


Welcome to a world where technology flows  
through the heart of your business environment

Welcome to CDC

 Energy MANAGER

Powered by Integra

 intelligent building solutions



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## Overview

The turn of the 21<sup>st</sup> century has seen a paradigm shift in the approach to operational management across the property portfolio, brought about by:

- high energy costs,
- carbon reduction legislation and
- sustainability demands.

Now the property portfolio is required to “perform” in real time to reduce energy costs, carbon emissions and environmental bad practice.

The challenge is to introduce integrated and intelligent technologies to support these operational processes in both new and existing buildings, controlled at a portfolio level, without the requirement for large capital outlay on building refurbishments to accommodate the new technologies.

The CDC **Energy Manager** meets the challenge of energy management, carbon reduction and environmental management by providing an integrated solution to control the disparate energy and environmental sub-systems within the property portfolio.

The CDC **Energy Manager** features automated monitoring of all energy & environmental control systems, conditional sensors and external contributory factors:

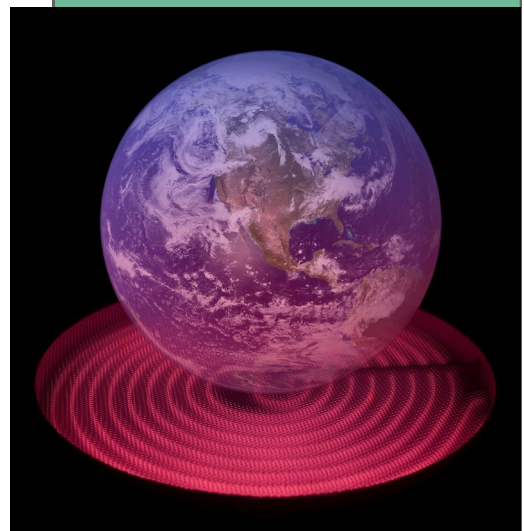
- Electricity, gas, oil and water meters.
- Building management systems.
- Occupancy services (footfall, access, visitor, event etc).
- Weather conditions (temperature, rainfall, humidity, extreme weather conditions).
- External factors (e.g. transportation issues, economic indices, etc).
- Automated carbon emission calculations.
- For further information see the **Energy Manager** Fact Sheet

The CDC **Energy Manager** provides significant operational management improvements - a transition from “Assess and Report” to “Monitor, Control & Predict”. It is an operational solution that contributes to occupational efficiencies, organisational awareness, and tenant attraction / retention programmes.

The CDC **Energy Manager** is powered by the CDC Integra™ software platform - a uniquely flexible interface and monitoring / control system, designed to allow for integrated communication and operational control between the different sub-systems that support the operation of any type of facility.

CDC **Energy Manager** is provided by CDC, an employee-owned company specialising in the application of

intelligent building solutions since 1988, with offices in London, Dubai, Istanbul and Beijing.



## Energy Management

The Investor, Owner/Occupier, or Corporate Real Estate organisation has over time established a mature and stable asset management process to realise value from the property portfolio. The main focus has been on strategic medium to longer term issues involving decisions on appropriate investment in property assets such as:

- *Planning & Performance – resource management, whole life costing, scenario planning, performance indicators.*
- *Estates Management – functional and legal asset structure, acquisitions & disposals, agreements and valuations.*
- *Occupancy Management – tenancy accounting, request management, arrears, voids, costs in use, etc.*
- *Portfolio Inventory – physical structure of properties & assets, system registers and administration.*

The shorter term operational components have historically proved the more difficult management challenge. This day to day property and facility management process includes:

- *Work Delivery – reactive call out maintenance, planned maintenance, projects and contractor/supplier management.*
- *Asset Assessment – condition, suitability, sufficiency, usage modelling and space planning, DDA, asbestos, fire, H&S, etc.*
- *Operational Control - Building controls, energy management and automated features.*

These operational processes have historically been supported by “silo” technologies i.e. individual systems dedicated to one or a few functions such as planned maintenance, asset registers, building management, etc.

Commercial office and retail properties in particular exhibit the greatest challenges in implementing and maintaining technical systems because they reflect a great deal of diversity with owners, brokers, managers, and tenants typically being from different organisations with disparate interest and priorities

There are a wide range of sub-systems that impact on energy usage and thus energy costs and some of the more common energy consuming systems in which energy efficiency can be improved, are listed below:-

- Air Cooled Condensers
- Air Handling Plant
- BMS Systems
- Boiler Plant
- Chiller Plant

- Coal Fired Boiler Plant
- Compressed Air
- Cooling Tower
- Domestic Hot Water Services
- Effluent & Drainage
- Electrical Switchboards
- Electricity Metering
- Emergency Lighting
- Gas Metering
- Geo-Thermal Plant
- Heat Pumps
- Heating & Air Conditioning
- High Pressure Hot Water Plant
- IT Assets & Network
- Leak Detection
- Lighting Control
- Oil Storage
- Power Factor
- Power over Ethernet PoE
- Presence Detection
- Pumping Systems
- PV Solar Panels
- Remote Management
- Standby Generators
- Steam Generating Plant
- Telephony
- Thermal Wheel
- Trace Heating
- UPS Uninterrupted Power Supply
- Ventilation Plant
- Water Metering
- Water Treatment

## CDC Energy Manager

The CDC **Energy Manager** is a network-based information management software product powered by the CDC Integra™ software solution, a uniquely flexible interface and control system, designed to allow for integrated communication and operational control between the different sub-systems that support the operation of any type of facility.

The CDC **Energy Manager** is licensed as **VIEW**, **ANALYTICS** and **CONTROL** and integrates monitoring and control of each technology “silo” of operations, proving easier to design, update, and operate a portfolio wide low carbon energy and environmental control plan.

The CDC **Energy Manager** is comprised of the following core management modules:

- Administrative
- Response
- Analytics
- Rules Based Logic
- Group Collaboration.
- Communications.
- Stakeholder & Media

### Administrative Management Module

The administrative management module is used to create the low carbon energy and environmental control plans. It utilises CDC Integra’s™ real time response plan concepts to capture energy and environmental management scenarios as templates which individually identify the performance thresholds and required automated / manual actions to maintain operation within the desired threshold. This can be likened to a multi-threaded “to-do” list. Real time event information is captured and presented as a series of clear instructions which are easily understood and verified by the planning, management and operational teams.

### Response Management Module

This module has two distinct operational phases:

1. Pre-defined low carbon energy and environmental control plans for the particular scenario’s, are presented to the operational team as key actions and options. Responsibilities for each set of instructions are clearly identified. The status is updated in real time as each element is completed by each individual member of the operational team.
2. If an “out-of tolerance” incident occurs and is not resolved by an automated response in a pre-determined time interval the response module demands manual resolution; records the actions; allocate team responsibilities for each; and records progress in completing these actions.
3. Information collected in phases 1 & 2 is passed in real time to the “Group Collaboration Management Module” which provides a “window” onto the

incident for all members of the team.

### Analytics Management Module

All performance information which is captured, from either polling or from receipt of alarm/incidents, is able to be passed in real time to the Analytics Service, which carries out computational / analytical tasks on the date. The outputs from the Analytics can take the following form

- Used as an action trigger for the Response and the Rules Based Logic Modules
- Form the basis of Reports, Graphical display, Dashboards and more..
- Passed to Third Party ERP and other software applications

### Rules Based Logic Management Module

This module provides the means in which captured data, either before and /or after being processes by the Analytics Service can be used to trigger automated multi dimensional cause and effect control scenarios for any and all connected systems / sub systems.

### Group Collaboration Management Module

This module provides a secure “groupware” area for the operational team members and managers to view up-to-date information with regards to “out-of-tolerance” incidents. A key benefit is the ability to link to a comprehensive (and easily maintainable) single point of reference knowledge base. Familiar search tools provide easy access to this key information to support the incident management process.

### Communications Management Module

The communications management module has two key roles;

1. Once an “out-of-tolerance” incident is declared, it is deployed to contact and inform the operational team (and all registered interested parties) as to the nature of the incident and the actions required of them. Confirmation of receipt of each message is requested and the status of the incident is presented in real time.
2. The designated communications controller within the operational team can also use the communications module to disseminate communications via all forms of media as and when dictated by the plans and developments “on the ground”. The communications module also manages and can prioritise incoming communications from (a) members of the incident team (b) operational staff attending to the incident (c) stakeholders and other interested parties.

All communications (including voice recording) are recorded and grouped together into a comprehensive audit log which can be used post-incident for debriefing, process improvement and/or audit exercises.

## Stakeholder & Tenant Management Module

The Stakeholder & Tenant management module posts relevant authorised elements of information to the organisational intranet and/or internet web sites to inform interested, but not directly involved, stakeholders as to the status of the plan.

The design allows for comments to be returned back from stakeholders, via a messaging service such as e-mail, so as to identify areas of concern not being directly assessed and managed by the operational team.

Additionally authorised news and information can be printed and/or disseminated electronically in a co-ordinated and controlled manner. All members of the team, authorised stakeholders and tenants can have access to this module to receive:

- Up-to-date information of the low carbon energy and environmental control plan; and
- Prior recorded and supporting organisational information

## Key Features

The key features of the CDC **Energy Manager** are:-

- A wide range of features and functionalities , all contributing to operating cost reduction and improved systems operational performance.
- Automated monitoring of all energy & environmental control systems, conditional sensors and external contributory factors:
  - Electricity, gas, oil and water meters.
  - Building management systems.
  - Occupancy services (footfall, access, visitor, event etc).
  - Weather conditions (temperature, rainfall, humidity, extreme weather conditions).
  - External factors (e.g. transportation issues, economic indices, etc.).
  - Automated carbon emission calculations.
- Consistent “out-of-tolerance” alarm trapping, and handling functionality across a wide range of connected systems and monitored domains.
- Automated alerts and alarm handling set against pre-defined thresholds
- Automated responses to alerts and alarms
- Powerful analytics tools which can be applied to the real time data so as to have actual operating data and performance for comparison with plans and targets
- Intelligent automated event driven cause and effect control strategies, which can be applied to any and many points on an connected system
- Connectivity to a wide range of different systems, involving different vendors, embracing both legacy existing systems and new systems.
- Access to information is real-time and all relevant information is available to users from a single source.
- Accessibility from LAN, WAN and Intranet or Internet networks. Operational teams can operate from dispersed locations yet still remain in constant communication.
- Low carbon energy and environmental activities can be made available to pre-selected stakeholder sources.
- Eliminates the multiplicity of paper based plans to ensure that all plans are current and readily available.
- Scenarios can be simulated and the resultant audit trails examined for continuous improvement and training purposes.
- The audit trail allows for powerful unbiased “forensic” analysis after real “out-of-tolerance” incidents have taken place to contribute to future planning design and to support corporate governance and best practice methods.
- Normalisation of interval data from multiple sources to provide a comprehensive database that can be interrogated to provide:
  - Dashboard provision of key energy and sustainability operational performance indicators.
  - Profile generation – analysis and comparison of performance over selected time intervals.
  - Examination of the effects of external factors on building performance such as weather conditions & external temperature, transportation, occupancy and footfall rates etc.
  - Year on year statistics and trend analysis for improved budgeting, planning, forecasting and capital allocation.
  - Benchmark comparison across a portfolio by geography, time of day, property type, and more....
- Refer to the CDC **Energy Manager** Fact Sheet for further details

## Benefits

The CDC **Energy Manager** provides the following demonstrable benefits:

- Flexible, system condition **VIEW** display capabilities. Allowing information to be seen by those that need to have it, where they need to have it.
- Operates over local and wide area networks as well as over the internet.
- Feature rich and powerful data **ANALYTICS** capability applied to all data that is able to be captured automatically or manually.
- Powerful and fully configurable automated cause and effect **CONTROL** strategies
- Ability to send data to and receive from other third party applications such as financial management, ERP, and more
- Pro-active management improvements - a transition from "Assess and Report" to "Monitor, Control & Predict".
- A portfolio-wide operational solution that contributes to occupational efficiencies, organisational awareness, and tenant attraction / retention programmes.
- Accurate and granular information for the provision of key performance indicators, benchmarking and year-on-year comparisons for budgeting, forecasting and reporting.
- Accurate and up-to-date information for value assessment, energy management, environmental management, corporate social responsibility and statutory reporting thus reducing operational cost.
- Improved scenario building and simulation for estimating the effect of operational improvements and/or capital investment initiatives.
- Integration with (and complements) existing metering, building automation and facilities management services hence eliminating replacement costs and enhancing + extending equipment life span.
- Reduce time taken for carbon reduction & environmental assessment programmes by providing aggregated performance datasets that contribute towards:
  - Carbon Reduction Commitments.
  - IPD environment code and Eco-Ledger Assessments.
  - BRE-EAM "In-Use" assessments.
  - LEED existing building assessments.
  - Environmental Management Systems (i.e. ISO 14001).
  - Global Reporting Initiatives.



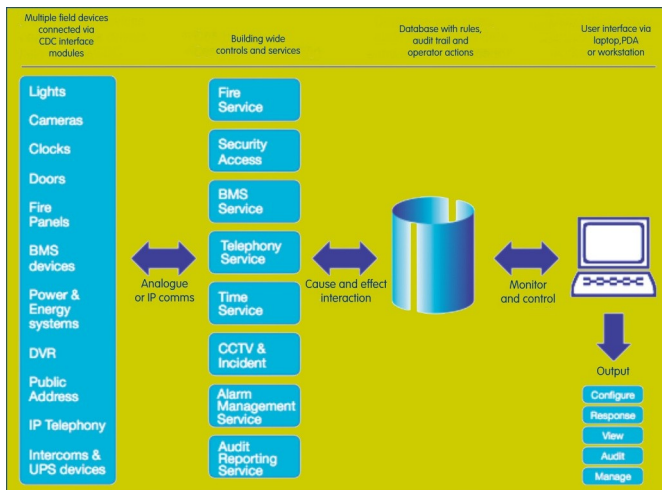
## Powered by Integra™

The CDC Integra™ software solution is a uniquely flexible interface and control system, designed to allow for integrated communication and operational control between the different sub-systems that support the operation of any type of facility.

All types of facility sub-systems are presented in an easily comprehensible graphical format to integrate all operational management services into a single control environment. The solution operates across, and groups together, management solutions for:

- Heating, Ventilation and Air Conditioning (HVAC).
- Environmental Monitoring and climate control.
- Energy management and carbon reduction.
- Physical and site access security.
- CCTV and Digital CCTV recording.
- Fire, Life and Safety systems.
- Lighting and shade.

Versatility is the key to the CDC Integra™ concept. Instead of attempting to force adoption to a particular standard, its success as an approach to system integration lies in being sufficiently flexible to adopt whatever communications media and protocols are already employed by the



proprietary sub-systems.

CDC's approach is to integrate the site sub-systems so that the functional autonomy of the individual systems is unaffected. This approach also preserves confidence and integrity in the independent operation of all the sub-systems.

CDC Integra™ hosts a suite of applications called CDC Server Services that each have a clearly defined role in terms of the discipline or function to which they relate

(such as Fire, Security, BMS etc). Each Server Service applies discipline-specific rules to maintain the integrity of the systems they control.

CDC Integra™ Server Services have the following characteristics:

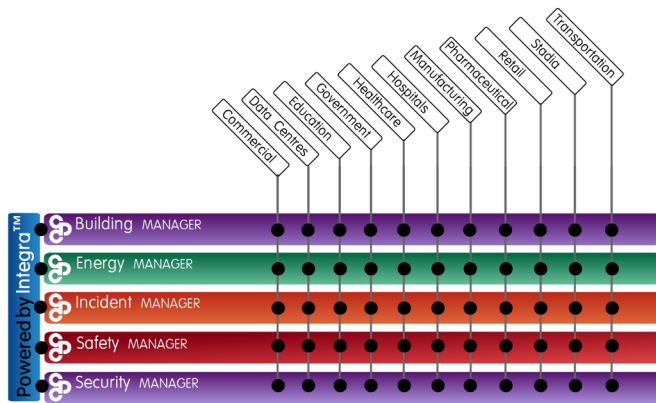
- A **Grouping Service** used to combine management tasks from the different Server Services on a location basis. This allows, for example, Fire Objects (detectors and text messages) to be grouped into a Room, and Rooms to be grouped into an Area, and Areas to be grouped into a Section, and Sections into a Floor, and so on. Graphical representation of the state of any Group is displayed, which in turn represents the state of its constituent components.
- The **Logging and Report Generating Service** provides audit trail information, and also acts as a central report storage facility.
- The **Alarm Management Service** receives alarms and allocates them into a prioritised Alarm List. It also builds a Response Plan for each received alarm to provide clear operator instructions.
- The **Response Plan** method of integration is designed to analyse a large number of different alarm conditions. Each plan creates "easy to interpret and follow" instructions in response to particular alarm stimuli. The response plan can automate some response actions, and assist operators or operational managers in completing others.
- The **Analytics Service** receives All performance information which is captured, from either polling or from receipt of alarm/incidents, is able to be passed in real time to the Analytics Service, which carries out computational / analytical tasks on the date. The outputs from the Analytics can take the following form
  - Used as an action trigger for the Response and the Rules Based Logic Modules
  - Form the basis of Reports, Graphical display, Dashboards and more..
  - Passed to Third Party ERP and other software applications

Response Plans are designed to provide operations and management teams with a tried and tested operational procedure when an alarm situation occurs, and to record their actions and feedback to an audit trail.

## Integra™ Applications

The CDC Integra™ Manager applications build upon the Integra™ software platform to provide an interconnected suite of feature rich applications designed to monitor, control and group together disparate building sub-systems. The main CDC Integra™ applications are:

- Building Manager
- **Energy Manager**
- Incident Manager
- Safety Manager
- Security Manager



Additional CDC Integra™ Manager applications are also available for specific operational solutions such as Vehicle inspection & parking management and Production control & automation.

## About CDC

CDC is one of the pioneers of the intelligent buildings concept and has been a market leader since its inception in 1988. An international network of offices in London, Dubai, Istanbul and Beijing supports our activities as a leading authority in existing and new build projects.



CDC solutions are used in over a 1,000 global locations and we are solution partners with many of the world-renowned organisations in the provision of intelligent building solutions.

A founder member of the Intelligent Buildings Group, CDC also continues to invest in R&D at leading universities to help drive the market and develop new technologies.

CDC provides many intelligent building management solutions covering sectors such as Healthcare & Hospitals, Retail Malls, Commercial, Industrial, Pharmaceuticals, Transportation, National & Local Government and Education.

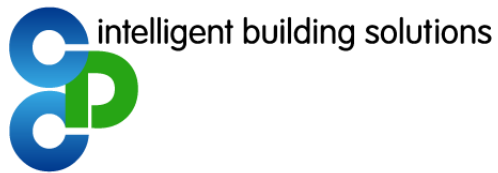
CDC is an associate member of the IPD Eco-Ledger .

IBG is an international not for profit organisation dedicated to the improvement of the built environment, through research into building intelligently an intelligent building. IBG is supported by government and affiliated with sister organisations in China Asia, Europe, US and more

Eco-Ledger Associate Members are licensed and approved by IPD to carry out Eco-Ledger related services such as data collection and quality audits. We can offer advice to support Eco-Ledger and help you improve your buildings' environmental performance.







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