

Energy Efficiency

2 DAYS ⌚ 14



Our Energy Efficiency course explores strategies for the effective use of energy within the data center; incorporating standards imposed by the EU Code of Conduct, The Green Grid, ASHRAE, BCS - The Chartered Institute for IT, and IEEE. This course builds upon the knowledge gained in the foundation level course 'Data Center Design Awareness' and upon it's completion, students will be awarded a Data Center Practitioner credential and will qualify for our specialist level courses.

Learning Outcomes

Upon successful completion, students will be able to:

- Explain trends in global energy and data center power consumption
- Understand corporate drivers for energy efficiency and various stakeholder roles and responsibilities
- Distinguish between the various energy efficiency drivers for different data center types
- Identify typical "worst practices" in the data center
- Identify metrics and regulations that apply to and impact energy efficiency
- Understand how Tier levels and infrastructure resiliency can influence energy efficiency
- Understand the role played by commissioning to ensure energy efficiency best practices are implemented correctly
- Identify major savings related to energy efficiency in power and IT equipment
- Explain the impact of site selection on energy efficiency and vice versa



5 reasons to choose our courses:

- 1** Courses aligned to international standards
- 2** Expert instructors with over 10 years experience
- 3** Interactive learning experience
- 4** Blended learning solutions (classroom and online)
- 5** Specialist career progression tracks for advanced learning

Who should attend?

Any individual directly or indirectly involved in the management or operation of an existing data center; or in the exploration, design or build phase of a new project, including:

- IT Manager
- M&E Consultant
- HVAC Engineer
- Property Developer
- Facility Manager
- Project Manager
- Data Center Owner/Operator
- Building Contractor

Price - \$1350 | €1050 | £850

Professional Development Hrs	14
Exam	1 hour, open book
Pre-requisites	None (although completion of our foundation level 'Data Center Design Awareness' course is recommended)
Suggested Progression	Data Center Cooling Professional + Data Center Power Professional OR Energy & Cost Management + Critical Operations Professional

"The course was excellent. A definite requirement to be attended by anybody responsible for managing a data center."

HOWARD GREEN,
Head of Enterprise
Management,
City of Cape Town

Course Content

The Global Energy Efficiency Landscape

- Global energy outlook
- Global data services outlook
- Global and local energy efficiency landscape
- Relevant industry bodies

Key Drivers

- Energy cost growth
- Energy availability security concerns
- End user behaviour vs infrastructure change
- Differentiating green strategies from sustainability and energy efficiency
- The data center energy lifecycle
- Energy efficiency opportunities – identifying the losses in the power chain from generation to the chip
- Management efficiency – efficiency at organizational level, IT vs facilities paradigm, TCO vs ROI, procurement for efficiency
- Building ratings – World Green Building Council, NABERS, LEED, BREEAM, Singapore, China
- Energy efficient product rating – 80 plus, Green Star, E3, TCO
- Data Center rating schemes – NABERS, LEED, EUCoC, CEEDA
- Examples of worst practices across the data center
- Standards and best practices

Auditing and Assessment

- Data center maturity model
- Assessment of different data center types
- Assessment of different industry types
- NABERS audit and assessment scheme
- Impact of availability and resilience on efficiency
- State of the art efficiency strategies
- Application of organizational efficiency metrics
- Customized metrics
- Metrics for water, carbon and business productivity

Monitoring and Measuring

- Measuring implementation levels
- Manual and automated measurement
- Incoming utility measurement
- Standalone vs shared and mixed use buildings
- Measuring electrical power consumption
- Measuring IT equipment consumption
- DCIM and new technologies

IT Hardware

- Servers – innovative solutions for the big consumers
- Processor performance vs efficiency
- Moore's Law and Koomey's Law
- Power usage analysis and opportunities
- Custom design solutions
- Power management features and issues
- Unused servers
- Getting the most out of virtualization, consolidation and load sharing
- Lifecycle analysis
- Storage energy efficiency
- Online vs offline, deduplication, email quotas
- Impact of infrastructure cabling on efficiency

Cooling Architectures

- ASHRAE thermal guidelines – implementing A1 to A4
- Air flow management
- Temperature and humidity settings
- Containment strategies
- Free cooling analysis
- VFD's
- Cutting edge cooling
- Location and efficiency

Power Architectures

- Electrical efficiency best practice
- Rotary and static UPS efficiency
- Cogeneration

Rightsizing and Capacity Management

- Design vs implementation strategies for efficiency
- Load variation design options
- Impact of redundant components on efficiency
- Zone design
- Modular design
- Retrofit vs new construction

Commissioning and Maintenance

- Building a project delivery team
- Stakeholder involvement
- Maintaining for efficiency
- Future efficiency opportunity