CDESS®

Introduction

More data centres are being built, driven by the explosion of data and the processing power required for IoT (Internet of things) sensors and AI (Artificial Intelligence). The percentage of total power consumption by data centres is growing in parallel. It has become vitally important that data centres are optimized for energy efficiency and designed for environmental sustainability.

The CDESS® course is aimed at providing knowledge of the standards and guidelines related to environmental sustainability, and how to move your data centre (existing or new) to a more environmentally sustainable design and operations.

Audience

The primary audience for this course is any IT, facilities or data centre professional who works in and around the data centre and has the responsibility to achieve and improve the efficiency and environmental sustainability, whilst maintaining the availability and manageability of the data centre.

Global Accreditation & Recognition

World-wide accredited by
EXIN

Prerequisites

Participants must have at least one to two years' experience in a data centre or facilities environment. The CDCP® is highly recommended. The CDESS® will discuss data centre facility aspects and without the CDCP® or equivalent knowledge, the participant may not be able to gain the full benefits of the CDESS® training.

Course Benefits

After completion of the course the participant will be able to:

- ☑ Understand the impact of data centres on the environment

- ☑ Describe the various environmental/energy management standards

- ☑ Understand the purpose and goals of the legally binding international treaties on climate change

- ☑ Implement various sustainable performance metrics and how to use them in the data centre environment

- ☑ Manage data centre environmental sustainability using international standards

- ☑ Set up the measurement, monitoring and reporting of energy usage

- ☑ Explain the impact of Green House Gases (GHG) and calculate carbon emissions

- ☑ Use best practices for energy savings in the electrical infrastructure and in the mechanical (cooling) infrastructure

- ☑ Use best practices for energy savings for the ICT equipment and data storage

- ☑ Understand the importance of water management and waste management

- ☑ Understand the different ways to use sustainable energy in the data centre

- ☑ Get practical tips and innovative ideas to make a data centre more sustainable

Course Syllabus 📖

Module 1 – Impact of Data Centres on the Environment
- Predictions in 2010
- Current situation
- Outlook and commitments

Module 2 – What is Environmental Sustainability
- The importance of sustainability
- Senior management commitment
- Environmental sustainability framework
- Sustainability policies
- Performance standards and metrics
- Information policies
- Transparency
- Awareness
- Service charging models

Module 3 – Environmental Management
- Environmental sustainability framework (ISO 14001)
- Standards and guidelines – ISO 50001 / ISO 30134
- Measurement and categories
- Baselining
- Trend analysis
- Reporting

Module 4 - Data Centre Green House Gases Emissions
- The usage of CO_2 equivalent
- The three scopes for GHG emissions
- Definitions for various emission scopes
- How to calculate Carbon emissions from the electrical grid
- How to calculate Carbon emissions from back-up generator
- How to calculate Carbon emissions from refrigerant leakage
- How to calculate Carbon Usage Effectiveness (CUE)

Module 5 – Power Efficiency Indicators
- Various efficiency indicators
- Power Usage Effectiveness (PUE)
- PUE measurement levels
- Factors affecting PUE
- Measurement points and intervals
- PUE in mixed source environments
- Measuring PUE in a mixed-use building
- PUE reporting
- Impact of PUE after optimising IT load

Module 6 – Electrical Energy Savings (Electrical)
- Identifying the starting point for saving energy
- Sizing of power
- DC power
- Generators
- UPS systems
- Power Factor (PF)
- Energy savings on lighting

Module 7 – Electrical Energy Savings (Mechanical)
- Energy savings on the cooling infrastructure
- Temperature and humidity setpoints
- Various energy efficient cooling technologies
- Energy savings on the airflow
- Liquid cooling
- Energy reusage
- PUE, ERE/ERF and Control Volume

Module 8 – Electrical Energy Savings (ICT)
- Procurement
- IT equipment energy efficiency
- ITEEsv, SMPE, SMPO
- IT equipment utilisation
- Server virtualisation
- Open compute project

Module 9 – Electrical Energy Savings (Data Storage)
- Data management
- Data storage management
- Data storage equipment efficiency

Module 10 – Water Management
- Water Usage Effectiveness (WUE)
- Improving WUE
- Water usage at the power generation source
- Energy Water Intensity Factor (EWIF)

Module 11 – Waste Management
- Waste management policies
- Life-cycle assessment (Cradle to the grave)
- 3 R's for waste management
- Reduce
- Reuse
- Second-hand market
- Recycle

Module 12 – Sustainable Energy Usage
- Sustainable energy sources
- Power purchase agreements
- Energy attribute certificates
- Renewable Energy Factor (REF)
- Matching renewable energy supply and demand
- Sustainable energy storage
- Carbon trading

Module 13 – Automated Environmental Management Systems
- Use of AI and machine learning
- Load migration
- Data Centre Infrastructure Management (DCIM) solutions

Delivery Structure and Methods

The CDESS® course is lectured by an EPI Certified Instructor using a combination of lectures and question-and-answer sessions to discuss participants' specific needs and challenges experienced in their own data centre environments. Participants are able to tap into the extensive experience of the trainer enabling them to validate and improve their own environments thus adding tremendous business value.

CDESS® course is available in the following delivery methods:
- ILT – Instructor Led Training
- VILT – Virtual ILT
- TOD – Training On Demand

Examination

The exam is a 60-minute closed book exam, with 40 multiple-choice questions. The candidate requires a minimum of 27 correct answers to pass the exam.

Certification

Candidates who successfully pass the exam will receive the official 'Certified Data Centre Environmental Sustainability Specialist' certificate. The certification is valid for three years after which the student needs to re-certify.

Global Accreditation & Recognition

The CDESS® course is accredited by EXIN, which is a global, independent and not-for-profit accreditation and examination provider. EXIN's mission is to improve the quality of the IT and data centre sectors, the proficiency of IT and data centre professionals and the IT users, by means of accreditation of course material as well as independent examination and certification.

Recommended Next Course

To further extend your skills, we recommend the CDFOS®, CDFOM®. These courses in combination with CDCP® and CDESS® provide participants with in-depth knowledge of the overall data centre design and operations that will make a person a all-rounded and knowledgeable data centre professional.

Course Schedule

Our courses are available in over 60 countries across all continents. For a comprehensive course schedule, visit the EPI corporate website at www.epi-ap.com or contact your local authorised reseller/partner.

EPI Data Centre Training Framework©

The **EPI Data Centre Training Framework**© provides a structured course curriculum for individuals working in and around data centre facilities and data centre operational management. It addresses the various disciplines required to design and manage a high-availability, efficient data centre. EPI's data centre course curriculum is not only the first in the world, it is also by far the largest in the industry. Many companies have specified these courses as prerequisites for their staff working in and around the data centre and use them as part of their career planning initiatives. Recognized globally, these certifications add value to both companies and individuals.

The Company

EPI is a data centre specialist company of European origin operating world-wide in over 60 countries through direct operations and a large partner network. EPI offers an extensive range of data centre services on auditing, certification and training. EPI's focus is on mission-critical, high-availability environments. Established in 1987, EPI has developed an international reputation for delivering high quality technical expertise, with flexible and innovative services, techniques and methodologies.

All our services are aimed at helping our customers to:

- Increase **Availability** of their mission-critical infrastructure
- Improve **Efficiency**, **Effectiveness** and **Manageability**
- **Minimise risk** of business interruption

Our Clients share a common need to protect their valuable data, run their mission-critical infrastructure efficiently and to be protected on a 24 x 7 basis. By protecting the interests of our customers, EPI is committed to an intensive program of comprehensive services development backed by engineering and support excellence.

Quality Systems and Procedures have always been at the heart of every stage of our service delivery to ensure consistent and high quality services. We are known for our thoroughness, flexibility and responsiveness. We focus on providing services that fit each organization and each project with a drive to deliver quality on time, every time.

Let us put our expertise to work for you!

Data Centre Services

Audit & Certification
- Data Centre Standards
  - ANSI/TIA-942
  - EN 50600
  - DCOS®
  - ISO/IEC TS 22237

- Other International Standards
  - ISO 9001
  - ISO/IEC 27701
  - ISO 14001
  - ISO 37001
  - ISO 14644
  - ISO 45001
  - ISO/IEC 20000-1
  - ISO 46001
  - ISO 22301
  - ISO 50001
  - ISO/IEC 27001
  - PCI DSS

- Singapore Standards
  - SS 507
  - DTPM
  - SS 564
  - CBPR
  - SS 584
  - PRP

Professional Training & Certifications
- Data Centre
  DCFC®, CDCP®, CDCS®, CDCE®, CNCDP®
  CDFOS®, CDFOM®, CDESS®, CDRP®, CDMS®,
  CTDC®, CTIA®, CTLA®

- IT
  CITO®, CITM®, CITD®

Non-Certification Training
- Digital Transformation

Frameworks
- IT&DCF® - IT & Data Centre Framework
- DCCF® - Data Centre Competence Framework
- DCTF® - Data Centre Training Framework
- ITTF - IT Training Framework

Standard
- DCOS® - Data Centre Operations Standard
- CRUR® - Computer Room Utilization Ratio