

**Benefits of SBS PV Forecast and Monitoring Solutions**

Together with S&B's range of Monitoring systems and solutions, the SBS PV Forecast service, provides a complete solution covering all the PV producer's needs for the PV data collection and archiving as well as his plant's obligation to the country electrical authorities.

Having installed an S&B integrated monitoring and forecasting system, the investor can now be rest assured his PV system is in good hands, enjoying the desired longer term protection of his investment's reliable operation and accurate energy reporting obligations, in the long term guaranteeing him the maximum PV revenues!



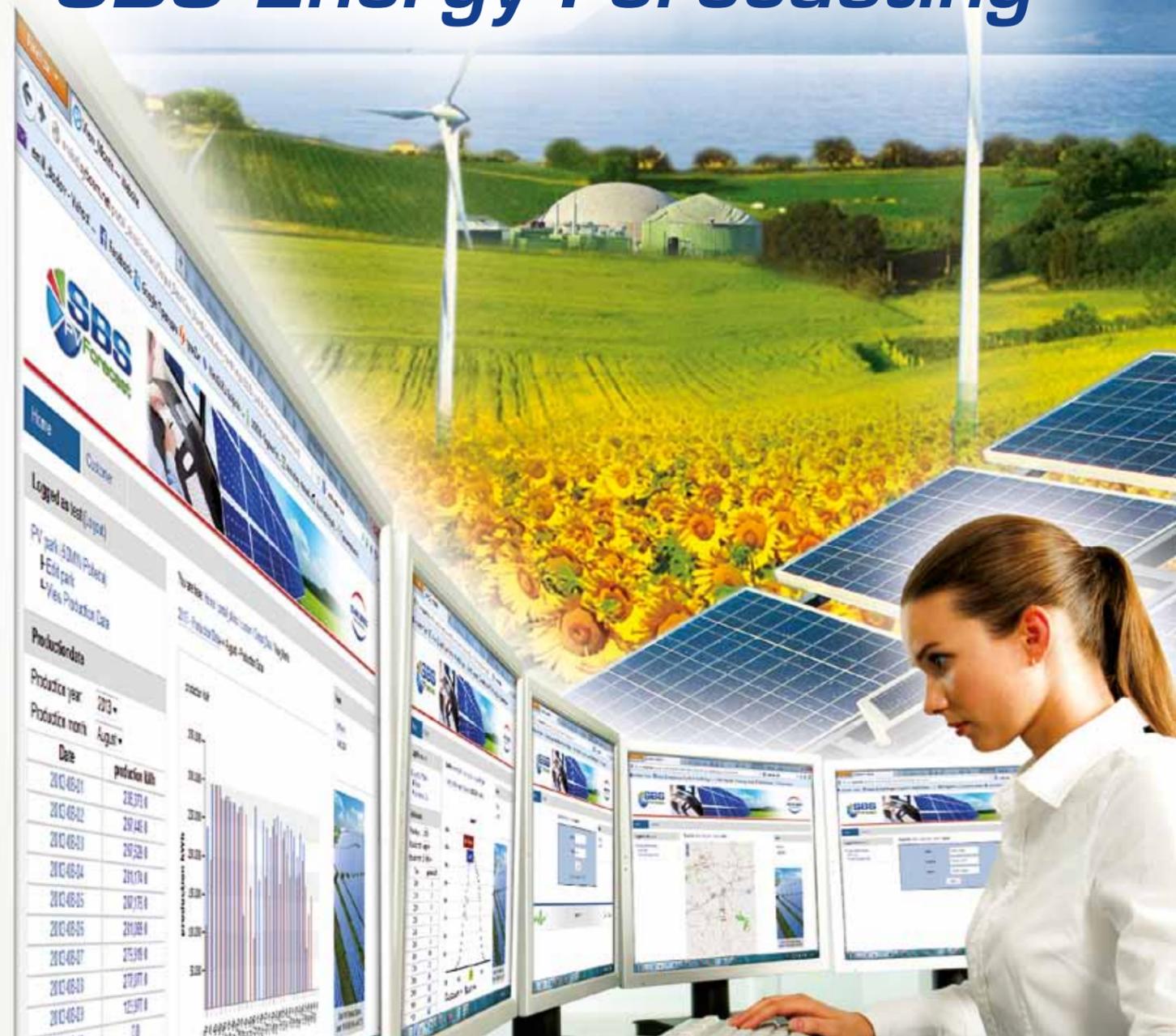
Smart solutions will become more and more important in the near future.

At Solar & Benefit International, we encourage the consolidation of energy producers from all the different renewable energy sources including the dynamic energy consumption of homes and the consumers from the commercial and industrial sector.

We believe that the electrical grid of the future, should be a smart grid combined with wind energy, hydropower, solar energy and biogas plants, using intelligent control systems.

By the application of the smart grid concept, local energy production and local energy consumption will go hand in hand.

**Photovoltaic  
SBS Energy Forecasting**



**Solar & Benefit Group OOD**

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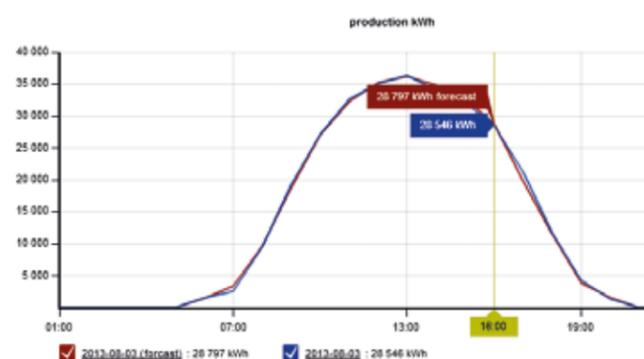
George Ahilaras - Division Manager Monitoring Systems

## Energy Production Forecasting

New regulations being introduced by each country's electrical energy distributing regulator are gradually coming into force specifying the obligation to provide accurate prediction of next day's energy production by the PV plant producer inserted into the electrical grid network. The authorities impose such requirements for the following day's planning of the overall national energy consumption requirements and the adequate coverage of supply by all its country grid connected energy producers, especially in the case of the renewable energy producers. One might say that it appears especially imposed on the renewable energy producers, as the cost of green energy to the utility or market



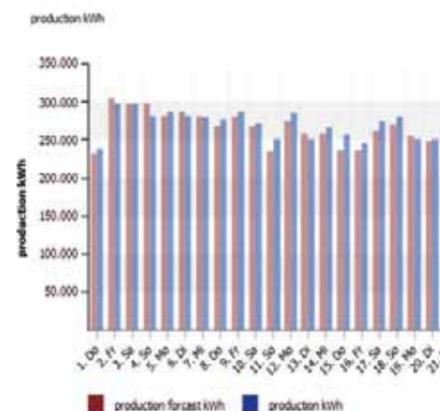
regulator because of the special incentives programs, is substantially higher than that of the traditional sources. In fact penalties are generally imposed on the energy producers, both for the oversupply or their deficiency with respect to the specific PV plant's production capability. Therefore there is a need to be able to accurately predict the plant's next day's energy production, based on its PV capacity, historical plant performance, local climatic conditions and weather prediction. The accuracy levels normally needed should exceed 95%, to be useful to the producer to minimize imposed penalties.



## Accurate PV Forecasting – Penalty Consequences

To ensure the highest possible compliance of forecasted energy production data with respect to that actually produced and inserted into the grid, the authorities impose heavy monetary penalties calculated on both the positive and negative production deviations and the hourly rates corresponding to the level of "punishment" they wish to apply on the producer. For instance if the public energy distributor has a need for a greater amount of energy insertion into the grid the next day, then the applied rates are normally lower, otherwise much higher rates are applied.

The opposite applies in the case where the energy authority wishes to reduce the overall amount inserted. For this purpose, the penalty rates are calculated on an hourly basis depending on the demand, thus requiring the notified forecasted production quantities to be provided on an hourly basis. Usually the penalty rate is based on the county's next day's "day ahead" market prices for energy consumption.



## 24 Hours ahead Forecasting and Reporting to the Distribution Regulator

The usual method requested by the country distribution authorities for transferring the next day's forecasted energy production information is via the forecast report, tabulating the hourly predicted energy production of the specific PV plant. For the report to be of real value to the national distribution authority or specifically the Energy Market regulator depending on the country in question, it should be forwarded as early as possible the previous day, giving the authority time to be able to consolidate the country's total energy needs against its available sources and allocate requirements.

Usually the reports should be sent the previous day before 17:00 latest, but there may be a requirement to be even sent as early as 15:00 in the afternoon. In such case, the forecast prediction calculations may be needed even further than 24 hours ahead into the future! In addition, the specific format of the report is usually predefined according to the corresponding country's requirements.

Productiondata	
Production year:	2013
Production month:	August
Production day:	2013-08-03
Time(hr)	Production - kWh
01:00	0
02:00	0
03:00	0
04:00	0
05:00	0
06:00	1501
07:00	2531
08:00	9461
09:00	19276
10:00	27102
11:00	32641
12:00	35125
13:00	36353
14:00	34141
15:00	32068
16:00	28546
17:00	21260
18:00	11844
19:00	4325
20:00	1350
21:00	0
22:00	0
23:00	0
24:00	0

Logged as test (Logout)

PV Plant (50MW Sky Plant)  
[Edit park](#)  
[View Production Data](#)

### Productiondata

Production year: 2013  
 Production month: August

Date	production kWh
2013-08-01	238,373.3
2013-08-02	297,445.2
2013-08-03	297,529.5
2013-08-04	281,174.8
2013-08-05	287,175.7
2013-08-06	281,089.8
2013-08-07	279,919.7
2013-08-08	277,077.7
2013-08-09	285,243.8
2013-08-10	272,529.4
2013-08-11	250,101.3

## Solar & Benefit's - SBS PV Forecast Service

Addressing the needs of the PV industry, Solar & Benefit International has developed its highly sophisticated PV Energy forecasting tool and services covering the obligatory requirements of the country energy market regulator or responsible energy distribution authority. In accordance with the specific country regulation, the SBS PV Forecast tool fulfills all the plant producer's obligations, providing accurate energy production predictions approaching an 99% accuracy level averaged over the entire monthly interval. Such very small levels of error are not commonly attained but are reached by the SBS PV Forecast tool due to its use of sophisticated prediction algorithms, in conjunction with on-line data collection of the plant's daily and historical production data and SBS's specialized weather prediction services for the specific location.

The net result for the producer is that whatever the applicable penalty scheme employed by the country, the result corresponds to a monetary equivalent penalty of the lowest possible level available in the market today, thus maximizing the energy revenues for the investor.

The forecasting service provided by S&B today, takes the form of an annual subscription, where the plant operator is given continuous access to the PV plant's specific SBS PV Forecast webpage, for viewing the on-line results and downloading the daily energy production forecast reports for transmission daily to the authority. downloading the daily forecast reports for transmission to the authority.

Save Nature!