# Increase returns with ABB Cylon® Smart Building Solutions

Optimise revenue and increase sustainability at the same time

# Content

# Introduction

As cities become more densely populated, the planet needs more dynamic management of every building's space in order to become more sustainable. Indeed, with buildings consuming around 30% of the world's energy and contributing around 40% of global carbon emissions, it is understandable why buildings are increasingly a focus in combatting climate change.

Not long ago, building green was seen as something of a luxury, a preserve of the affluent. Nowadays, however, many planners, architects, tenants, and occupiers of buildings regard this as standard. As a result, building developers are expected to include active emission mitigation technology in their development from the outset.

This increasing demand for a fundamental shift to more sustainable buildings is accompanied by advancements in IoT (internet of things). As a result, it is possible to create spaces in which people not only want to work but spaces and buildings that respond and adjust automatically to our requirements. At the heart of this sustainability drive is increased energy efficiency and the concept of the 'smart building'.

In a time of volatile energy costs and pressures on profitability, optimising revenues with smart buildings solutions simply makes good sense. Research reveals that heating and cooling account for 20-40% of energy costs in a typical office environment. For this reason, monitoring and optimisation should be at the heart of every organisation's strategy.

Continuous monitoring and management of HVAC (heating, ventilation and air conditioning) and lighting (combined, the largest use of energy in modern buildings) can prevent up to 20% of building energy drift each year – caused by unexpected and unscheduled changes in the level and type of usage, unpredicted changes in weather conditions and fluctuating occupancy rates, something that is becoming more prevalent with the increased demand for remote working.

# ABB Cylon®

ABB Cylon delivers scalable, front-end building automation solutions, open-protocol building controls and cloud-based energy analytic tools to meet the needs of today's high-performance, green-conscious commercial facilities. ABB Cylon can help you integrate smart building solutions into the planning of new facilities, retrofitting to an existing site, or upgrading current systems in a way that optimises return on investment and improves energy consumption efficiency.



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# Attract and retain high value tenants

## Flexibility

ABB Cylon Smart building solutions provide the flexibility building owners and tenants require to control and optimise workspaces while managing energy usage and reducing costs. Smart buildings attract and appeal to the demands of high-quality tenants through the installation, management and maintenance of smart HVAC, lighting and room controls that provide improved air quality, light, shading and temperature control. The result is the creation of an ideal environment for greater work productivity for occupants, at the same time as an increase in the value of a building for investors and building owners.

The high level of configurability of the ABB system also enables the owner to accommodate multi-tenants' requirements very quickly and with minimum cost. The system can be extended quickly and easily throughout a building's life cycle, protecting investments into the future.

Scalable design and flexible building solutions allow smart devices, systems and people to connect more easily. Our range of IP controllers built on an open platform provides the interconnectivity and flexibility required to create smarter buildings.

# Occupant comfort

External temperature sensors, weather data, occupancy levels, room light, air quality and temperature sensors feed information back to the BMS (building management system), causing it to react and make intelligent adjustments to lighting, shading and HVAC, thereby ensuring occupant comfort is always maintained.

## ABB FusionAir® Smart Sensor

The FusionAir Smart Sensor comes with an optional four-in-one sensor for temperature, humidity, CO2 and volatile organic compounds (VOCs). Thanks to its colour-changing LED display and touch-free indications, FusionAir provides a clear visual indicator of room air quality and safety against specified safety benchmarks on safe indoor environment indicators. In addition, it responds by initiating the appropriate air ventilation based on IAQ (indoor air quality) safety parameters, keeping building occupants safe.

The FusionAir Smart Sensor delivers intelligent control of HVAC, lighting and sun blinds. Through motion sensing via connection to additional occupancy data devices, such as PIR (passive infrared) sensors and door entry data, the FusionAir Smart Sensor feeds information back to the BMS. This causes it to react and make intelligent adjustments to the HVAC, lighting and sun blinds, adjusting the environment according to occupancy requirements.

# Total cost of ownership

### Saving on more costly future replacements or repairs

ABB's intuitive energy analysis and management tools provide ongoing monitoring and historical alarms that may point to additional problems that require maintenance. Identifying faults and resolving issues early saves on more costly future replacements or repairs.

### Protect your investment

Highly flexible and easily extendable, our range of BMS controls are built on an open system. This allows for straightforward expansion or upgrades to the BMS that may be required in years to come, therefore future-proofing today's BMS installations.

### Real-time monitoring

The BMS monitors system faults across all zones from a central point, making maintenance faster and more responsive. Technical services managers can monitor all the integrated systems without having to visit the various plants or zones.

# Speed, resilience and efficiency

### Quickly adapt to changes with patented technology

ABB Cylon controllers feature UniPuts™ patented technology, a revolutionary answer to flexible point configuration that allows points on the controller to be configured as an input or an output. This in turn maximizes flexibility relative to programming changes as well as point capacity on the controller.

### Efficient commissioning and testing

Manual override of UniPuts enables easy configuration, fast commissioning and post-installation testing without the need to connect to the CXproHD engineering tool. Override of UniPuts can be undertaken through CXporHD or locally using the HOA (hand-off-auto switches) facility where available.

### Quick and easy installation

FLX I/O bus/power connection is achieved through a single plug connector, simplifying the installation process, and eliminating the possibility of misconnection between components of a CBX system.

### Reduce diagnostic time

Software-free diagnostics are included to facilitate instant visual identification of wiring faults. Status LEDs for all I/O points instantaneously provide visual diagnostic and error status for each connected system point, which reduces problem-solving time and associated costs.

# Sustainability

## Reduce energy costs with intelligent control

Depending on your geographical location and weather conditions, HVAC can represent 40-60% of the energy consumption of commercial buildings. Taking intelligent control of HVAC can produce significant energy cost savings. Building owners can ensure their building systems are operational only when needed with smart room control scheduling and the application of intelligent sensor feedback. And as data from the European Parliament suggests, the same ROI benefits enjoyed by new builds can be realised by older ones via deep renovations, including installing smart technology, potentially reducing demand for heating by more than 70%.

More effective and efficient use of power can save money, quickly repaying initial technology expenditure. HVAC and lighting alone can account for about 50% of energy use in an average commercial building. By incorporating smart automation, managers may see decreased energy costs of 30 to 50%.

## Reduced operational costs with energy optimisation

ABB building automation controls provide alerts via any web-enabled device in real time, allowing building managers to monitor equipment performance, track anomalies of operation outside of setpoints and scheduling, and react to resolve any issues quickly, reducing downtime and saving on operation costs and unnecessary energy consumption. Through continuous monitoring and intelligent analysis of energy consumption, facility managers can prevent building energy drift of up to 20% a year.

## Funding and promoting smart building technology

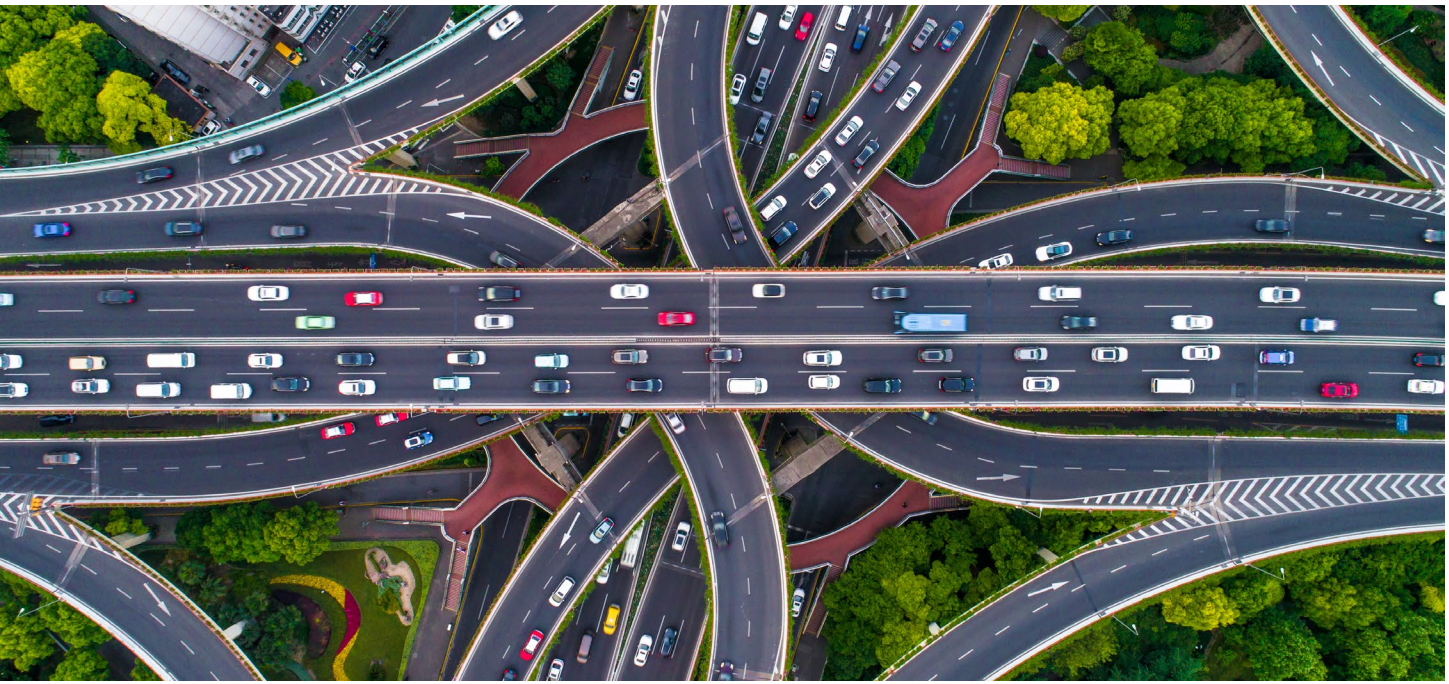
Across the planet, governments and multinational agencies are pushing improved energy efficiency as a way to help hit their climate-neutral goals. For example, via its Horizon program, the European Union is promoting

- More innovative, affordable, user-friendly and accessible products and systems to continuously monitor and improve the energy performance of buildings
- Increased building energy performance through the optimisation and integration of different technologies, including renewable energy, storage and services
- Easier and more systematic use of smart products and services to achieve savings where energy renovation is not an option
- Higher replicability to increase the number of buildings with smart building devices and digital infrastructure resulting in a higher smart readiness rating[1]

Similarly, via the Federal Support for Efficient Buildings, Germany is handing out funds and loans to support 'greater energy efficiency in the building sector'.[2] Across the rest of Europe, the Americas and much of the rest of the world, governments are in one way or another providing incentives and funding for greener, smart buildings. This includes China.

[1] EU: www.ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d4-01-03

[2] Engie: www.engie-deutschland.de/en/magazine/new-energy-funding-programs-you-should-know-about-these-attractive-options



China is the world's largest emitter of greenhouse gas emissions, with around 30% of the total. This is something the Chinese government has publicly committed to changing, in the Paris Agreement and further declarations since then. In 2020, the country announced it aimed to hit peak CO2 emissions by 2030 and carbon neutrality by 2060.[3] As a result, new green investments and incentives are pushing forward the green agenda.

On the one hand, indoor air quality, for example, has become a pressing focus in the wake of the coronavirus pandemic. On the other, recent years have seen numerous 'smart city districts' being developed, backed by huge amounts of money, and in cooperation between private and public sectors.[4] The twin aims of creating more sustainable, smart buildings and work spaces are to reach carbon-neutral goals at the same time as generating healthy ROIs.

[3] Nature: https://www.nature.com/articles/s41467-021-27671-0

[4] Forbes: https://www.forbes.at/artikel/public-or-private-building-smart-cities.html

# ABB Cyclon’s stories of success

## 01 Tanjong Pagar Centre, Singapore:

There are more than 27,000 points at Singapore’s US$2 billion, 290-metre-high Tanjong Pagar Centre, which features a five-star hotel, grade A office space, and 181 luxury residences. As an open protocol, BACnet promotes integration across other manufacturers’ platforms and systems to give a total integrated control solution. The ABB Cylon BACnet solution is highly flexible and can be easily extended, allowing for the addition of new functionalities and the ability to create new object types.

## 02 Greenview Building, Beijing, China:

It has around 19,000 points across four buildings, including monitoring, cooling, heating, air handling, lighting, metering, natural ventilation, humidity, lift monitoring, electrical supply management, energy use and the fire alarm. Composed of four towers, ranging from 41.7 to 78 metres in height, Cylon BEMS ensures occupant comfort within the building while actively reducing energy consumption and costs.

## 03 BP1, London, UK:

BP1 is part of the huge Canary Wharf project, which includes ten office buildings, multi-level indoor shopping, a Docklands light railway station, and a conference and banqueting centre. ABB Cylon Unitron BMS has been installed in various buildings. BP1 has 16,200 points across its 92,900 square metre building, taking in five basement levels and 33 upper floors. The points control local temperatures via 2,100 UCU10VAV controllers on one basement and 23 upper floors. The BMS is managed by a full-time team of Eton Associates engineers and the facility has achieved an excellent environmental assessment (BREEAM) rating.

## 04 20 Fenchurch Street (‘The Walkie Talkie’), London, UK:

Nicknamed the Walkie Talkie because of its distinctive form, this 160-metre tall central London tower offers a full open protocol solution that provides tenants with the opportunity to install their preferred BACnet control solution on a floor-by-floor basis. The ABB Cylon BACnet solution is highly flexible and can be easily extended, allowing for the addition of new functionalities and the ability to create new object types.[8]

[5] ABB: https://library.e.abb.com/public/1b53fbd8b68248ec8ebd4d54de9388d9/ABB_Cylon_A4_TanjongPagarCentre_CaseStudy_global.pdf

[6] ABB: https://webcache.googleusercontent.com/search?q=cache:k51980mFbhAJ:https://cylon.com/us/case-studies-installations/commercial/greenview-building-china.html&cd=1&hl=en&ct=clnk&gl=de & https://library.e.abb.com/public/d7e27b6a6b064d65a97de7419ef6e8a7/ABB_Cylon_A4_GreenviewBuilding_CaseStudy_global.pdf

[7] ABB: https://library.e.abb.com/public/6992cfeb303d4f818a62fa3dc446510e/ABB_Cylon_A4_CanaryWharf_CaseStudy_global.pdf?x-sign=l5EPU9UqUfAmCAhMkCOmX/RDdkrD3Eq7Ckm5hFbiDdCZ9TteY91BKuVCiGt+jsTO

[8] ABB: https://library.e.abb.com/public/794d8d8b36204feeab17658650bb7c37/ABB_Cylon_A4_FenchurchStreet_CaseStudy_global.pdf?x-sign=brUNPTlHH9z2oDJnF5TIFpoJI-5soxrRLplEhr9yqnWoceBAuW1qritM796pTuKM6

# Smart designs for smart buildings and a smart future

ABB's scalable designs and flexible building solutions allow smart devices, systems and people to connect more easily. Built on an open platform, ABB Cylon provides building owners with the interconnectivity and flexibility they require to create and run smarter buildings.

Highly flexible and easily extendable, ABB Cylon allows for straightforward expansion or upgrades to the BMS that may be required in years to come, future-proofing today's BMS installations.

This guideline for building owners outlines the various benefits of what a highly advanced and flexible smart building system looks like, for now and for the future. ABB Cylon is there to make your life much easier, by providing the advanced technology and systems for you to create and run a sustainable, energy-efficient, smart building.

Layout changes, different occupant types, building use, regulations: all of these can change. What will remain, though, is ABB Cylon. Working for you.

# Contact

## We are the partner that can power and digitalize your future.

Together we can ensure you reach efficiency providing scalable automation and energy control of any size commercial or industrial building, thanks to ABB Cylon® Smart Building Solutions.