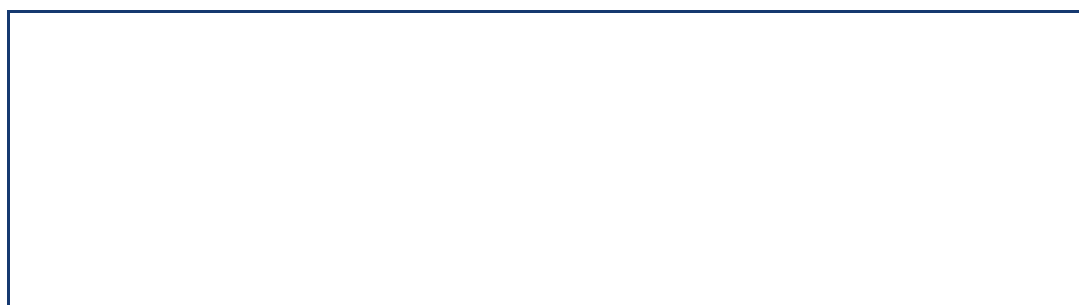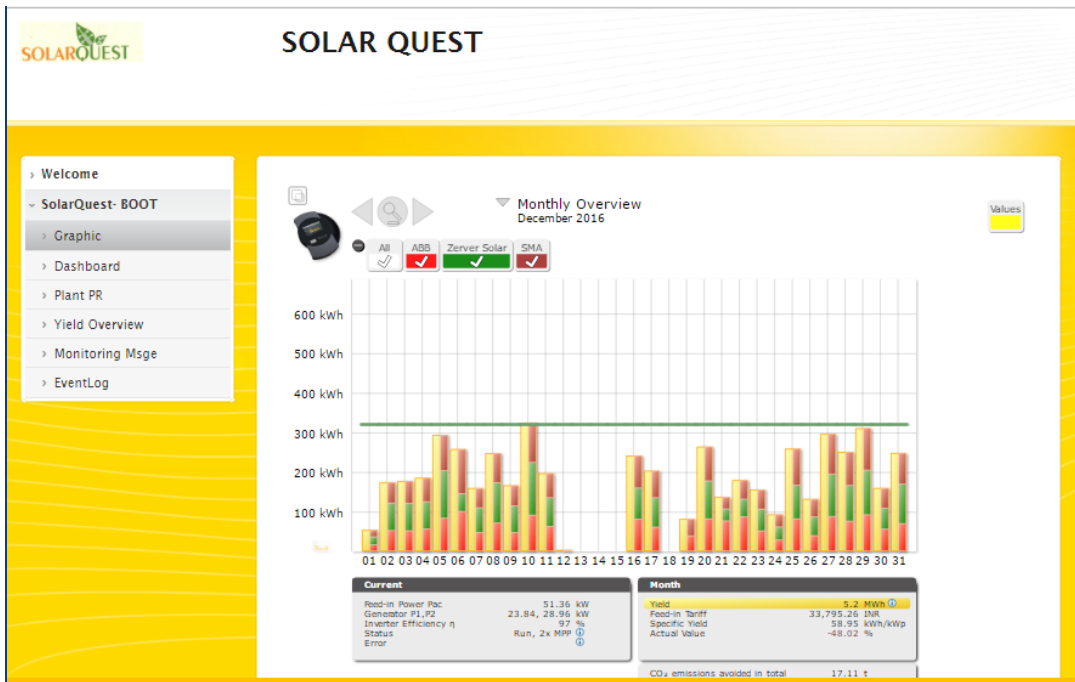
Solar-Log™: what are the reason you decided to opt for Solar-Log™ solution?

Solar-Quest: we were aware about Solar-Log™ since we visited the stall in an exhibition. We try literally every new product which ever sounds appealing, and Solar-Log™ had this unique feature of being able to monitor three different makes of inverters. There were other companies also, however price wise it was better so we went with it. We would also point out about the better response time and more informative replies of the sales team which made us comfortable going ahead with Solar-Log™.

#Feed-In Management with Solar-Log™
What is Feed-In Management (Zero Export/ Export Limitation)?
Power grids were originally built to distribute energy from a central source to the individual consumers. However, the increasing amount of PV power installed has changed this requirement, but the more energy is being fed into the grid from generation plants than is being used by the connected consumers or is being transferred on to other grid areas, grid frequency is increasing or grid is becoming unstable.

Therefore, to improve the stability of the grid, these services have decided either to reduce/ limit the amount of power supposed to feed-in to grid (limited export) or to ensure no amount of power can feed-in to grid (zero export).

This reduction can relate to values of 60%, 30%, 10%... or we can call this function as the function "X%" regulation method or this reduction percentage may be even up to 0% which is called as "Zero Feed-in Management" or "Zero Export Limitation."

What are the Solutions Solar-Log™ is offering for Feed-in Management?

- "X%" regulation with Solar-Log™

The function "X% fixed regulation" with the calculation of self-consumption offers an innovative solution to minimize losses that result from the fixed regulation.
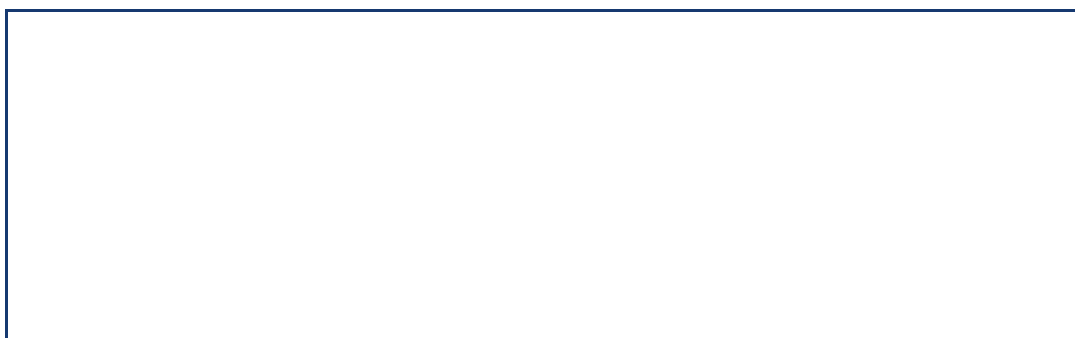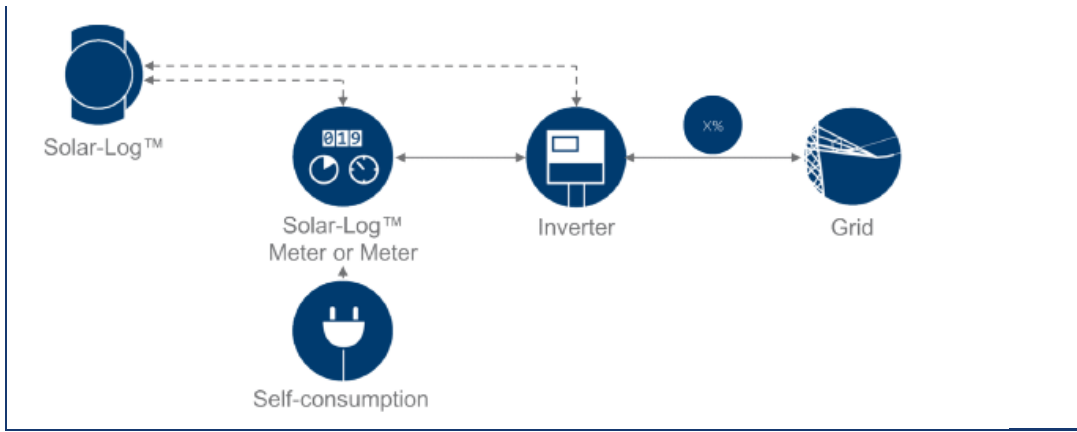
The Solar-Log™ calculates the amount of power being fed into the grid based the self-consumption of power and the current amount of power being produced by the inverters. Only a consumption meter (Solar-Log™ compatible meters) is needed to implement the intelligent x% regulation. This records and transmits the self-consumption of power to the Solar-Log™. The Solar-Log™ calculates amount of power being fed into the grid based the self-consumption of power and the current amount of power being produced by the inverters. Before the feed-in power (difference between current production and consumption) exceeds the maximum amount specified, the inverters are regulated accordingly.

Here, Solar-Log™ Smart Energy funcions (Solar-Log™ Smart Energy Solutions) can also be used to optimize self-consumption.
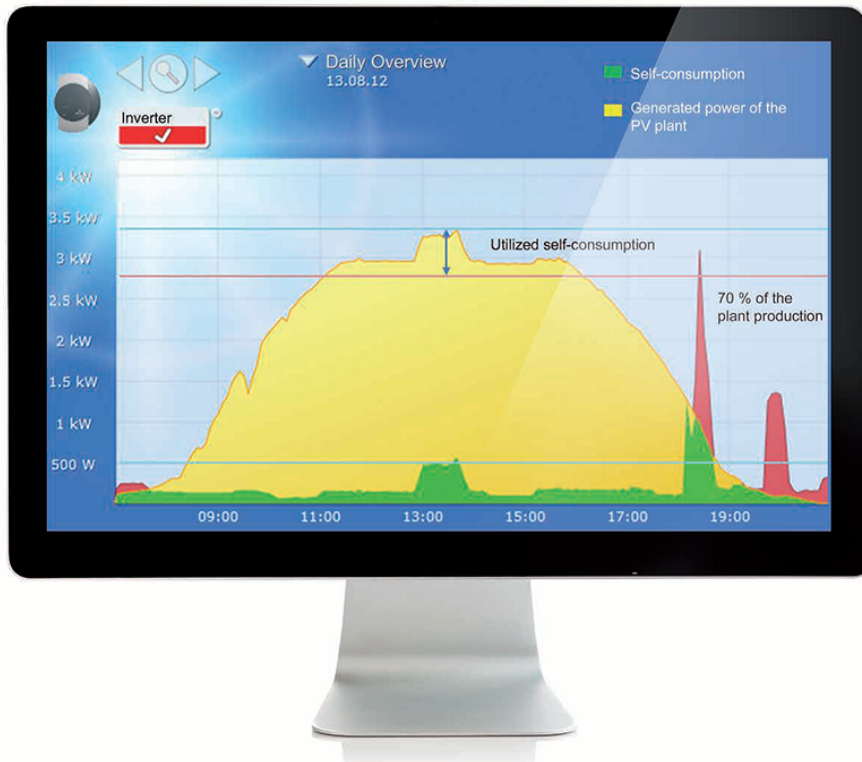
- Zero Export Limitation

This function is used to fulfil the feed-in requirements of 0 kW which means Solar-Log™ will ensure that no amount of power will feed into the grid. Basically, Solar-Log™ will control the inverters, allowing them to generate power to offset the consumer load but not export surplus energy to the grid. An additional external meter is needed to implement this function.
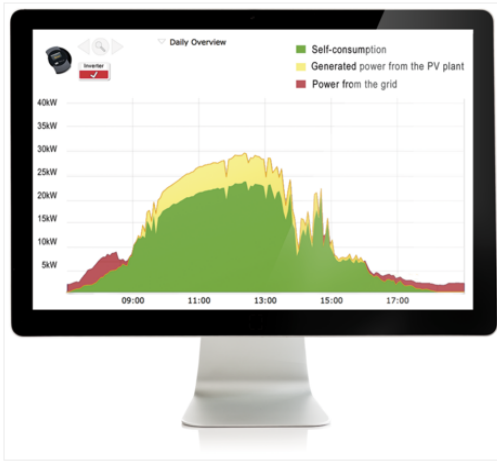
Figure 1: X% Regulation

Figure 2: 0% Regulation

What are the basic functions for active/ reactive power control through Solar-Log™ for Feed-In Management?

Solar-Log™ does provide different functions for active and reactive power requirement:

Active Power	Reactive Power	
X% fixed reduction	Fixed value cos (Phi)	Stand-Alone
X% fixed reduction with the calculation of self-consumption	Characteristic curve P/Pn	
	Characteristic curve Q(U)	
Simple Feed-in Management (without a feedback channel)	Remote controlled cos (Phi)	Remote Controlled
Simple feed-in management with the calculation of self-consumption		
Feed-in management (with a feedback channel)		

Remote Control Capabilities and Response Signals

The Solar-Log™ facilitates the remote control of generating plants (active and reactive power) and sends the response signals with the plant's current output data to the grid operator.

### Remote Control via the Modbus TCP interface

Setpoints for active and reactive power can be placed via a special Modbus TCP interface. This interface also allows the current output data to be accessed.

Remote Control via analog signals (0/4-20mA)

With the optional PM+ Packages, analog signals can be used for the Remote Control of PV plant.

Remote Control via potential-free commands or ripple control receivers

The signal to reduce active power is generally sent via a Ripple Control Receiver or remote control technology. Up to two Ripple Control Receivers can be connected to the Solar-Log™ PM+, one for power reduction and one for reactive power control as the. The PM+ modules can evaluate two sets of four contacts.
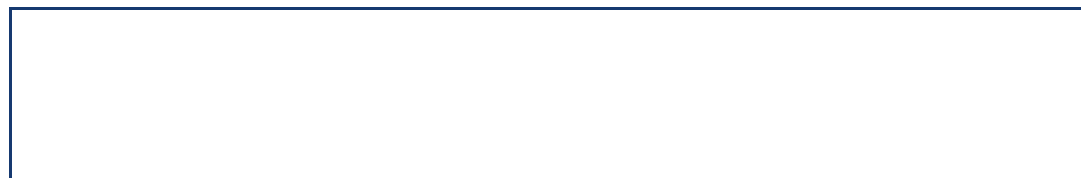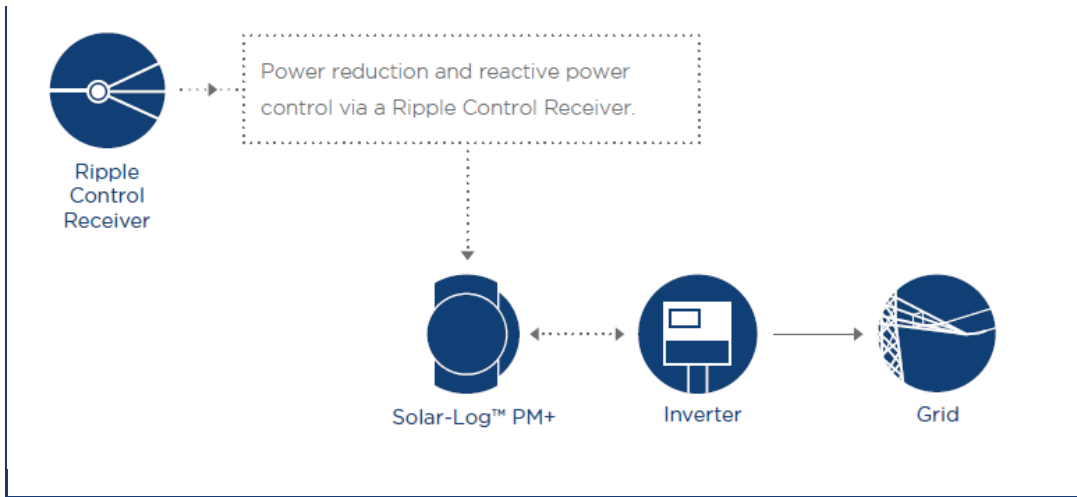
Response Signals
The Solar-Log™ can generate potential-free and analog response signals with PM+ Packages.

#Direct Marketing Interface (Modbus TCP DPM)with Solar-Log™:
The Solar-Log™ PM+ (as of firmware 3.3.0) receives the command signals from the direct marketer via the Modbus TCP interface by Ethernet. This fulfills the requirements to receive a bonus for a remote controllable PV plant.
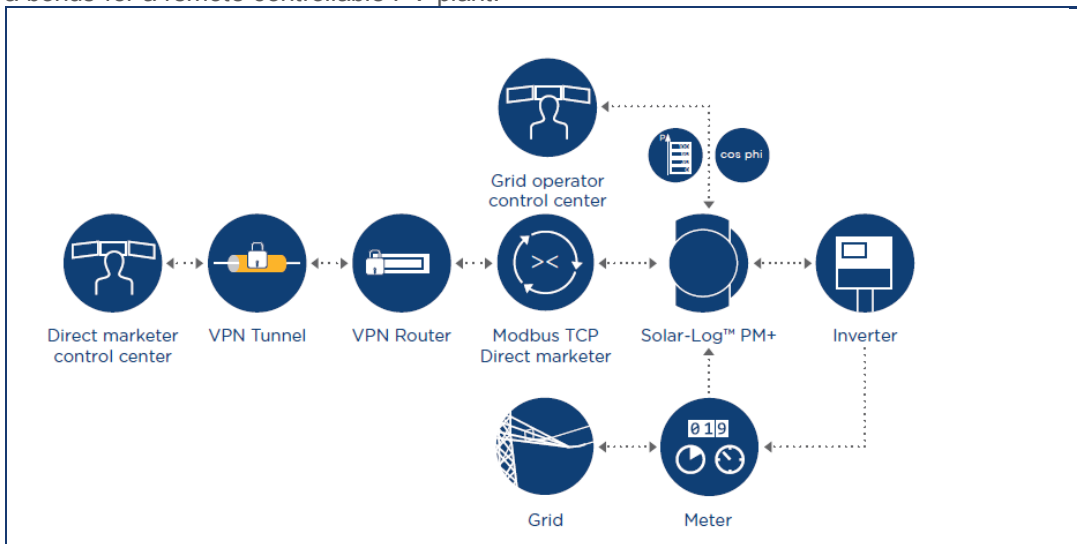
- The Solar-Log™ PM+ supports communication with majority of the direct marketers.

- The control status for feed-in management (grid operator) and the current power data for production, self-consumption and feed-in can be made available.

- The control commands from the grid operator / direct marketer can be evaluated. Additional reporting functions are available in the Solar-Log™ WEB Commercial Editio software.

#Solar-Log™ WEB monitoring & data transfer possibilities to third-party server/ portal:

• Solar-Log™ WEB „Commercial Edition":
The Solar-Log™ WEB „Commercial Edition" software has been developed for installers, portal operators, developers, EPC and service providers as well as for investors. For the plant owner, this is the simplest and safest way since all of the installation and monitoring will be professionally and properly handled.

The possibility to customize the design of your own platform is a huge service benefit for

installers to monitor/access to several plants on personalized portal on Solar-Log™ server with your own desired customized website with your own logo and color scheme.

### • Data transfer over FTP to external portal/third- party server:
It is possible to make a data transfer to third-party portal/ server once per day via FTP (File Transfer Protocol) and also an additional licensed service is available for more frequent data transfers with the possibilty of either 10 minute interval or 1 minute interval.

• Data Integration from Solar-Log™ device to SCADA system:
 Solar-Log™ does also have the TCP Modbus SCADA communication possibility where you can do the register mapping to have data into SCADA system from Solar-Log™ device. This register mapping is available in two forms. One is 'Modbus_TCP_Free' which is having free data access information and the other one is 'Modbus_TCP_Advanced" which is a full access version with the licensing requirement.

• Possibility of WEB Commercial Edition Interface through API:
It is also possible to provide a Solar-Log™ WEB "Commercial Edition interface with your system (such as an ERP system) through Solar-Log™ API(Application Programming Interface). The interface is available in three different variations of Basic Yyield Data, Daily Data, Minute Data.
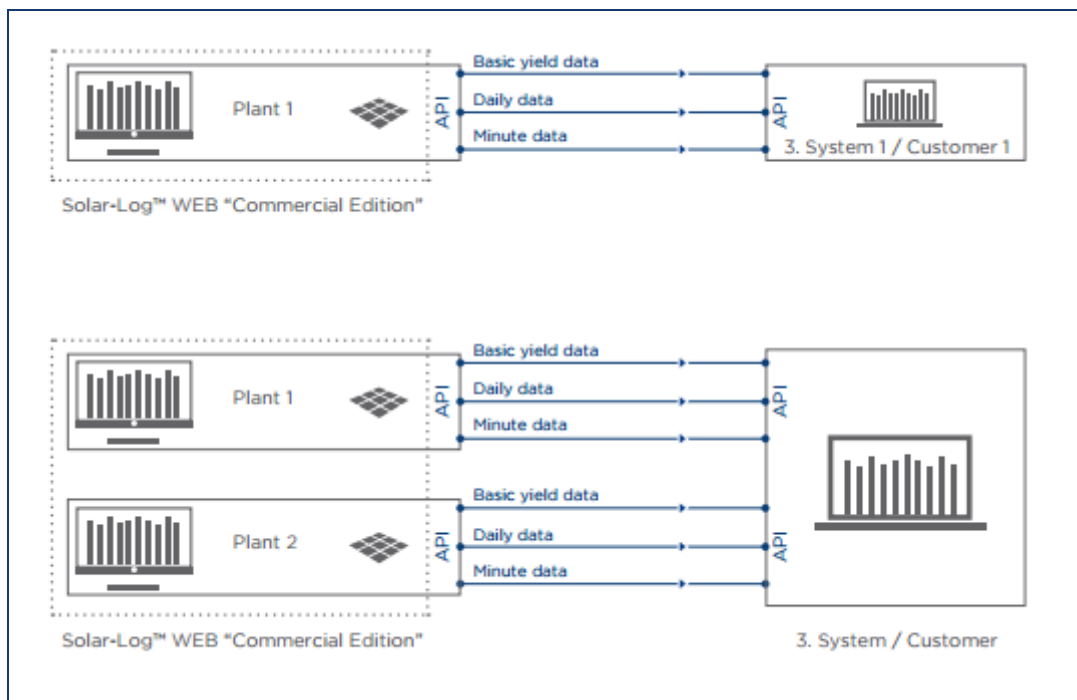
#Save the Date - India Rooftop Solar Congress 2017
Please visit the India Rooftop Solar Congress 2017 in New Delhi and watch the Presentation, Asset & Portfolio Management (Session 5), on January 18th, 2017 at 10:00 AM - 11:30 AM. Our CEO, Dr. Frank Schlichting, will present Solar-Log™.

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We look forward to working with you!

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