

The National Renewable Energy Centre of Spain -CENER- is a technology centre specialized in applied research and development as well as the promotion of renewable energies. CENER is divided into six departments: Wind Energy, Photovoltaic Solar Energy, Solar Thermal Energy, Biomass Energy, Bioclimatic Architecture and Renewable Energy Grid Integration.

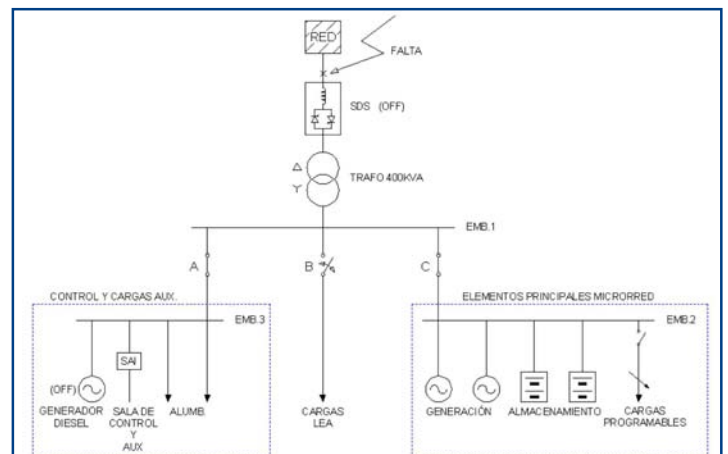
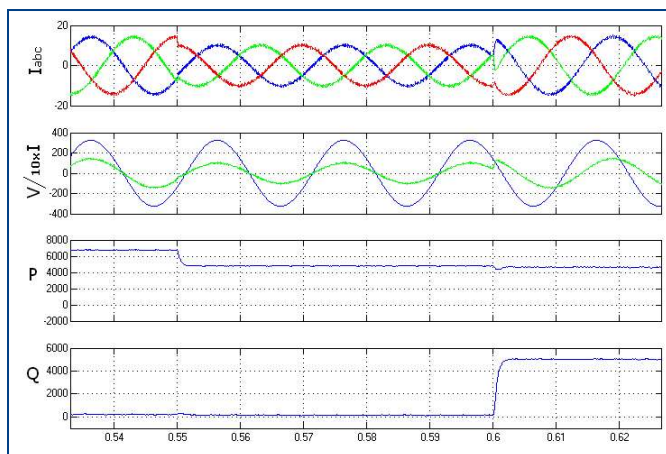
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## MICROGRID DESIGN AND PLANNING



- The Microgrid concept is one of the most promising solutions for the increasing of distributed generation and the development of smart electric networks
- This concept poses the following advantages over the traditional generation schemes:
  - Higher penetration of renewable and high efficiency sources
  - Improvement of electric supply reliability (isolation ability)
- Related with this topic, CENER offers the following services:
  - Economic and Technical feasibility studies.
  - Design and sizing of Microgrid components and layouts.
  - Development of Microgrid newer control systems improving the behaviour and performance of Microgrid assets.
  - Turnkey Microgrid installations from draft to implementation



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## ASSESSMENT OF DIFFERENT ENERGY SCENARIOS USING TIMES/VEDA MODELS



- TIMES is an economic model generator for local, national or multi-regional energy systems. It is usually applied to the analysis of the entire energy sector, but may also be applied to study in detail single sectors.
- Using the inputs provided by the user, the TIMES model aims to supply energy services at minimum global cost.
- Taking advantage of this software, CENER offers the following services:
  - Forecasts of the energy market evolution (local, national, etc.)
  - Medium-long term estimation of the introduction of new technologies in the energy market (i.e. off-shore wind power, hydrogen, electric cars)
  - Study of the influence of possible drivers like feed-in tariffs, energy environmental policies, resources depletion, feedstock prices increase, etc.
  - Support in the development of R&D plans, strategic agendas, roadmaps for energy sector and technologies related

