



Contact details

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Organisational profile

With a staff of above 1200, Fraunhofer ISE is the largest solar energy research institute in Europe. The work at the Institute ranges from the investigation of scientific and technological fundamentals for solar energy applications, through the development of production technology and prototypes, to the construction of demonstration systems.

What challenge area is your project idea focused on for the Solar ERA-Net 2nd call

PV2.3 Grid Integration and large-scale deployment of PV



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Ancillary services for distribution grids

Voltage stability, frequency stability, black-start capability, congestion management

Problem:

- *High PV penetration lead to an (PV-)inverter dominated distribution grid*
- *Centralized conventional power plants with synchronous generators were turned off*
- *More and more non-linear and unbalanced loads stress the distribution grid*
- *The voltage quality and stability must be ensured by distributed generators*

Project scope:

- *Analyses of a real low voltage grid with high PV penetration. Field measurements (Freiburg: "Solarsiedlung")*
- *Simulation of low voltage grid with high PV penetration (20ms-RMS-values; positive, negative and zero sequence component)*
- *Development of new control algorithms to improve voltage stability and power quality*
- *Implementation and verification of control algorithms in laboratory*
- *Recommendations for grid codes (e.g. VDE-AR-N 4105)*

Partners or expertise for collaboration:

- *Distribution system operator*
- *PV inverter manufacturer*



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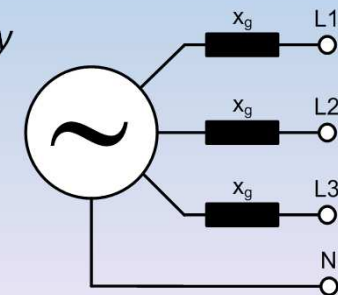
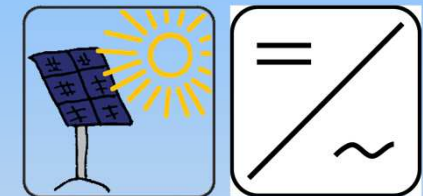


Fig: Equivalent circuit diagram, synchronous generator with neutral point