



why matrix?

**MATRIX**

ultimate fan coil system



# matrix - the solution of the moment

Energy Efficient saving up to 80% on electrical input.

Control Matrix Remotely.

Future Proof any design beyond occupation.

A Simpler Installation saves cost.

Fits any space for Physical Flexibility.





Intuitive air conditioned comfort for everyone.

Makes Soft Landed Handover eminently possible.

Fully BACnet Compliant means effortless integration.

Save time with Reduced Commissioning.



## The Concept

Matrix is a complete terminal air conditioning package designed to substantially reduce energy consumption by providing a far more intuitive and intelligent level of control, whilst simplifying installation and commissioning greatly.

To achieve this, Ability have located and integrated into a single package; the most efficient fans and motors, the latest valve sets and a powerful terminal controller.

Finally and most importantly, Ability overlay the whole package with an intelligent and intuitive control strategy to get the very best out of each element of the package.

There is no doubt that "Fan Coil Unit" styled air conditioning systems are moving in this direction but the Ability Matrix System leads the rest.

Joined up thinking from Ability Projects

# something for all

Matrix gives any building a ✓ in the box and is appropriate and cost effective on any project - large or small.



## A Developers Perspective

- Offer your tenants 'Grade A' efficiency rated world leading air conditioning technology.
- Provide your tenants with the highest levels of comfort.
- Appeal to prospective tenants with their own corporate commitment to being 'Green'.
- Attract prospective tenants with lower energy costs.
- Command a premium for a premium environment.
- Reduce tenant complaints through remote problem solving - Less occupier disruption.
- Forget the disruption of routine maintenance - Matrix can self diagnose and request maintenance.
- Give different tenants, within the same building, different design criteria options.
- Remotely reconfigure Matrix as tenants move in, leave or move around your building.
- Expect less damage to building fabric throughout building lifetime, including handover.
- Demand a soft landed handover from your designers – Matrix makes it possible.
- Matrix will keep your building viable for longer. Matrix motors have twice the life expectancy of AC types.
- Struggling for power? Matrix reduces overall building electrical demand in congested city areas.
- Add a new dimension to your own sales and marketing campaigns.
- BACnet allows you to keep your communications options open with:

A choice of components,

A choice of installers,

A choice of your ongoing support providers.

## A Designers Perspective

- Be the first to excite your “developer” clients with this new air conditioning concept.
- Choose Matrix to help achieve the highest energy rating for your design and your client’s building.
- Offer your client the option of a ‘Soft Landed Handover’
- Matrix allows your design to adapt because changes are all made remotely.
- Offer unique features such as ‘Multi Room’ unit strategies .
- Your design will react to the needs of the occupiers.
- BACnet - Integrate with any other product you may want to use.
- The overall component cost of your design will be less than a conventional design.
- Your design will be quicker to implement and commission.
- Your design will remain physically flexible - If you could have fitted a fan coil unit, you will fit a Matrix.
- Enhance your project design portfolio for tomorrow.
- Start giving your projects the best energy credentials.



## An Installers Perspective

- Matrix is a self-contained, fully assembled package, not a collection of parts.
- A number of ancilliary components will no longer be required, VCDs, Double Regulating Valves etc.
- Matrix will integrate with any system but does not depend on any other system.
- Many Matrix installation elements are less skills dependant so consider keeping more in your own package.
- Installation and Commissioning are quicker so costs are reduced.
- Commissioning is more accurate.
- You can continue to work on the building fabric as commissioning continues because commissioning is controlled remotely.
- A panicked handover can be avoided by offering your client a soft landed, progressive handover.



# commercial buildings



Matrix, fan coil styled products are the most flexible solution. Physically and individually Matrix will fit most commercial spaces and as a system will evolve as the building progresses through its working life.

**Energy Effective** - Matrix was developed to minimise energy usage by applying intuitive control regimes to provide a comfortable working environment whilst keeping consumption to an absolute minimum.

Most projects are sized to allow for the hottest day in any summer and the coldest day in any winter, however, the reality is that these conditions only ever exist for a very small fraction of any year. So Matrix uses a combination of defined guidelines, real time environmental feedback and user / occupier inputs to decide the most comfortable but cost effective response.

**Installation** - Matrix units set their own air volumes, balance their own air flows and help set their own water flow rates. All the relevant information is pre-loaded at the factory to reduce site commissioning time. Commissioning with Matrix is more a checking process rather than a setting process.

Matrix reports back to the owners any amount of useful information. IP or Ethernet connectivity mean that there is no real practical (or cost) limit to the amount of information that can be seen, interrogated and used on a real time basis.

Occupancy, set points, current air volumes, current water flow rates, even energy usage all become useful outputs that can influence the way people see their environment and how they then interact with it.

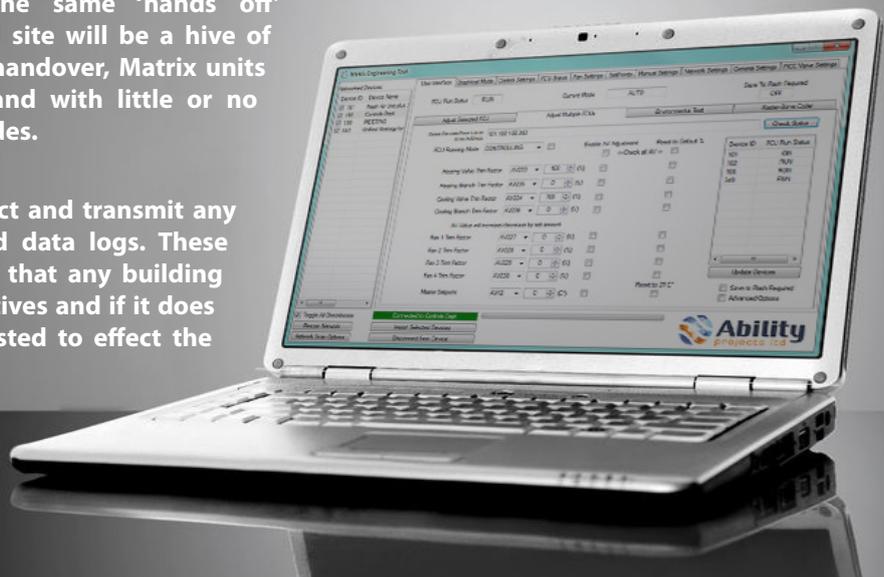
Matrix itself uses this information to make informed decisions. If a meeting room is under utilised or empty, Matrix will fall into a standby mode saving energy. If a Matrix unit finds itself struggling it can self compensate and correct the situation, again without human intervention.

All Matrix settings are user definable, enabling the building to evolve as time passes.

Regulations may change, the style of usage may change or even the climate may change but Matrix will allow you to make whatever updates you feel are appropriate.

Commissioning benefits from the same 'hands off' approach. While any conventional site will be a hive of frenetic activity as it approaches handover, Matrix units can be commissioned remotely and with little or no impact either on, or from other trades.

Matrix units can be asked to collect and transmit any number of commissioning related data logs. These logs can then be used to confirm that any building meets the original specified objectives and if it does not, Matrix can be remotely adjusted to effect the desired result.



**How?** - Every Matrix design value, every strategy routine, every reading, every reaction are all remotely accessible and remotely adjustable. Through either the BMS or the software tools provided, a single Matrix unit, a group of Matrix units or a whole building can be instructed to subtly change or to completely reconfigure.

No longer is 'out of hours working' necessary to make physical adjustments, Matrix can be instructed at anytime and without any physical contact with the unit being necessary.

**Soft Landings** - Furthermore, Soft Landed Commissioning is not only becoming more desirable, Matrix now makes it practical. No longer is handover a transient moment in time, it can now be a period through which the clients witness first hand that the system they have purchased, does indeed, meet their expectations.

**Servicing** - Advanced Matrix units have the capability to send an 'Alarm' if a filter is getting dirty or a fan has failed. So maintenance need no longer be routine, servicing can be demand driven cutting down needless occupier disruption and expense.

**BACnet protocol** - All Matrix products utilise the native BACnet protocol. Therefore Matrix will interface with any other BACnet equipment from any manufacturer.

This leaves the developer, the occupant, the designer or the installer free to select all the other BACnet equipment and any BACnet support they need from any of their preferred BACnet suppliers.

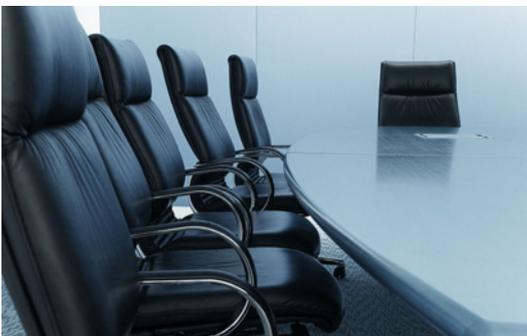
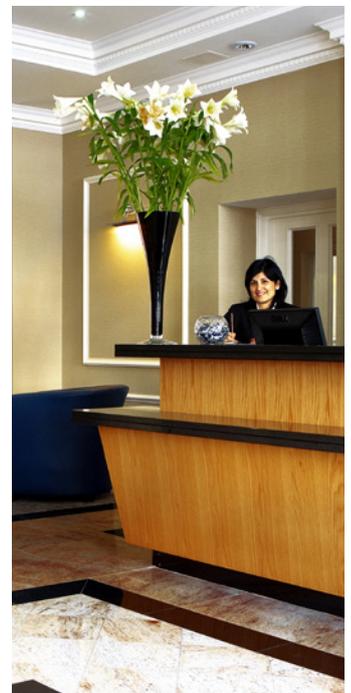


# hotels - win, win, win!

If there ever is an issue with a hotel room, it almost always centres on the air conditioning. How often is it said that, 'the room was so hot', the guest 'couldn't bear the noise' or 'it just doesn't work'. The fact is however, that for a small investment the Matrix units can solve all of the guest's air conditioning needs, eradicate related complaints, reduce energy bills and give any hotel chain a real 'ECO Message'.

The controllability of Matrix gives any guest the flexibility to have the unit set at whatever condition and at whatever fan speed (translated as noise level) they require. As Matrix EC fans are infinitely fan speed controllable, this avoids the three set speeds common to many hotel units, 'Low', 'Medium' and 'High' which more descriptively might be better called; 'Ineffective', 'Bearable' and 'Torture'.

Employing an intelligent fan speed control strategy reduces electrical consumption considerably. Such a strategy might afford the guest the satisfaction of turning the unit fan speed up for a while to have it then self correct to a more reasonable, and efficient, speed after a pre determined time.



One popular Ability strategy - Once the Matrix has been activated, the fan speed tracks a speed profile that changes as the day progresses removing the need for frequent adjustments by the occupants. This can also be influenced by the booking system, occupancy sensing and or window switches.

Timely servicing in a hotel environment is important. Matrix units have the capability to send a message to the desk if a filter is getting dirty, or a fan has failed or a unit is struggling to keep the temperature in check. This means that rooms are only serviced when necessary but are nonetheless kept in peak condition. So the hotel owner (or franchisee) now has a lower energy bill, happier customers with fewer complaints and disputes at checkout. Matrix for hotels is a:

Win for the owner / operator,

Win for the guest,

Win for the environment.

# retail, leisure & small office

Matrix Fan Coils no longer only suit large projects...

Matrix is available with an innovative and very cost effective 'Mini BMS Package' that allows individually owned and franchised operations such as shops, bars and restaurants within large multi-retail complexes to fully control their own air conditioning independently of the main shopping centre system.

The self-contained package comprises a full colour 7in touch screen display which is in fact both the user interface and the 'Mini Head End'. Networking aside, nothing else is required other than the Matrix units themselves incorporating their own terminal control device.

The touch screen unit can be wall or panel mounted and therefore occupies little room which can often be at a premium in such operations. Most often the visuals are tailored to present the customers corporate theme. Sub screens can show the Matrix unit layout, the various setting options and the 'real time' operational conditions.



These features, common to most BMS systems can be complimented by occupancy monitoring and time scheduling.

All features are simple in operation allowing the outlet Manager to control and adjust the timing of, and the environmental condition within their own business. This is very important when stores often have variable opening hours depending on the season, sales, stock taking etc and also where room use is very variable such as in stock rooms or staff rooms.

The whole system is connected by 'CAT 5 / 6' cabling through an Ethernet Switch which are readily available. Configured on a native BACnet IP network ensures that the system is simple to install, the network is robust, is very fast in operation and is expandable.

These small retail packages do not need to necessarily rely upon a communal supply of chilled and heating water. They are equally happy operating with a small chiller in a self-contained system and will provide equally as much flexibility and energy efficiency.

# Ability Matrix range of supporting literature



## Why Matrix?

Matrix is the first fan coil styled product to bring benefits, efficiencies and cost savings to all levels of the construction industry. This guide gives an overview of what those advantages may mean to you as either a developer, a designer or an installer.



## Features & Configuration

Matrix is not a conventional fan coil product. This guide explains all the Matrix developments and gives an overview of how they could positively impact your project.



## Accessories

Matrix is fully BACnet compliant. This guide shows some of the exciting accessories available to compliment Matrix and how they would enhance any project, commercial, retail, domestic or leisure.



## Selection Guide

Matrix performs. This guide gives duty and acoustic selection data which will guide you through the selection process



## Installation Guide

Matrix is simple to install. This guide pulls together the common installation conventions including BACnet MS/TP, IP and Ethernet networks and Hydraulics using PICC valves.



## Commissioning Guide

Matrix is simple to commission. This guide gives useful advice on how to commission Matrix to get the best from the system



## Quick Start

Can't Wait ? This guide summaries the most important elements from the installation, the commissioning and the operating and maintenance guides.



## Operating & Maintenance Guide

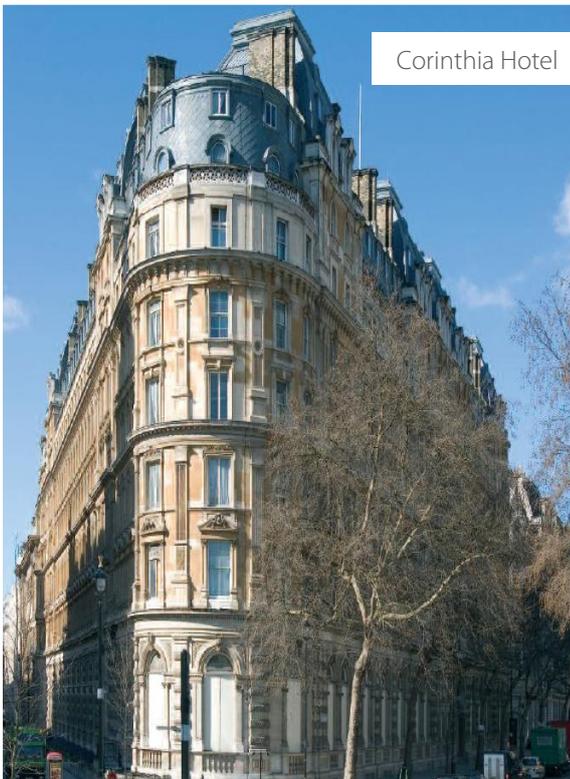
Handing Matrix over to the Facilities Managers. This guide gives the eventual owners and operators of the Matrix system their step by step 'users reference'



Palestra



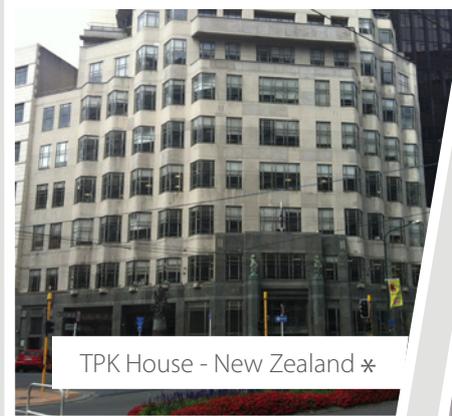
Masdar City - Abu Dhabi



Corinthia Hotel



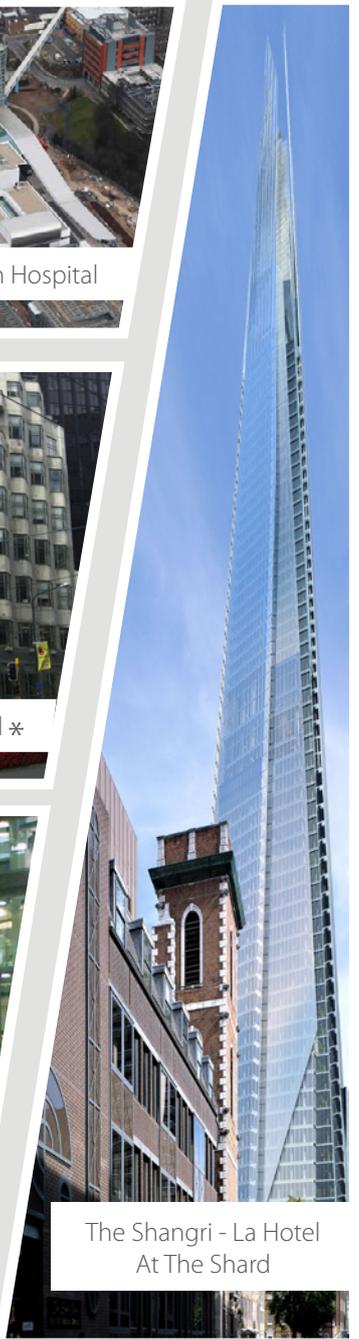
Birmingham Hospital



TPK House - New Zealand \*



Heathrow - Terminal 5



The Shangri-La Hotel  
At The Shard

\*Te Puni Kokiri House - The Ministry for Maori Development - New Zealand. Circa 1942.  
To see our full portfolio, please visit - [www.abilityprojects.com/projects](http://www.abilityprojects.com/projects)



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