

AN INNOVATION CASE STUDY

THE FUTURE OF SUSTAINABLE OPERATING THEATRES

PROJECT DURATION: 10 months and 18 months

PARTNERS: Cardiff University, Cardiff & Vale UHB, University of Wales Trinity Saint David, Cenin Renewables, Medtronic, Nuaire and BIPVco.

PROJECT AIM: To design and build sustainable operating theatres

OVERVIEW

There is a need for buildings to transition towards a zero carbon environment. Hospital buildings and operating theatres use a relatively large amount of energy and produce large quantities of waste. Hospitals produce more than 5 million tons of waste each year. The operating theatre environment contributes ~20-30% of a hospital's carbon footprint. Good environmental conditions for medical staff and patients are also important, and must consider issues including comfort, cleanliness and cross infection.

A project to design and build a sustainable, future theatre is not only pioneering in terms of its intent, but further addresses the real need to move towards a healthier and sustainable Wales.

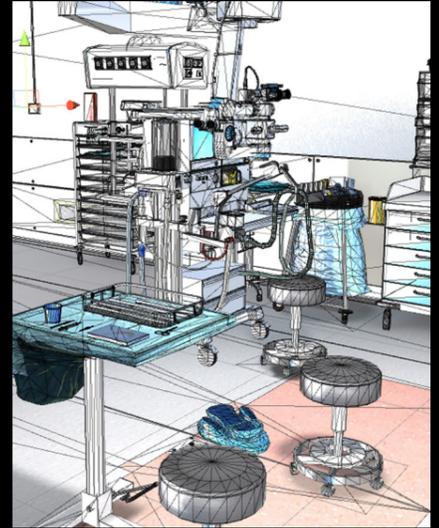
Accelerate is supporting the delivery of this project which brings together collaborators with a wide range of expertise from theatre practitioners, to designers and sustainability build experts. The initial phase has been to establish the scope and project delivery plan. Moving into the next phase has shifted the focus to the designing and construction of the theatre. The design will be focused around the specific needs of a general operating theatre, but incorporate a low energy design, efficient mechanical services for heating, cooling, ventilation and lighting, and building integrated renewable energy generation and energy storage. It will also consider waste handling and minimising waste production, including those of anaesthetic gases.

This has been facilitated by bringing theatre staff together to focus on architectural construction, design features and ergonomics, and, anaesthetics and waste. The subsequent design, construction and evaluation will be overseen by a dedicated project officer, who will facilitate the delivery of tangible outcomes.

Feedback from a Future Theatre project collaborator:

"Accelerate support has enabled us to consider the design and construction of a sustainable hospital operating theatre. We are able to apply our energy positive approach, developed through previous LCRI WEFO funding, to this interesting building type. Not only will we be looking for a zero-carbon performance, but also we will be looking at a wide range of other sustainability aspects, including waste management, and producing a high quality internal environment. We welcome the opportunity to collaborate with a broad team of medical and visual design experts."

Prof. Phil Jones, Welsh School of Architecture, Cardiff University.



A Model of a Future Theatre
Credit: Assistive Technologies Innovation Centre (ATIC), UWTSU.



EXPECTED OUTCOMES

- The design and build of a modular, sustainable theatre for improved patient, staff and environmental wellbeing
- Reduced carbon footprint
- Facilitation of innovation based collaborations and the generation of new knowledge
- Performance measures
- Engagement events
- Training opportunities for NHS staff.
- Provision of a model build to roll out across NHS Wales.
- Academic publications and clinical/innovation/impact case studies.



POTENTIAL FUTURE OUTCOMES

- Future collaborations between industry, academic and clinical partners
- Changes in clinical practices
- Future builds of this innovative, sustainable theatre across the NHS and beyond

Feedback from a Future Theatre project collaborator:

"...following some great talks at the 'Sustainable Anaesthesia Innovation Day' supported by Clinical Innovation Accelerate at the Life Science Hub, it was agreed by Cardiff & Vale UHB Anaesthetic Consultants that we would remove the Desflurane vaporisers from the back bar of the anaesthetic machines. Compared to baseline data, we now save a recurring £8K per month and the department are able to reinvest 50% of savings into equipment for the department. There is also the environmental saving of 80T of CO₂/month, which equates to >350,000km in an average car each month!"

Fiona Brennan, Consultant Anaesthetist, Cardiff & Vale UHB