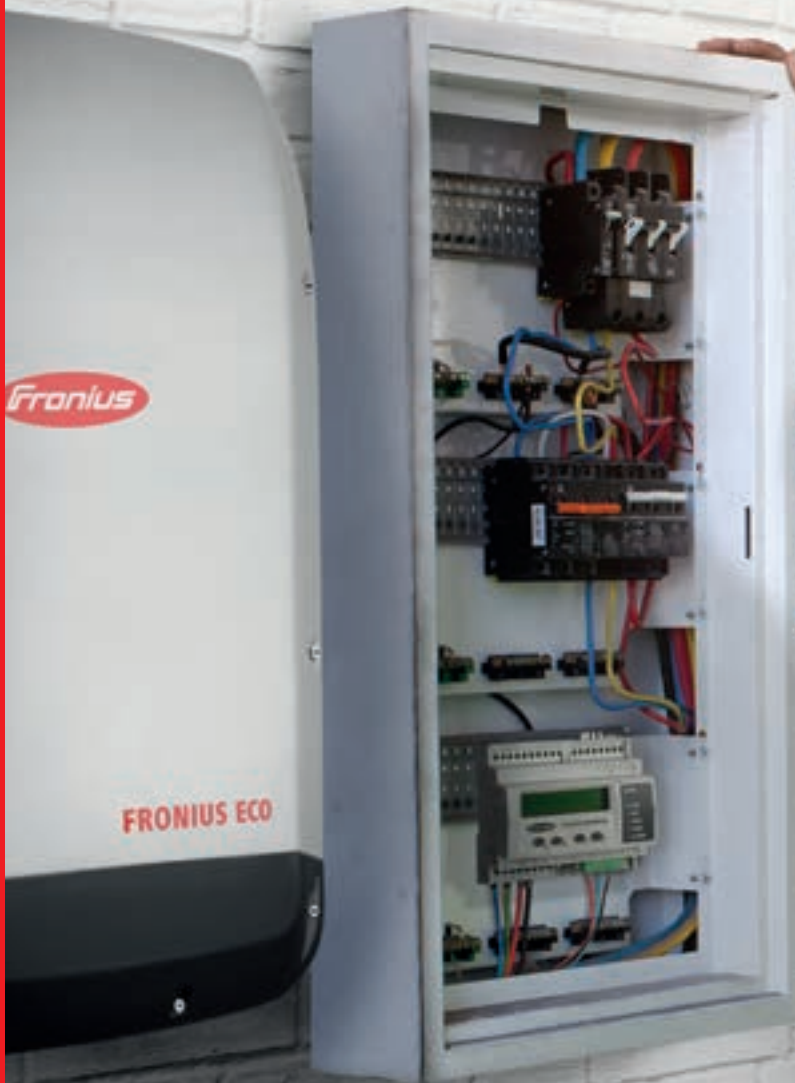


/ Perfect Welding / Solar Energy / Perfect Charging



FRONIUS PV-GENSET SOLUTION

SAVE FUEL WITH FRONIUS
PV-GENSET SYSTEMS.



FRONIUS PV-GENSET SOLUTION

SAVE FUEL WITH FRONIUS PV-GENSET SYSTEMS.

Diesel gensets and photovoltaic technology can be combined in perfect harmony. Although these technologies have rarely been in demand by the same users in the past, combining them has now become extremely beneficial technically, ecologically and, last but not least, in terms of cost effectiveness. To control simple systems with only one generator, the new Fronius PV System controller is the first choice. Fronius also provides support in planning the PV-Genset solution.

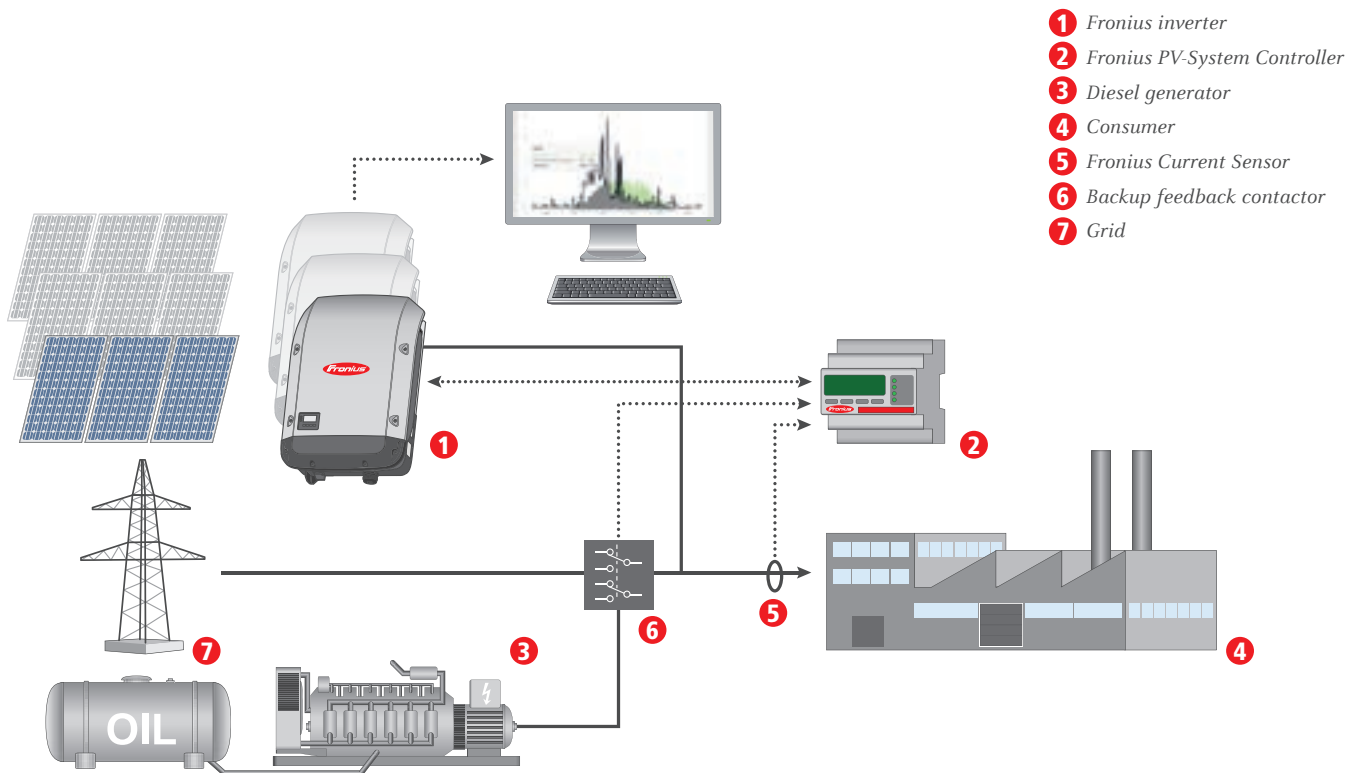
INTELLIGENT TECHNOLOGY

A stable PV-Genset system is the highest priority. Using photovoltaics must not result in diesel gensets being operated at unfavourable or prohibited operating points, where an increased load causes premature ageing. As a result it becomes absolutely essential that the inverters (and, where necessary, the diesel gensets too) in systems above a certain size are subject to an intelligent control mechanism.

FRONIUS PV-GENSET EASY

With the Fronius PV-Genset Easy solution, photovoltaic systems can be integrated into existing diesel systems quickly and easily.

The solution is optimised for backup application with only one diesel generator.



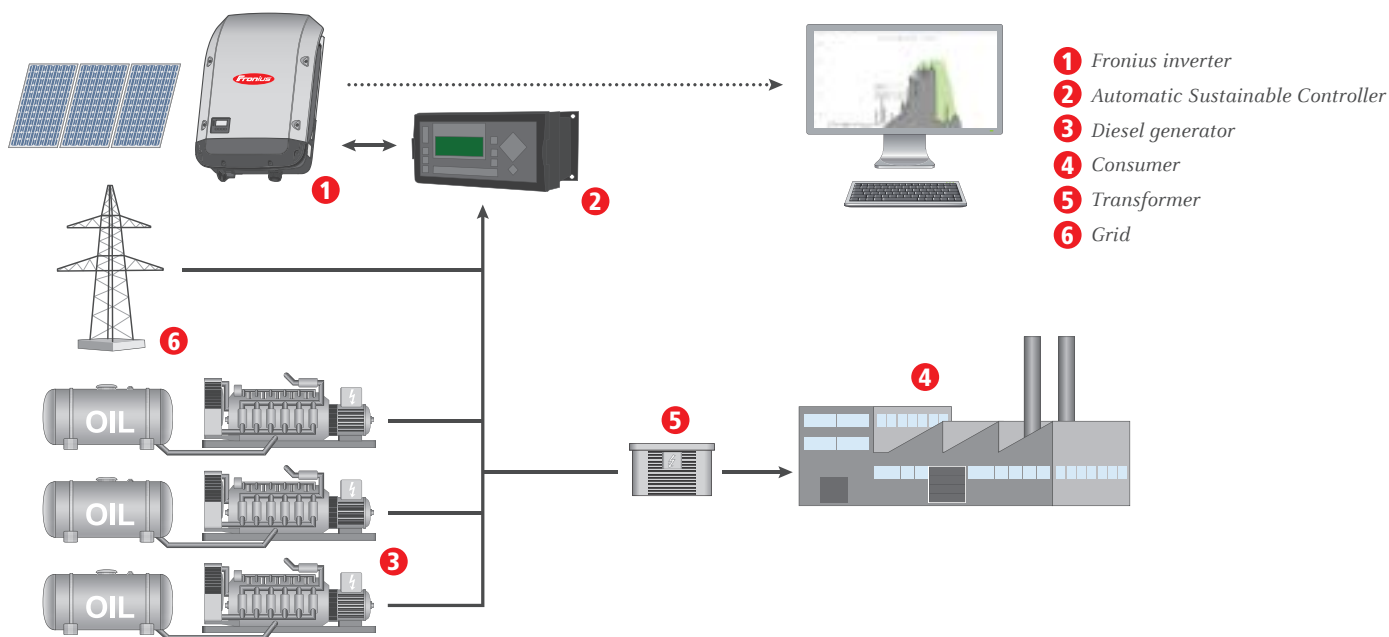
A consistent power balance (reactive and effective power) must be guaranteed within a PV-Genset system at all times. Both the load and the PV power available are subject to fluctuations. In small PV systems (just as in systems with no PV element), these variations are met by the diesel genset. Yet if the power from the photovoltaics system is proportionally quite large, the entire system must be optimally controlled to obtain the best possible diesel savings.

This is where the Fronius PV-System Controller comes into play. By using data from the Fronius inverters together with load measurements (as well as diesel genset measurements where necessary), the entire system can be monitored. Fronius inverters can thus be controlled so that the minimum load of the diesel generator is not undershot and the system remains stable.

FRONIUS PV-GENSET ADVANCED AND PROFESSIONAL

With the Fronius PV-Genset Advanced and Professional, PV systems can be quickly and easily integrated into diesel systems in which several diesel generators are used. The controller is the communication interface for the photovoltaic system and diesel generator and assumes all control functions over the system.

The solution is suitable for both low-voltage and medium-voltage applications.



Fronius PV-Genset Advanced is the retrofit solution for multi-generator systems.

Fronius PV-Genset Professional is the fully-integrated solution for multi-generator systems.

OPTIMISING THE PV-GENSET SYSTEM

It is very easy for a small PV system in relation to the load to pay for itself financially, but it does not represent a cost-effective form of optimisation. As the PV output never has to be restricted, the savings can simply be identified from the annual energy calculated in the respective region. The difference between the costs of producing PV energy and the costs of producing electricity from diesel is normally quite large. The saving is therefore much higher if the temporary power restrictions are the norm and multiple generators can be controlled

automatically. This significantly increases the amount of power supplied from photovoltaics. In order to identify the most cost-effective PV system size for each project, it is important to examine the insolation and load profile alongside the variable diesel power costs and the cost of the PV system.

Simulations are then used to calculate the highest possible savings that could be achieved. Fronius can provide you with unbeatable support in the planning of your PV-Genset system.



ONLINE SYSTEM MONITORING

Every PV-Genset system can be designed, monitored, analysed and visualised at any time using the Fronius Solar.web online portal. Up-to-date system data can be accessed at any time and is clearly presented: the portal is very user-friendly and easy to use, and a comprehensive range of analysis functions is included.

More information can be found at www.solarweb.com

Due to the user-friendly design
you can use Fronius Solar.web
on any mobile device.



/ Fronius Datamanager 2.0 Box

PRODUCTS FOR THE FRONIUS PV-GENSET SOLUTION

Products for the Fronius PV-Genset Easy Solution:

- / Fronius PV-System Controller
- / Fronius Genset Measurement Extension
- / Fronius Current Sensors
- / Fronius inverter with Fronius Datamanager or Fronius Datamanager Box

Products for the Fronius PV-Genset Advanced Solution:

- / Automatic Sustainable Controller ASC, DEIF A/S
- / Fronius inverter with Fronius Datamanager or Fronius Datamanager Box
- / Further suppliers of PV-Genset Advanced Solutions with Fronius are for example:
ComAp, eLum or EnCombi

Products for the Fronius PV-Genset Professional Solution:

- / Automatic Sustainable Controller ASC, DEIF A/S
- / Automatic Genset Controller AGC, DEIF A/S
- / Fronius inverter with Fronius Datamanager or Fronius Datamanager Box
- / Further supplier of PV-Genset Professional Solutions with Fronius is for example: ComAp

Due to the open nature of Fronius communication solutions, it is also possible to implement individual solutions containing third-party components. With the Fronius Datamanager 2.0 or Fronius Datamanager Box 2.0, it is possible to incorporate all components into a control system using Modbus RTU or TCP with the SunSpec Inverter Control Model.

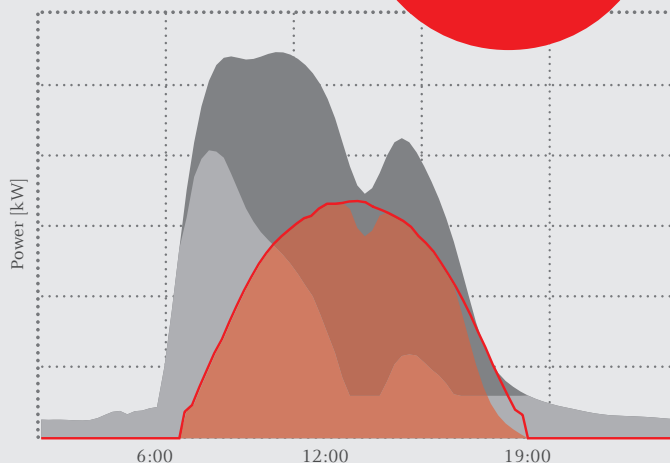
FRONIUS PV-GENSET SOLUTION MINIMISES COSTS



In remote areas or regions where the electricity supply is patchy or extremely expensive, grids powered by diesel gensets are an absolute must. The cost per kilowatt hour of electricity from a diesel genset is largely changeable, depending as it does on fuel and other variable costs. Only a small proportion is fixed. The costs can vary widely depending on country, transport distance and increasing oil costs on the global market (€ 0.05 - 2.5 per kWh).

The price trend in the photovoltaics sector is much more positive. Over the past few years the costs per kWh from PV systems have dropped dramatically around the globe (€ 0.07 - 0.14 per kWh).

As soon as the PV system can produce cheaper electricity than a diesel generator, the system is profitable.



- The load profile of an example load.
- The area in red represents power from PV and therefore the saving in expensive diesel.
- The difference between load and PV is met as before by the diesel genset.

For this reason there is a clear financial justification for integrating a Fronius PV-Genset solution into almost every diesel-powered system. Every unused diesel kWh saves money.

/ Perfect Welding / Solar Energy / Perfect Charging

THREE BUSINESS UNITS, ONE GOAL: TO SET THE STANDARD THROUGH TECHNOLOGICAL ADVANCEMENT.

What began in 1945 as a one-man operation now sets technological standards in the fields of welding technology, photovoltaics and battery charging. Today, the company has around 4,760 employees worldwide and 1,253 patents for product development show the innovative spirit within the company. Sustainable development means for us to implement environmentally relevant and social aspects equally with economic factors. Our goal has remained constant throughout: to be the innovation leader.

Further information about all Fronius products and our global sales partners and representatives can be found at www.fronius.com

Fronius India Private Limited
GAT no 312, Nanekarwadi
Chakan, Taluka - Khed District
Pune 410501
India
pv-sales-india@fronius.com
www.fronius.in

Fronius Australia Pty Ltd.
90-92 Lambeck Drive
Tullamarine VIC 3043
Australia
pv-sales-australia@fronius.com
www.fronius.com.au

Fronius UK Limited
Maidstone Road, Kingston
Milton Keynes, MK10 0BD
United Kingdom
pv-sales-uk@fronius.com
www.fronius.co.uk

Fronius International GmbH
Froniusplatz 1
4600 Wels
Austria
pv-sales@fronius.com
www.fronius.com