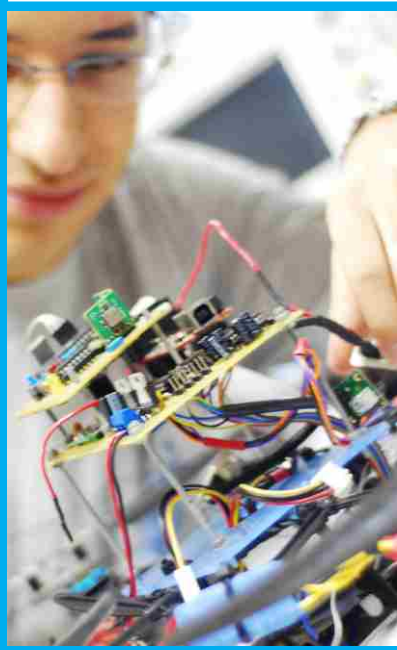


ENERGY EFFICIENCY, DESIGN, ENGINEERING AND AUDITING



What You Will Learn...

- Establish an Energy Savings Strategy for your organisation
- Put together practical energy efficiency plans for your firm that will save money
- Use the energy savings toolkit and checklist from the course in your workplace
- Conduct a simple energy audit of your workplace and collect good data
- Read and interpret data from different types of measurement equipment
- Interpret and analyse case study data and relate this detail to your facility
- Improve employee working conditions and productivity with minimal outlay
- Assist in the reduction of greenhouse gases and improvement of the environment
- Look for opportunities to set demand - side energy management strategies
- Appreciate the importance to your organisation of choices with energy suppliers
- Network with others to discuss alternatives and options for comparable processes

SmartBrains Oil and Energy Institute provides premium training courses for energy industry executives and fresh engineering graduates. Our success and distinguished reputation is thanks to our commitment to provide first-class programmes to our clients. Combining leading professionals from across the industry as lecturers and an interactive, practical format, the lessons learnt in a SmartBrains for Energy course are directly transferable back to the work place.

Course STRUCTURE



“I would like to thanks T&P Team of Smartbrains who helped me to get skill set on Electrical System Design. The learning experience was good and placement is excellent”

Zeeshan Ahmad

Ankit Electrotech Engineers Pvt Ltd, Noida

DAY ONE

MANAGEMENT OVERVIEW OF ENERGY EFFICIENCY

WHAT IS ENERGY EFFICIENCY?

- Energy and environment
- Energy forms and conversion
- Energy sources and energy sinks
- Can we make better use of the energy?
- How do we channel waste energy into useful output?
- Energy audit and principles

CASE STUDIES

- Schools
- Mines
- Factory

BASIC FINANCIALS

- Simple costings and ROI

PRACTICAL EXERCISES

- Examination of your facility
- Simple checklist on doing an energy audit

DAY TWO

ENERGY EFFICIENT PRACTICES IN ELECTRICITY USE

- High efficiency motors
- Better T&D practices
- Role of power factor
- Motor rating and efficiency correlation
- Variable speed drives as energy-savers
- Lighting efficiency
- Efficient luminaires
- Use of daylight to supplement artificial lighting
- Intelligent buildings to reduce wastage of electricity

ENERGY COST STRUCTURE

- Identifying types of energy used
- Tariff structures
- Components of electric tariffs
- Factors in controlling electric costs
- Electric utility incentive programs
- Electric meters
- Gas rates
- Oil, coal, and other rates
- Steam and hot water rates
- Factors in controlling fuel costs

ENERGY EFFICIENCY IN PROCESSES USING FUEL DIRECTLY

- Improved efficiencies
- Reduction and re-use of heat wastage
- Recovery of exhaust heat from engines
- Energy efficient designs - equipment and buildings
- Cogeneration for better efficiency

ALTERNATIVE ENERGY SOURCES

- Fossil fuels
- Alternatives - renewable energy and hydrogen
- Green energy
- Fuel cells

MAIN FORMS OF ENERGY

- Energy converted to electricity for direct use
- Electricity in metal smelting (electrolytic processes)
- Use of fuels for motive power
- Direct use of fuels for heating applications
- Use of fuels as part of a process
- Example from iron production (reduction process using coal)
- Conversion equipment and challenges

ELECTRICAL ENERGY GENERATION

- Electricity as the preferred energy carrier
- Conversion systems for electrical energy
- Commonly used fuels
- Methods of improving conversion efficiencies
- Better equipment
- Waste energy recovery
- Process improvements
- Cogeneration for better efficiency
- Combined cycle process for gas turbines

ELECTRICAL ENERGY USAGE

- Sectors using the major portion of electricity
- Industrial, domestic, agriculture and agro-processing, mining and metals
- Better efficiencies in electricity usage
- Uses of electricity
- Motive power
- Lighting
- Space heating and cooling
- Better efficiencies in electricity usage

ENERGY EFFICIENCY IN CLIMATE CONTROL APPLICATIONS

- Need for climate control
- Industry and comfort examples
- Efficiency in heating
- Reducing heat loss through better design
- Efficiency in cooling
- Building design features to improve cooling
- The paradox of cooling
- Temperature reduction but no energy recovery
- Use of waste heat for cooling
- Comparison between compression refrigeration and absorption chillers
- Examples from industrial applications

INTRODUCTION TO ENERGY AUDITS

- Purpose
- Know your process, fuels and major systems
- Compare energy usage
- Energy use index and energy cost index
- Where energy is used in facilities
- Lighting and HVAC energy use
- Data forms for recording information
- Collecting the actual data
- Walk-through inspections
- Assess energy and cost saving opportunities

INSTRUMENTATION FOR AUDITS

- Energy audit instrumentation
- Temperature-measuring instruments
- Combustion efficiency measurement
- Airflow and air leak measurement
- Thermography
- Ultrasonic leak detectors
- Data logging
- Light level meters for checking superfluous lighting
- Electric meters: voltages, current, power, energy and power factor
- Use of software tools in energy audits

FINANCIALS AND COSTINGS

- Energy audit reports
- Simple economic measures
- The time value of money
- Cost and benefit analysis
- Rate of return
- Life cycle costing
- After tax cash flows

Why

SmartBrains?

SmartBrains is the ultimate choice for all the working & non working engineer's in energy Sector training requirements. Our extensive portfolio of energy training courses are:

- ▶ 100% focused on the Oil and energy industry.
- ▶ Guided by the industry's renowned professionals with unprecedented knowledge of the Oil and energy industry.
- ▶ Highly interactive program with practical and relevant case studies.
- ▶ Training by extensively researched self developed cutting edge techniques.
- ▶ Skill development techniques with comprehensive set of documentation, practical skills and tools used in the Industry.

Admission

Requirements

- ▶ Duly Filled Application Form
- ▶ 2 Photographs
- ▶ Photo State of Qualifying Examination
- ▶ Address Proof
- ▶ I.D. Proof
- ▶ Latest Resume



- ▶ The perfect opportunity to develop network and experiences with knowledge sharing.
- ▶ Internationally acclaimed engineering qualification.
- ▶ Designed for both Fresh engineers and working professionals to attain growth in oil and energy industry.
- ▶ One of the finest international faculty.
- ▶ Interactive, interesting and motivational training sessions.
- ▶ Access to enormous reference books and research materials.

Declaration

- ▶ This training program is on AUTONOMOUS basis conducted by SmartBrains.
- ▶ SmartBrains has right to expel any student at any time for misbehavior, poor attendance without refunding the fees.
- ▶ Certification will be issued only after completion of course, submission of all assignments and passing all the examinations.
- ▶ SmartBrains has its own rules and regulations about conducting examinations and assessment of examinations

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