

# Data Center Energy Practitioner (DCEP) (Includes Generalist & Specialist courses)



Developed by Department of Energy (DOE) in Collaboration with the Industry

## Introduction

The DOE "Save Energy Now" program has partnered with the industry in the development of a process leading to practitioners becoming qualified to evaluate the energy status and efficiency opportunities in data centers. The key objective of the Data Center Energy Practitioner (DCEP) Program is to accelerate energy savings in the dynamic and energy-intensive marketplace of data centers.

## Course overview

Energy efficiency is one of the major factors associated with the on-going management of a data center and one that is attracting increasing amounts of pressure with a view to reducing the amount of energy consumed and related costs.

The DCEP Program is driven by the fact that significant knowledge, training, and skills are required to perform accurate energy assessments in data centers. Benefits of using qualified Practitioners include consistency of approach as well as a high level of repeatability and credibility of recommendations.

This 2-day (plus exam) program is designed to raise the standards of education associated with on-going energy assessment and management. The aim is to ensure delegates can carry out assessments confidently and accurately using one, or several of the in-depth DC Pro System Assessment Tools.

Successful delegates gain the Data Center Energy Practitioners (DCEP) status (please note the acronym "DCEP" is for individual use only, it may not be used for organizations, companies, or firms).

Within this course the key areas to consider for an effective strategy are highlighted, which collectively allows a Data Centre professional to build a complete and concise forward plan.

## Course Content

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### DCEP Generalist Training (1 day + 3 hour exam)

<b>8:00</b>	<b>Registration (20 minutes)</b>	<b>12:10</b>	<b>Lunch (80 minutes)</b>
8:20	1. Introduction & Training Overview (40 minutes) Objectives Overview Resources	1:30	6. Electrical Systems (40 minutes) Electrical Systems and Components Right-Sizing and Redundancy Best Practices
9:00	2. DOE DC Pro Profiler (40 minutes) Introduction to Benchmarking and Metrics Overview of DOE DC Pro Profiler	2:10	7. Commissioning, Monitoring, and Controls (30 minutes) Commissioning Monitoring Controls
9:40	3. IT-Equipment (40 minutes) Provisioning Component Energy Use Best Practices	<b>2:40</b>	<b>Break (10 minutes)</b>
<b>10:20</b>	<b>Break (10 minutes)</b>	2:50	8. DOE DC Pro Profiler Example—Live Demo (90 minutes) Introduction to Case Study Input Steps 1-6 Retrofit Demo Take-Home Case Study
10:30	4. Air Management (40 minutes) Environmental Requirements and IT-Reliability Airflow and Temperature Management Best Practices	<b>4:20</b>	<b>End of Day (Exam tomorrow morning)</b>
11:10	5. Cooling Systems (60 minutes) Air- and Liquid-Cooling Systems and Components Central Chilled-Water Plant Best Practices	<b>Day 2</b>	
		8:00	Registration (20 minutes)
		8:20	Exam (180 minutes)
		11:20	End of Generalist training /exam
		11:20	Lunch (70 minutes)

## DCEP Specialist HVAC Training (1½ day + 3 hour exam)

<b>12:30</b>	<b>9. Introductions &amp; Training Overview (40 minutes)</b> Overview Resources Assessment Process Metrics	<b>8:00</b>	<b>17. On-site Assessment Planning and Measurement (45 minutes)</b>
<b>1:10</b>	<b>10. Environmental Requirements (45 minutes)</b> Temperature and Humidity Recommended and Allowable Ranges (ASHRAE/NEBS) Compliance Metric RCI Best Practices	<b>8:20</b>	<b>13. Air Handlers and Air Conditioners (105 minutes)</b> Second Largest Energy User in Mechanical System: Fans Central vs. Modular Systems Air-Side Economizers Evaporative Cooling Case Study Performance Metrics Best Practices
<b>1:55</b>	<b>Break (10 minutes)</b>	<b>10:05</b>	<b>Break (10 minutes)</b>
<b>2:05</b>	<b>11. Airflow and Temperature Management (105 minutes)</b> Avoid Mixing of Cold and Hot Air Maximize Supply Air Temperature/Minimize Supply Airflow Energy Impact High-Level Air-Management Metrics RCI and RTI Air Management Measures, including Controls Data Gathering and Visualization—CFD Best Practices	<b>10:15</b>	<b>14. Liquid Cooling (75 minutes)</b> Why liquid cooling? Options and configurations Energy Benefits Interface with free cooling Case study Best Practices
<b>3:50</b>	<b>12. DOE DC Pro Air-Management Tool (90 minutes)</b> DC Pro Software Tool Suite DC Pro Air Management Tool Overview Tool Walk-Through (step-by-step application example) Input and Output Data	<b>11:30</b>	<b>Lunch (75 minutes)</b>
<b>5:20</b>	<b>End of Specialist Day 1</b>	<b>12:45</b>	<b>15. Chilled Water Plants (75 minutes)</b> Largest Energy User in Mechanical System: Chillers Optimizing Energy Usage Considerations for Data Centers Performance Metrics Best Practices
<b>DCEP Specialist Training (Day 2)</b>		<b>2:00</b>	<b>16. Cooling System Controls (45 minutes)</b> Temperature, Humidity, and Airflow Data Gathering/Monitoring Central vs. Distributed Controls IT-Equipment Feedback Sensor Quality and Calibration Best Practices
<b>8:00</b>	<b>Registration (20 minutes)</b>	<b>2:45</b>	<b>Break (10 minutes)</b>
<b>8:20</b>	<b>13. Air Handlers and Air Conditioners (105 minutes)</b> Second Largest Energy User in Mechanical System: Fans Central vs. Modular Systems Air-Side Economizers Evaporative Cooling Case Study Performance Metrics Best Practices	<b>2:55</b>	<b>17. On-site Assessment Planning and Measurement (45 minutes)</b> Commissioning as an Assessment Resource Assessment Planning Process Overview Metering and Benchmarking Best Practices
<b>10:05</b>	<b>Break (10 minutes)</b>	<b>3:40</b>	<b>18. Modeling Data Center HVAC Systems (90 minutes)</b> Levels of Modeling Detail Comparison of Methods Modeling Energy Usage Calculating Annual Energy and Energy Cost Savings
<b>1:55</b>	<b>Break (10 minutes)</b>	<b>5:15</b>	<b>End of Specialist Day 2</b>

## DCEP Specialist Training (Day 2)

- 8:00 Registration (20 minutes)**  
**8:20 13. Air Handlers and Air Conditioners (105)**  
**10:05 Exam (180 minutes)**  
**11:20 End of Specialist training / exam**



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### Related Training

CDCD™ – Certified Data Center Design  
CDCDP™ – Certified Data Center Design Professional  
CDCM™ – Certified Data Center Management  
CDCMP™ – Certified Data Center Management Professional  
DCE™ – Data Center Efficiency  
DCM™ – Data Center Management  
DCC™ – Data Center Cooling  
DCP™ – Data Center Power  
DCMC™ – Data Centre Compliance  
DCMS™ – Data Centre Strategies  
DCMP™ – Data Centre Physical  
DCMA™ – Data Centre Auditing  
Project Management (TPMA)  
Advanced LAN Design & Network Engineering  
BICSI RCDD

## 2-day course (plus-day exam)

**Classroom based with instructor led discussions with examination.**

### Qualification

- ▶ Data Centre Energy Practitioner (DCEP) Status

### Who Should Attend?

Individuals with responsibility for energy assessments within data centers, employees of property management companies, engineering consulting firms, service companies, data center users, employees of colleges and utility companies.

### Related Training

- ▶ Certified Data Centre Technician - CDCT Pro™
- ▶ Certified Telecommunications Project Management - CTPM™
  - ▶ Certified Data Centre Design Professional - CDCDP™
  - ▶ Certified Data Centre Energy Professional - CDCEP™
- ▶ EU Code of Conduct in Data Centres
  - ▶ BICSI RCDD

### Course Objectives

To raise the standards of education associated with on-going energy assessment and management and ensure delegates can carry out assessments confidently and accurately using one, or several of the in-depth DC Pro System Assessment Tools.

### Prerequisites

Delegates must have:

- Attended a 4-year technical degree and gained 3 years data centre HVAC design/operation experience.  
or
- Attended a 4-year non-technical degree with 5 years data centre HVAC design/operation experience.  
AND
- Hold a PE Mechanical; Discipline, PE#  
or
- Hold a CEM by the Association of Energy Engineers (AEE); CEM#  
or
- Successfully completed the CDCDP by CNet Training  
or
- Successfully completed the Data Centre Energy Generalist 1-day Program.

