CASE STUDY

MAT HANDS OVER TURNKEY RADIOPHARMACY AT BRIGHTON 3Ts REDEVELOPMENT

MEDICAL AIR TECHNOLOGY

"I have been involved in a cleanroom project with MAT over the last few years and I am very satisfied with the final product. I found the MAT team to be responsive, and any issues were dealt with quickly. I would certainly use them again."

Helen-Marie Cripps: Radiopharmacy Product Manager, 3Ts

Hospital redevelopments don't come much bigger than the 3Ts project (Teaching, Trauma and Tertiary care) at the Royal Sussex County Hospital in Brighton. The redevelopment is replacing all the buildings on the front half of this major acute hospital site. Medical Air Technology (MAT) has worked with some on the UK's most prestigious healthcare and research facilities, so when it came to tendering for the design and installation of new radiopharmacy suite as part of the redevelopment, the team was perfectly placed to win the tender and deliver a successful solution, working under main contractor, Laing O'Rourke.

MAT started on site in December 2020, with handover February 2023, as scheduled. The new suite, which operates within the Nuclear Medicine department, has a sizeable footprint of approximately 160m2 and is located in the Louisa Martindale Building, the first and largest stage of the redevelopment and the newest clinical building in NHS England.

The hospital, operated by University Hospitals Sussex NHS Foundations Trust, wanted to bring a wide range of services under the same roof, simplifying the patient journey and improving the hospital experience. As well as the new radiopharmacy, the Louisa Martindale Building will house a range of Outpatient and Inpatient services, Critical Care, Neurosciences and a new stroke unit across its eleven floors.

Work is being carried out in three stages to ensure all the hospital's clinical services can continue to run on site during construction. Stage two is the completion of the Sussex Cancer Centre, and the final stage is a new service yard. A helideck has also been built on top of the Thomas Kemp Tower, the highest point of the hospital.

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The new radiopharmacy

The design of the radiopharmacy suite delivered by MAT in this turnkey solution was developed in careful consultation with the Trust and includes air handling units (AHU), building management system (BMS) controls, an environmental monitoring system (EMS), interlocking automated door systems, isolator extract and ductwork.

The airflow design facilitates cascading pressure, which ensures that the most stringent cleanroom zone has the highest level of pressure, and the least stringent cleanroom zone has the lowest level of pressure, so the flow of contamination is from clean to less clean.

Pressure monitoring panels in the lobby show room pressures are correct and can be checked easily by the laboratory manager, with the EMS displaying user-friendly graphics to indicate room status.

From the main lobby, the suite divides into two distinct areas:

- **A 'hot lab' for the delivery, storage and preparation of the radioactive materials required for diagnostic imaging and radiotherapy, specifically Technetium**
- **A cleanroom for blood cell labelling, used to diagnose or treat illness**

Each area has five rooms, accessed via automatic, access-controlled glass doors:

1. **Outer support room**
2. **Outer change room**
3. **Inner support room**
4. **Inner change room**
5. **Cleanroom**

HEPA-filtered pass-through hatches in each room provide a safe and easy way to transfer products and materials between cleanrooms and adjacent non-sterile areas. Vision panels in each wall provide an additional layer of safety, allowing constant visual monitoring right through from the first to last room in each suite. In addition, an intercom system allows contact to each room.

Emergency stop buttons located throughout can be used to switch off the associated air handling unit if there a spill, ensuring toxic elements are not ventilated further throughout the hospital and locale. In addition, one room on each side of the suite has an escape panel with a rubber seal that can be ripped off in the event of a fire to provide an emergency exit route.

Project challenges

Throughout the build, many different partners were working in the Louisa Martindale Building at the same time, each with their own important role to fulfil in making the project a success. This made coordinating all services within the building quite a challenge for the MAT installation team, but thanks to proactive project management, it was achieved without any significant delays to the schedule.

The air handling plants that MAT installed are located on basement level 2, while the radiopharmacy suite is on level 2. Mechanical and electrical coordination was therefore unusually complex as it crossed different fire containment zones, necessitating close liaison on drawings between all contractors.

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