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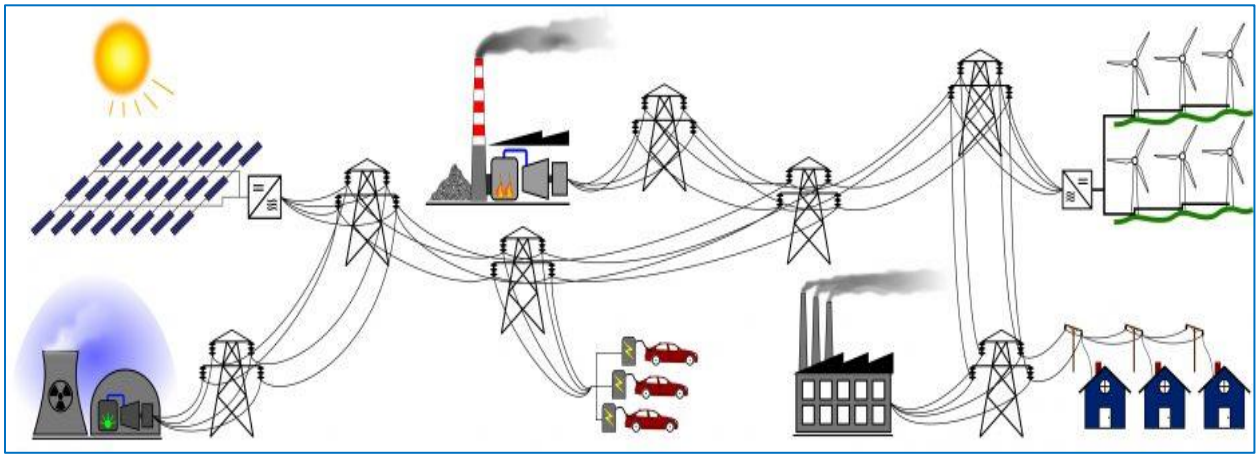

RE037:
Renewable Energy Integration

Training Description:

Why **Renewable Energy Integration** essential in modern day electrical grid systems? This intensive training course focuses on incorporating renewable energy, distributed generation, energy storage, thermally activated technologies, and demand response into the electric distribution and transmission system.

The solar power and wind turbines approaches are being used to conduct integration development and demonstrations to address technical, economic, regulatory, and institutional barriers for using renewable and distributed systems. In addition to fully addressing operational issues, the integration also establishes viable business models for incorporating these technologies into capacity planning, grid operations, and demand-side management.

Electric utilities are increasingly tasked with meeting Renewable Portfolio Standards, and are looking to generate power from wind, solar, geothermal, and biomass sources. But integrating the power from such renewable sources into the grid can be a daunting challenge.

Following benefits will get by attending this training course:

- Reduce carbon emissions and emissions of other air pollutants through increased use of renewable energy and other clean distributed generation
- Increase of asset use through integration of distributed systems and customer loads to reduce peak load and thus lower the costs of electricity
- Support achievement of renewable portfolio standards for renewable energy and energy efficiency
- Enhance reliability, security, and resiliency from microgrid applications in critical infrastructure protection and highly constrained areas of the electric grid
- Support reductions in oil use by enabling plug-in electric vehicle (PHEV) operations with the grid
- Emphasis on wind power, solar power and energy storage systems

Training Objectives:

By the end of the training, participants will be able to:

- ✓ Understand the grid flexibility to renewable energy integration
- ✓ Determine the various types of renewable energy
- ✓ Explain the different types of solar panels
- ✓ Analyse the common types of wind farms
- ✓ Understand the various type of energy storage systems

Training Designed for:

This course is intended for Electrical engineers, Electrical supervisors, Power engineers, Managers in-charge of electrical installations and Project engineers.

Training Program:

DAY ONE:

- ❖ Pre-Test
- ❖ **Renewable Energy Generation - The Present, The Future and The Integration Challenges**
  - Drivers of renewable energy development
  - State of the art integrating large capacities renewable energy

- Transmission and operation technologies and practices
- Wind power generation
- Photo voltaic power generation
- Concentrated solar power generation

DAY TWO:

❖ Technical Solutions for Integrating Large Capacity Renewable Energy

- Wind turbines
- Grid friendly renewable energy generation
- Improved flexibility in conventional generation
- Transmission expansion developments
- Promising large capacity electrical energy storage technologies
- Roles of electrical energy storage in renewable energy integration
- Standards for large capacity electrical energy storage renewable energy integration

DAY THREE:

❖ Grid Flexibility - The Key to Renewable Energy Integration

- Effects of wind and solar power on energy demand
- Power plant flexibility
- Forecasting and demand response
- Wind and solar power variabilities
- Challenges variable renewable energy poses to the grid
- Impact of fossil fueled generators

DAY FOUR:

❖ Integrating Renewable Energy into the Transmission and Distribution Systems

- Approach to analysis of integrating renewable energy
- Integration of distributed and renewal energy generation
- Power quality impacts
- Electrical transmission and distribution systems
- Photo voltaic optimization and sensitivity analysis
- Wind optimization and sensitivity analysis

DAY FIVE:

❖ Renewable Energy Integration in Smart Grids and Micro Grids

- Smart grid attributes
- Merits of smart grids
- Operation of micro grids
- Merits of micro grids
- Future of smart micro grids

❖ Course Conclusion

❖ Final Examination and EVALUATION

Training Requirement:

"Hand's on practical sessions, equipment and software will be applied during the course if required and as per the client's request."

This training course is available upon request in English or Arabic. Content, location and duration can be adapted to your specific wishes. It is therefore possible to focus on specific modules of the training course as per client's learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures, Concepts, Role Play
- 30% Workshops & Work Presentations, Techniques
- 20% Based on Case Studies & Practical Exercises
- 20% Videos, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

As per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:30	Recess (Prayer Break & Lunch)
13:30 - 16:00	Last Session

For training registrations or in-house enquiries, please contact:
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Training & Career Development Department