



THE FUTURE OF HEALTHCARE IS OPEN

Secure, reliable, sustainable energy
management with open protocol solutions.



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TO OUTRUN

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INTRODUCTION

As critical health infrastructure, hospitals must serve the needs of the community today and tomorrow.

So, when it comes to building or redeveloping a hospital, the more resilient and adaptable its infrastructure, the more prepared it will be for the future. As healthcare continues to digitalise, it is more important than ever to invest in platforms that promote connectivity across digital solutions. These platforms give hospitals the real-time data they need to make better decisions that lead to safer, smarter, more sustainable operations and optimal patient care.

Open protocol solutions: future-proofing the smart way

Investing in open protocol solutions is key to giving hospitals the connectivity they need to move confidently into the future. Instead of being tied to one vendor, these 'open' platforms give hospitals the flexibility and power to select the best digital solution for the task at hand.

This ebook has been developed as a guide to help hospitals prepare themselves for an increasingly difficult outlook. Cost pressures, labour shortages, an ageing population and constant change means that hospitals need to run in a more agile and efficient way, without sacrificing patient care. Being able to connect equipment, devices and technology from multiple vendors through an open protocol platform is key to building the resilience hospitals need to meet these challenges with confidence.



KEY FINDINGS

In this ebook, we'll explain what open protocol solutions are and why they are the better choice over a closed protocol system. Apart from giving hospitals more choice in the vendors they can work with, an open protocol approach is better suited to preparing hospitals for present and future challenges.

Today's challenges

- ▶ Hospitals need to do more with less – patient and staff expectations are higher than ever, yet costs are rising.
- ▶ A reliable energy supply is crucial for hospitals to function – but equally important is cutting wastage and reducing overall energy use.
- ▶ As hospitals become more connected, they become more vulnerable to potentially catastrophic cyber attacks.

Tomorrow's opportunity

New technology such as human-centric lighting, automation and AI have the potential to raise standards in patient care and staff well-being.

What are the benefits of an open protocol solution?

- ▶ Enables different equipment to work together seamlessly – allowing for multi-vendor infrastructure.
- ▶ Gives greater flexibility for hospitals to make the most of new technology, and incorporate it into existing infrastructure.
- ▶ Facilitates data flow between departments, helping improve energy management, optimise power monitoring and ensuring vital information is secure.

The importance of working with the right partner

We'll also explain how finding the right connectivity partner can help you make the most of an open protocol approach – and how ABB has helped hospitals from Australia to the UK get future-ready with open platforms.

SECTION

01

Healthcare's unique challenges

New technology offers exciting possibilities to improve healthcare standards in every way, from staff wellbeing to patient care. But it also poses new questions, which need to be addressed before its potential can be fully realised.





Keeping energy consumption under control

To provide a service that patients can rely on, hospitals need an uninterrupted supply of electricity. But as they move to a digital-focused future, their carbon footprint has risen to worrying levels – incredibly, if global healthcare was a country, 'it would be the fifth-largest greenhouse gas emitter on the planet'.

Key challenges

- ▶ How can hospitals invest in innovative, resource-hungry technology while remaining sustainable?
- ▶ How do you balance the need to improve standards for staff and patients with reducing emissions and becoming more energy efficient?

Solutions

- ▶ Investing in automation can help hospitals leverage technology such as human-centric lighting while controlling and optimising energy consumption.
- ▶ Ensure long term system availability with high-efficiency UPSs, significantly reducing carbon emissions.

DID YOU KNOW?

01

Heating, ventilation and air conditioning (HVAC) accounts for around 50% of all hospital energy use.

02

Up to 30% of energy consumed in hospitals is used unnecessarily.





Ensuring power quality, with the highest efficiency

Hospitals house a huge variety of complicated equipment – from computers to diagnostic equipment, from laundry facilities to robots. And with such a wide array of technology under one roof, power supply issues can easily arise – with the results being potentially catastrophic.

Key challenge

- ▶ Power supply issues can lead to lost data, malfunctioning equipment, device lockups and cost implications.

Solution

- ▶ Ensure long term system availability with a high-efficiency UPS, significantly reducing carbon emissions.



DID YOU KNOW?

01 The average cost of a hospital power outage is \$7,900 per minute.

MEGAFLEX DPA

– ENERGY-EFFICIENT POWER PROTECTION

This modular UPS is based on ABB's decentralized parallel architecture (DPA) allowing each module to practically function as its own independent UPS. The on-line double conversion UPS provides the best power protection for critical infrastructure from 250 kW to 1,500 kW.

MegaFlex DPA is highly energy efficient, and a part of ABB's EcoSolution range. The ABB EcoSolutions™ label provides full transparency to environmental impacts across the entire product lifecycle.

[FIND OUT MORE](#)

Guarding against cyber-attacks

As digital experiences become more interconnected, this increases a hospital's exposure to cyber attacks, particularly ransomware. Critical infrastructure, like hospitals, are top targets for criminals, and the impacts of a breach can be severe.

Key challenges

- ▶ How can hospitals embrace new technology and stay secure?
- ▶ Many hospitals are not prepared for potential security breaches.
- ▶ Even stand alone or isolated systems cannot be defined as 100% secure.

Solutions

- ▶ Energy management software needs to be made as secure as possible to protect crucial infrastructure – for example KNX Data Secure building automation uses encryption and authentication to protect valuable user data.
- ▶ Managing cyber security is managing risk. Cloud based energy asset management (EAM) tools like ABB Ability mitigate risk by continuously monitoring and preventing vulnerability to cyber attack.
- ▶ An EAM cloud solution like ABB Ability allows hospitals to adapt quickly to new security challenges with minimal disruption. Unlike on-premise networks, which struggle with timely updates, cloud services are continuously updated to address emerging threats.



Future-proofing critical infrastructure

Hospitals exist in a constant state of innovation and standing still is not an option. Technology which can enhance patient care is always evolving, and it comes in a wide range of forms – from AI-driven diagnostics and robot surgeries to providing patients and their families with EV charging facilities.

However, building and redeveloping hospitals has become increasingly expensive, due in large part to a specialist skills shortage and consequent rising labour costs. How can healthcare developments balance these somewhat competing priorities?

Key challenge

- ▶ How can hospitals keep pace with continuing advances in technology?
- ▶ How can hospitals continue to innovate against a backdrop of rising costs?

Solution


- ▶ Hospital infrastructure needs to be as flexible as possible to allow it to adapt quickly to the opportunities offered by new technology. An automation platform which is backwards compatible but also futureproofed will allow hospitals to react seamlessly to changes in layout or function.
- ▶ Hospitals need to ensure new technology be deployed quickly to minimise costs.
- ▶ A long-term, holistic view needs to be taken to ensure any new technology offers lower Total Cost of Ownership (TCO).

DID YOU KNOW?

01

Proper energy and asset management can help hospitals reduce energy bills by 20%, and up to 40% on maintenance costs.





SECTION
02

The role of open
protocol platforms



How open protocol platforms can create tomorrow's connected hospitals

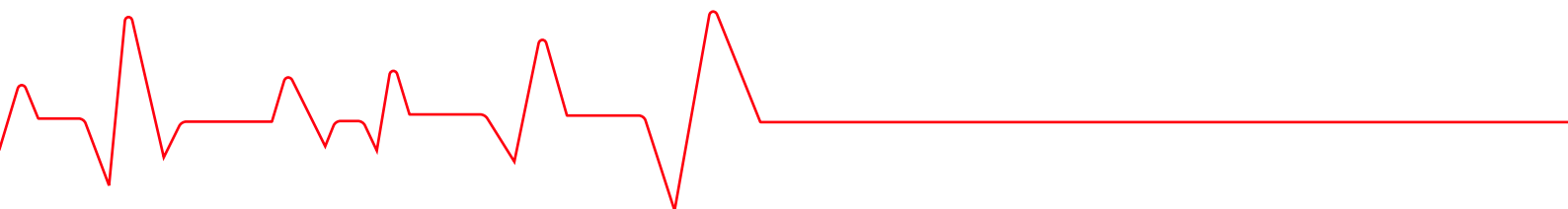
Designing and managing hospitals has never been more challenging. Decision makers are under constant pressure to do more with less, while still delivering first-class patient outcomes. They are also continually looking for new and innovative ways to improve standards.

But these are also hugely exciting times for healthcare. For example, human-centric lighting can automatically mirror circadian rhythms, reflecting the balance of light, darkness and colour needed to support biological health and emotional wellbeing.

In-room sensors and voice control activation can ensure greater levels of comfort and control for patients, at the same time as reducing energy consumption.

Healthcare facilities need to maintain connectivity across the electrical system while incorporating new technology.

Open protocol digital solutions ensure quick and seamless interoperability across a wide range of equipment. They are a welcome alternative to proprietary solutions which tie buildings down to one provider and restrict a hospital's ability to react to evolving demands and take advantage of new opportunities.





Shedding light on comfort in public buildings

Electrical installation company ELAB looked to ABB to implement a Human-Centric Lighting (HCL) approach at an office building in Halmstad on the west coast of Sweden. Connectivity was pivotal since HCL goals are more easily achieved when coupled with technology that manages and automates lighting on a large scale. ABB i-bus KNX DALI Gateway Premium enables simple HCL control without the need for other expensive, complex product additions. It is designed to offer maximum flexibility in lighting design through tuneable white and colour control functionality in one device with powerful HCL functionality.

[FIND OUT MORE](#)



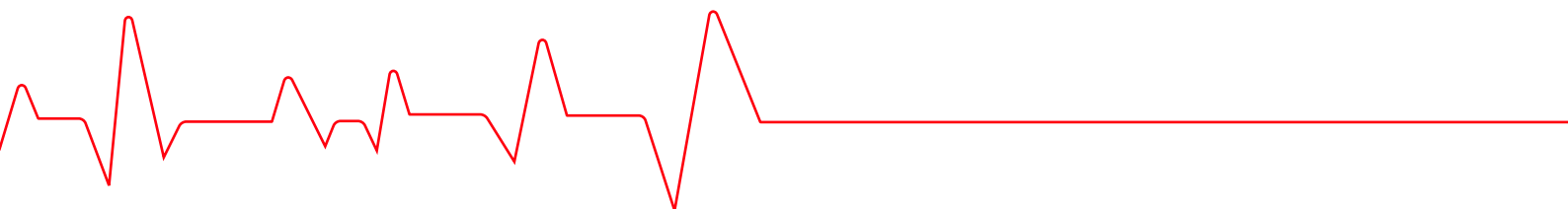
What are the benefits of an open protocol platform?

- ▶ Hospitals can choose the best solution for them with confidence that connectedness can be maintained.
- ▶ Visibility is improved by seamless data transfer, enabling more informed decision-making.
- ▶ Greater flexibility to explore the benefits of new technology such as AI.

Future-proofing lighting control at Calvary Adelaide Hospital

Calvary Adelaide hospital is a state-of-the-art, 12-story healthcare facility with a floor area of 57,000m² and 5 levels of patient wards. The hospital needed an intelligent lighting management system to maintain control and reduce energy consumption. ABB's i-bus[®] KNX solution, which functions on the standard KNX protocol, offers the highest levels of controls with flexibility for easy expansion and alteration.

[FIND OUT MORE](#)





Connected energy management

An intelligent power network is essential for today's hospitals. It functions as its 'central nervous system', and ensures all facilities have the power they need to ensure the health and wellbeing of patients and staff alike. An open protocol approach to smart energy management prepares hospitals for future challenges, such as the ability to deploy innovative technologies quickly and easily.

Why do hospitals need it?

- ▶ Allows them to predict and detect issues before they become critical events, reducing the risk of downtime.
- ▶ Builds resilience to prepare for the future. This includes deploying new technologies such as AI-driven diagnostics, robotic surgeries, the latest imaging systems through to providing patients and their families with EV charging facilities.
- ▶ Allows hospitals to balance meeting sustainability goals with patient outcomes.
- ▶ Smart electrification maximises energy use around temperature control, centric lighting and other functions to achieve the best patient care.

How can an open protocol solution help?

- ▶ Modular, open protocol solutions allow hospitals to upgrade without the need to 'rip and replace' their entire infrastructure – so improvements can be made quicker, and costs minimised.
- ▶ An open platform that integrates with third-party hardware and API platforms simplifies deployment, whether in a new system or integrating into an existing platform.

MODERNISED POWER SYSTEM

– LARGEST HOSPITAL AREA IN FINLAND UPGRADES

The Meilahti Hospital Area in Helsinki, upgraded its electrical system to optimise hospital operations.

ABB Ability™ Energy and Asset Manager was installed to facilitate remote monitoring and provide personnel with real-time information on the condition of equipment, such as temperatures, with alarms from devices alerting them instantly by text message.

This level of predictive maintenance ensures early warnings of any potential failures, providing crucial information to act upon to avoid unplanned downtime.

[FIND OUT MORE](#)

Helsinki, Finland - December 6, 2017: The Helsinki University Hospital in Meilahti decorated with blue and white colour lights and Finnish flag. Credit Line Mikko Palonkorpi - stock.adobe.com

CRITICAL POWER

– FOR A STATE-OF-THE-ART HOSPITAL IN CHILE

The Felix Bulnes Hospital in Santiago, Chile is considered to be the most innovative hospital in South America, providing emergency inpatient and outpatient care to 1.2 million people.

To ensure power supply at critical points, the hospital needed back-up generators and uninterrupted power supply (UPS) systems. ABB was able to optimise the installation of the S750DR Selective Main Circuit-Breaker (SMCB), a highly reliable solution for the protection of distribution circuits, by introducing miniature circuit breakers in the S200 series. ABB also delivered packaged solutions including the Emax 2, Tmax T and System Pro E Power. This allowed the hospital to continuously monitor the status of circuit breakers and all currents, negating the need for scheduled maintenance by anticipating problems before they became an issue.

[FIND OUT MORE](#)



Flexibility and interoperability

In such a constantly evolving landscape, hospitals need flexible systems to help them react to rapid change – and being complex and mission-critical environments, it's crucial that every element works together.

Why do hospitals need it?

- ▶ Allows hospitals to be more agile and adapt to unexpected challenges.
- ▶ Minimises compliance risk and lowers operational expenses.

How can an open protocol solution help?

- ▶ Gives decision makers the ability to pick the best vendor and product for their specific needs – with the confidence that multi-vendor solutions will work seamlessly.
- ▶ Helps hospitals deal with fast-paced changes in layouts and functionality.
- ▶ Third party hardware and API platforms simplifies deployment, whether in a new system or integrating into an existing platform.



Flexible control over energy use at Royal Preston Hospital UK

Royal Preston Hospital provides a full range of acute services for the local community from 24-hour accident and emergency facilities to high dependency and coronary care units and maternity services. It has 1,000 beds and serves over 1.2 million patients annually.

The hospital was able to gradually replace its legacy building management systems with ABB Cylon® as a unified solution. The Cylon system controls the boiler plant, ventilation systems and radiant heating panels in the hospital and remotely located clinics. The whole system is managed from supervisors in the estates office on the same Ethernet network.

A range of energy saving measures have been successfully implemented including the use of occupancy sensors to step down heating levels when rooms are not in use.

[FIND OUT MORE](#)



Security

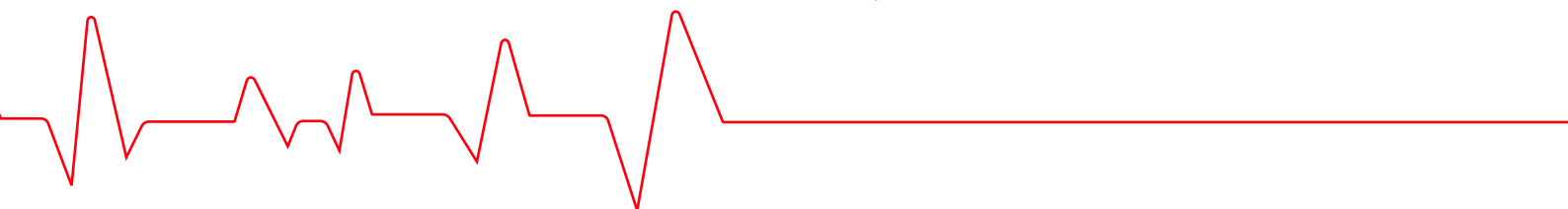
As hospitals become more connected – deploying growing numbers of devices and systems – it's crucial they undertake adequate preparation to protect from potential cyber-attacks.

Why do hospitals need it?

- ▶ Connecting intelligent components can make hospitals more secure, preventing software vulnerabilities and minimising the risks associated with the flow and storage of important data.

How can an open protocol solution help?

- ▶ Allows for safe, seamless and transparent flow of data.
- ▶ Strengthens interoperability between components and systems.



SECTION 03

Why you need a
connectivity partner





Why you need a partner who understands the power of connectivity

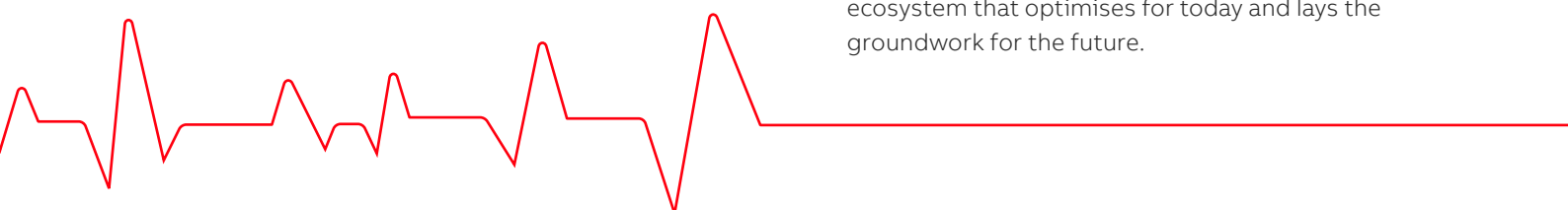
Hospitals are among the most complex modern buildings to design and manage. Not only are they large in scale, but they also house a diverse array of resource-hungry and critical equipment.

As we've shown, there are significant advantages to using open protocol systems when building or upgrading hospitals. SaaS solutions like ABB Ability™ Energy Manager allow healthcare facilities to monitor and optimise energy consumption and CO2 footprint, giving these facilities the chance to make faster and better decisions based on data insights. Being an open protocol system, it is interoperable with a wide range of equipment, allowing hospitals to incorporate whichever product, system or solution is right for the specific project.

Open platform benefits at a glance

- ▶ Flexible
- ▶ Secure
- ▶ Adaptable
- ▶ Reliable
- ▶ Sustainable

Hospitals locally and around the world have improved operational efficiencies and patient outcomes with open protocol solutions. Working with a partner like ABB in the initial stages of development allows hospitals to build a digital ecosystem that optimises for today and lays the groundwork for the future.





Resources

Section 1

The energy paradox in healthcare: How to balance innovation with sustainability

(PDF) Energy efficiency in healthcare institutions

Cybersecurity considerations: Healthcare sector insights

Digitization of healthcare sector: A study on privacy and security concerns - ScienceDirect

A Healthy Pipeline: Delivering Australia's Hospital Infrastructure - Infrastructure Partnerships Australia

Healthcare Construction Challenges and Solutions Explained

Supporting mission critical power applications_9AKK108468A4902_RevA.pdf

Cyber-attacks on critical health infrastructure

Section 2

EL_AU_2022_Whitepaper_Hospital_Application_Paper_AU_version.pdf

Healthcare Building Solutions

Continuous operations in Healthcare Buildings

Smart electrification – the central nervous system for the most resilient hospitals

Supporting mission critical power applications_9AKK108468A4902_RevA.pdf



Visit our Healthcare landing page to discover our full range of solutions



FIND OUT MORE

About ABB

ABB provides solutions for a reliable power supply, sustainability of the facility and comfort and safety of patients and occupants. Connected digital solutions and advanced technologies provide hospitals with new insights and possibilities to reduce CO2 footprint and ensure efficient operation.