

# Engineering Courses

## Future Grid: Distributed Energy Resources, Microgrids and Energy Storage

### Training objectives:

This course provides a high-level overview of the various elements of the grids that are defining the direction of future development. A key elements are Distributed Energy Resources (DER) and their integration to ensure resilient and robust operation of the power grid. Section A provides an overview of the various Distributed Generation (DG) types and their functions. Section B provides an overview of customer side of smart grid, including Demand Response (DR) and dynamic pricing. Section C provides an overview of plug-in electric vehicles and their grid deployment, impact evaluation, and smart charging. Section D provides an overview and discussion around the technologies and applications of grid-scale energy storage ranging from frequency regulation to energy arbitrage. In addition, the course is concluded with the discussion and the case studies of existing and planned DER and microgrid applications and deployments.

### The course is intended for:

Power system engineers, power economists, power system planning experts, power system policy makers, grid operators and developers, as well as all experts working on readiness of the power grid for an increased role that DER are expected to play in future.

### Main features:

- Overview of Distributed Energy Resources (DER)
- Types of Distributed Generation
- DG compensation strategies and standards and management
- Overview of DR types, components, pricing strategies and business cases
- Introduction to EV grid integration
- EV batteries and charging technology, including Vehicle to Grid (V2G)
- Modelling of EV charging grid impact
- Types and deployment of grid-scale energy storage
- Overview of the grid-scale batteries and electrolysers
- Microgrid types and components
- Introduction to microgrid cost-benefit analysis
- Microgrid feasibility study example

### Recommended prior knowledge:

Basic knowledge of electric power systems.

**Note: The course is held in English. Class subject to change. Class times are 8-4.**

For more information visit: [www.geenergyconsulting.com](http://www.geenergyconsulting.com)



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