

## Basic Study of HVAC Design Engineering



## ABOUT SMARTBRAINS

SmartBrains is the global market leader in providing high-level training services to the energy sector (Oil and Gas, Petrochemical, Refinery, LNG, Power Plants, Fiscal, Contracts, Strategy & Finance and Leadership & Management). Operating nation wise over the last 8 years, our courses are widely acknowledged within the energy community for quality and up-to-date information. Our success and distinguished reputation is down to our commitment to the industry, a high-level of expertise, sector knowledge, cultural diversity and experience that comes from organising many courses.

SmartBrains Institute provides premium training courses for energy industry executives and fresh engineering graduates. Programs are designed by experienced high level Engineers/Managers and professionals as an option to broaden their skill sets to include management tools and techniques that are applicable to various profiles in Oil & Gas industry. 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 workplace.

## WHY SMARTBRAINS

SmartBrains is the ultimate choice for all the working and non working engineers in energy sector training requirements. Our extensive portfolio of energy training courses are:

- ✓ 100% focused on Oil & Gas industry.
- ✓ Guided by the industry renowned professionals with unprecedented knowledge of Oil & Gas industry
- ✓ High 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.
- ✓ 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 renewably industry
- ✓ One of the finest international faculty.
- ✓ Interactive, interesting and motivational training sessions.
- ✓ Access to enormous reference books and research materials.

## OUR STRATEGIC OBJECTIVES

To be recognized by industry and employers as a highly reputable training organization. Provide dynamic leadership, sound management and excellence in training. Continue to improve our services through quality management processes. Invest in and value our people through professional development activities, Grow our business through innovation and to continue to be financially secure. Be influential in the economic development of the industries we serve nationwide.







## ACCREDITATION & AFFILIATION

SmartBrains engineers and technologist Pvt Ltd. has received recognition, endorsement and affiliation from National Skill Development Corporation of India (NSDC) and various Skill Sector Councils as an authorized training provider under various trades. SmartBrains provide skill based training for engineering/non-engineering candidates as per their interest. As a training institute we will provide complete practical knowledge based skill training, recognition & certification from NSDC & Sector Skill Councils. Students who successfully complete their certification from SmartBrains may be able to apply for recognition of their qualification within the local education system. Trainees will be awarded by a National level certification approved & provided by National Skill Development Corporation of India (A PPP promoted by Ministry of Skill Development & Entrepreneurship, Govt. of India) which is broadly accepted & recognized across the globe.

### WHAT YOU WILL GAIN

- ▶ Fundamentals of HVAC
- ▶ Psychrometry
- ▶ Standard & Codes used in HVAC-R system
- ▶ HVAC Drafting
- ▶ Requirements of Air Conditioning
- ▶ Heating & Cooling Load Calculation
- ▶ HVAC Systems
- ▶ Refrigeration

### PURPOSE



- ✓ Our extensive portfolios of training courses are:
- ✓ 100% focused on Heating Ventilation & Air-conditioning (HVAC).
- ✓ Guided by industry renowned professionals with unprecedented knowledge of process plant industry.
- ✓ High interactive program with practical and relevant case studies.
- ✓ Training by extensively researched self developed cutting edge techniques.
- ✓ Perfect opportunity to develop network and experiences with knowledge sharing.
- ✓ Designed for both fresh engineers and working professionals to attain growth in process plant industry
- ✓ Interactive, interesting and motivational training sessions.
- ✓ Access to enormous reference books and research materials. sessions.



**BASIC STUDY OF HVAC**  
**Fundamentals of HVAC**

- Principles of thermodynamics
- Pressure and temperature relationship
- Fundamentals of heat transfer
- Fundamentals of fluid flow

**Psychrometry**

- Introduction to psychrometry
- The properties of air
- Understanding the psychrometric charts

**Standard & Codes used in HVAC-R system**

- Relevant codes & standards as per IAQ
- Codes & Standards as per material specification

**Requirements of Air Conditioning**

- Air purification methods
- Thermodynamics of the human body
- Role of clothing
- Comfort and comfort chart
- Design considerations
- Requirements of temperature and humidity high heat load industries
- Recommended inside design conditions
- Outside summer design conditions for some foreign cities
- Indoor Air Quality
- Design of ventilation systems

**Heating & Cooling Load Calculation**

- Design considerations
- Internal Sensible and Latent Heat Load components

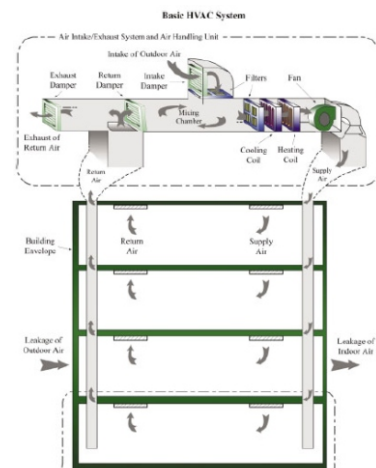
- Design condition - indoor & outdoor conditions
- External Load components
- Miscellaneous heat sources
- Fresh air load

**HVAC Systems**

- Heating systems
- Hot water heating system
- Steam heating systems
- Electric heating systems
- Air-conditioning systems: General
- Air Handling Units
- Functional variations in the design
- Capacity calculation of an air handling unit

**Refrigeration**

- Methods of refrigeration
- Air refrigeration system
- Vapour compression refrigeration system
- Absorption refrigeration system
- Important refrigerants
- Refrigeration equipment





# SmartBrains

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