

# Heating, Ventilation & Air Conditioning (HVAC) for Hospital

Hospital Management  
Kigali (Rwanda)  
13 - 17 Jan 2025

UK Training

# PARTNER



## Heating, Ventilation & Air Conditioning (HVAC) for Hospital

**Ref:** 32105\_138569 **Date:** 13 - 17 Jan 2025 **Location:** Kigali (Rwanda) **Fees:** 3300 Euro

### Introduction

Heating, ventilation, and air conditioning HVAC is an indoor and vehicular environmental comforting technology. The technology aims to provide thermal comfort and high indoor air quality. The techniques of ventilating a building is further divided into a few types as mechanical, forced, and natural ventilation that will provide optimal temperature throughout the day and night. Today in hospitals, HVAC systems are witnessed everywhere despite the type of environment including domestic and commercial. HVAC systems offer ventilation and balances pressure between vacuum spaces. This method of delivering air and removing spaces is called as room air distribution.

### Course Objectives Of Heating, Ventilation, and Conditioning HVAC for Hospitals

- Provide a deep understanding of real-world solutions and has been tailored with simple yet realistic modules for effective and holistic implementation.
- Equip the learner with all the basic fundamentals of AC systems and design
- Use of testing equipment, and the principles of mechanics, electricity, and electronics.
- Enabling the learners to start off with a great professional career in this field.

### Course outlines Of Heating, Ventilation, and Conditioning HVAC for Hospitals

#### Day 1

#### First Cost, Energy Efficiency / O&M Cost

- Maintainability. Reliability. Redundancy. Flexibility
- Change in Occupancy
- Partial Controllability
- Temperature
- Humidity
- Pressurization
- Air Quality
- Infection Control

UK Training

**PARTNER**



## Day 2

### The Selection of Hospital HVAC Systems

- Packaged Air Handling Units, Direct Expansion
- Chilled Water, Local Special Systems
- Medical Equipment, Computer Rooms
- Terminal Units, Unitary or Served by a Central Plant
- Fan Coil Units, Incremental Units
- Heat Pumps
- Induction Traditional Hospital HVAC Systems Decentralized Systems

### Packaged Terminal Air Conditioner filter

- Water-Source Heat Pump
- Fan-Coil Unit cooling coil supply fan return-air inlet supply-air outlet filter
- Fan Coil Systems 4 pipe 2 pipe Central ventilation unit
- Induction Units 4 pipe 2 pipe Central ventilation unit
- Air-Cooled Chiller, Fan-Coil System
- Small Chilled-Water System

## Day 3

### Traditional Hospital HVAC Systems

- All Air Systems
- Central Heating
- Central Cooling
- Single Zone
- Multiple Zones & Constant Volume cooling
- Multiple Zones & Variable Volume

### HVAC Filtration

- Primary panel filter Secondary filter HEPA or tertiary filter
- Sources of Chilled Water Chilled water
- Cooling Sources Chiller Plant
- Constant or Variable Flow-Primary-Flow Systems bypass two-way valve variable-flow pumps control valve check valves optional bypass with three-way valve
- Primary-Secondary Configuration production pumps
- Variable-Speed Drives
- Boiler Plant Steam vs. Hot Water Fire tube vs. water tube Full size vs. Modular Hot Water

## Day 4

### LEED for HealthCare

- Energy Conservation a significant part

A graphic of a chessboard with several chess pieces (a king, a queen, a rook, and a knight) on it. The board is white and black, and the pieces are gold and silver. The text 'UK Training PARTNER' is overlaid on the right side of the board.

UK Training  
**PARTNER**

- Establish ASHRAE 90.1 for base performance
- LEED forces early consideration of all measures
- Energy modeling required
- ASHRAE Standard 189.2P
- High Performance Healthcare Facilities

### Guidelines for Construction of Hospitals

- Building Envelope Improvements
- Reduce Building Volume Height
- Reduce Fan Horsepower's
- BIM as a resource
- Requires less external static pressure
- Dedicated ventilation air systems

### Day 5

#### Chiller, Heat Recovery, Solar, Hydronic

- PV Strategies to Reduce Energy Consumption
- Heat Recovery Chillers
- Using the rejected condenser heat
- Heat Pumps Heat Recovery, Laundry, Data Centers, Ground Source Heat Pumps, Cogeneration
- Trigeration Strategies to Reduce Energy Consumption Continued...
- Ground-Source Heat-Pump System geothermal heat exchanger heat pump pumps
- Reducing building height and horizontal duct lengths
- Non-All Air Systems
- Ventilation- Energy Recovery
- Non-All Air Alternatives
  - Fan Coil Units
  - Chilled Beams
  - Positive Displacement Ventilation
  - Hybrid VAV Systems
- Active Chilled Beams in Cooling and Heating Mode
- Passive Chilled Beams
- Active Chilled Beams
- Displacement Ventilation

A graphic of a chessboard with several chess pieces (a king, a queen, a rook, and a knight) on it, set against a background of concentric circles. The text 'UK Training PARTNER' is overlaid on the right side of the board.

UK Training  
**PARTNER**

## Blackbird training cities

Accra1 (Ghana)

Amman (Jordan)

Amsterdam (Netherlands)

Annecy (France)

Baku (Azerbaijan)

Bali (Indonesia)

Bangkok (Thailand)

Bangkok (Thailand)

Barcelona (Spain)

Batumi (Georgia)

Beijing (China)

Beirut (Lebanon)

Berlin (Germany)

Birmingham (UK)

Bordeaux (France)

Boston,Massachusetts (USA)

Brussels (Belgium)

Cairo (Egypt)

Cape Town (South Africa)

Casablanca (Morocco)

Cascais (Portugal)

Copenhagen (Denmark)

Doha (Qatar)

Dubai (UAE)

Düsseldorf (Germany)

UK Traininig  
**PARTNER**



## Blackbird Training Category



Human Resources



Audit & Quality Assurance



Finance, Accounting, Budgeting



Marketing, Sales, Customer Service



Secretary & Admin



Law and Contract Management



Project Management



IT & IT Engineering



Supply Chain & Logistics



Management & Leadership



Professional Skills



Oil & Gas Engineering



Health & Safety



Telecom Engineering



Hospital Management



Customs & Safety



Aviation



C-Suite Training



Agile and Refinement



## Blackbird training Clients



UK Training  
**PARTNER**



BLACKBIRD  
FOR TRAINING

LONDON TRAINING PROVIDER



[www.blackbird-training.com](http://www.blackbird-training.com)



[training@blackbird-training.com](mailto:training@blackbird-training.com)



+44 7480 775526 / +44 7401 177335