

# XILTRIX - CRYOFILL INTEGRATION AND CRYOGENIC EFFICIENCY OPTIMISATION IN HEWITT FERTILITY CENTRE, LIVERPOOL



**Customer:** Hannah Newby & Rachel Gregoire

**Company:** Hewitt Fertility Centre, Liverpool

**Industry:** IVF/ART

**Suppliers:** XiltriX International & Cryo Products

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In 2008 The Hewitt Fertility Centre moved into their new facility in the Liverpool Women's Hospital. The brand-new facility was outfitted with state of the art automatically filling large cryogenic vessels and a facility wide XiltriX system. In the years to follow the lab had steadily grown with the number cryogenic samples and cycles increasing. Looking towards the future making sure the labs is ready for this whilst adhering to the strictest of quality procedures is a monumental challenge.

## The Story of Hewitt Fertility Centre

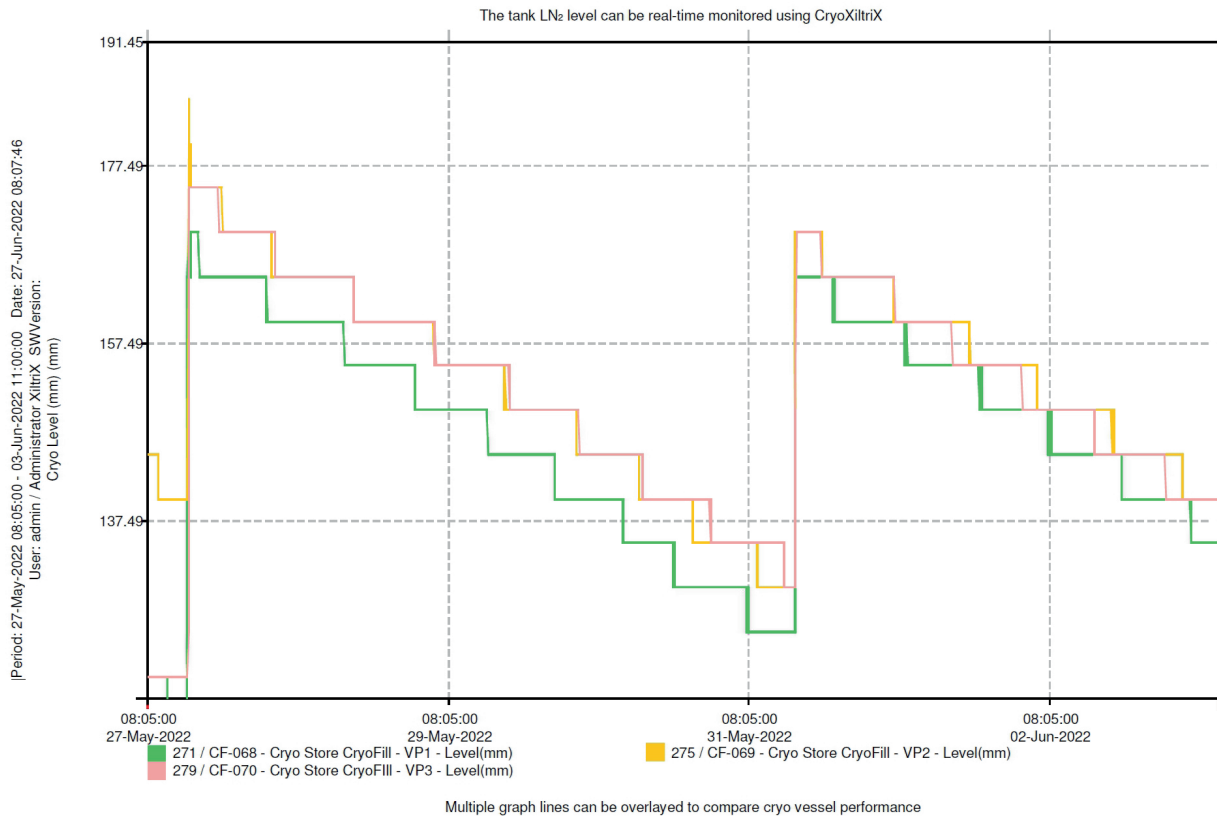
After being established as a branch of The Royal Liverpool Hospital and beginning to treat patients in 1989, the first baby born as a result of IVF treatment carried out at the IVF unit (which now we know as the Hewitt Fertility Centre) was delivered in 1990\*. Over time the facility grew and investment in new technologies were embraced. With the first ICSI baby in 1997, the Freezing of eggs in 2008, to offering Time lapse technologies to all patients from 2013 onwards, The Hewitt Fertility Centre has always been on the cutting edge of new developments in science.

*\*Source: <https://www.thehewittfertilitycentre.org.uk/news-events/news/history-of-hewitt-fertility/>*

This also goes for the embracing quality across the facility. As an (NHS) Trust member under scrutiny of the HFEA, frequent audits are a part of normal operations. Recognizing early on that quality monitoring was imperative, XiltriX was chosen as the centralised monitoring and alarm system as early as 2005. XiltriX has grown with the facility, including its expansion to the Knutsford site in 2013. Ms. Hannah Newby (Lead Clinical Embryologist) has been with the Hewitt Fertility Centre since 2005 and has witnessed its growth and development. Dr Rachel Gregoire (Scientific Director & HFEA person), with more than 20 years of experience in the field of Reproductive Science and Embryology, is tasked with managing the laboratories' financial reports and scientific development.

## Challenges overcome during implementation

The first and most difficult challenge of this project was to get a clear overview of all the requirements, with regards to liquid Nitrogen control, safety and



storage expansion, LN<sub>2</sub> supply, automatic filling and monitoring integration, IT and building integration and all the other third party suppliers involved in the process. Only after this parts of the project would be completed could a comprehensive project plan be delivered and the necessary funds requested from the Trust. Since none of the Third party suppliers were able to supply the level of integration desired for this project, both XiltriX International and Cryo Products were asked to consult, still in the middle of the Pandemic. **Ms. Newby commented:** *"As we had a lot of requirements for the upgrade of the cryogenic facility, the role of XiltriX and Cryo Products as solution providers has been imperative in making this project possible. By breaking down the challenges into manageable chunks a clear project plan with milestones was delivered and offered to the NHS for sign off."*

In the first phase of the project, all options were investigated. With the upcoming change in UK law, the Hewitt Centre indicates it expects a growth in sample numbers, therefore the solution had to be scalable. This not only means the vessels needed to be able to take the samples, but everything from LN<sub>2</sub>

supply to storage space and Health & Safety needed to be taken into account. Not being able to grow in floor space, more efficient ways to store sperm and embryos had to be found. In the case of the Hewitt Centre, it already had a number of large liquid storage vessels and vapour phase vessels. Expanding with more vessels would mean the LN<sub>2</sub> consumption would exceed earlier assumptions. The installed liquid Nitrogen generators were not able to provide more LN<sub>2</sub> and the aging Liquid Nitrogen controllers on the cryo vessels were not able to provide the necessary control and integrate with the centralised XiltriX monitoring and alarm system. **Mr. Han Weerdesteyn, CCO of XiltriX International said:** *"This was one of the most challenging projects to date. Upgrading a major facility, without moving one embryo in the process and shoehorning in a perfectly fitting solution is a challenge in itself. Alongside this challenge we also needed to navigate travel restrictions and changing customs clearance processes due to Brexit. We are very proud to have successfully finished the project in time and on budget."*

The second phase of the project involved the retrofitting of the cryogenic vessels with the



CryoFill 2.0 controllers designed for seamless XiltriX Integration. These MDR compliant controllers provide state of the art liquid Nitrogen control and provide real-time LN<sub>2</sub> level, temperature and fill status information to the laboratory users. Since the tanks were already filled with samples, the upgrade needed to be done without moving any embryos. This meant making sure all the moving parts, staff, hardware and access needed to be planned in one smooth motion. **Dr Gregoire commented:** *“Trust is key in this whole project. We only work with partners we trust and our relationship with XiltriX International dates back many years. Our lab feels very strongly about unnecessary handling of embryos. Not having to move the embryos during this whole project whilst maintaining full quality control was a prerequisite for us to move forward.”*

After having successfully retrofitted the CryoFill controllers, the next challenge was setting them up correctly and training the staff. Even though the controllers worked perfectly, the benefits are not immediately evident for everyone to see. Staff that have been intimately involved in the improvement process are familiar with all the added benefits and controls, but all staff performing operations in the cryo room needed to be trained on the new devices as quickly as possible. **Ms. Newby noted:** *“Quality assurance and staff competence management are things we are very aware of. The integration of CryoFill and XiltriX gives us the ability to become even more proactive. Making sure all staff had the appropriate level of knowledge was a challenge because of distance*

*and staff availability. The flexibility of XiltriX' and Cryo Products' staff was instrumental in getting on top of this challenge as quickly as possible.”*

The final step of this project is currently being planned. This step involves further futureproofing of the cryogenic facility by putting in a large LN<sub>2</sub> bulk tank, replacing the VIP lines and putting in the Cryomatic, a sophisticated cryogenic optimisation device, that allows for advanced efficiency and safety control in the cryo room. Adding in more vessels and VIP lines usually goes hand in hand with continuously rising LN<sub>2</sub> consumption. By cleverly optimising the filling cycles the rise of gas consumption can be kept within limits. **Mr. Richard van Woerden, Commercial Director of Cryo Products commented:** *“Having CryoFill connected to XiltriX with Cryomatic installed in the cryo room really provides the optimum level of control. Not only Liquid Nitrogen consumption, but also operator safety and convenience can be brought to the next level. Our experienced engineers will make sure all parts will work to optimum efficiency!”*

### Why Hewitt Fertility Centre chose XiltriX

XiltriX has been the centralised monitoring and alarm system in the Hewitt Centre for many years. It had already proven its value and stability to the lab on many occasions. The project in the Hewitt Centre was so multi-faceted that providing a solution that fits all requirements was nearly impossible. On top of that global supply chain issues meant very long lead times on new deliveries of cryogenic storage vessels. Furthermore the Trust has a “Green Initiative” giving priority to more sustainable and environmentally friendly solutions.

By retrofitting the CryoFill controllers to the existing tanks, supply chain issues were circumvented, moving of embryos prevented, up to 75% costs saved and more control gained. **Ms. Newby noted:** *“It gives me much peace of mind knowing XiltriX now integrates seamlessly without cryo repository. These vessels hold tens of Millions of pounds of priceless samples, many of which can never be replaced. Having not just a real-time LN<sub>2</sub> level monitoring, but also temperature and filling status monitoring adheres with our aim to further quality control on all levels.”*





### How the Hewitt Fertility Centre uses XiltriX

The Hewitt staff have always tightly controlled the cryogenic facility. XiltriX alarms and monitoring are closely managed and staff are on call 24/7 for emergencies. Having the added level of control in insight into the operations of all the vessels (both in Liverpool and in Knutsford), not only mitigates risk but also allows more insight into the vessels behaviour. Being able to overlay level drops with filling cycles allows users to track each individual vessels behaviour and spot issues early on. **Mr. Han Weerdesteyn commented:** *"Many people do not realise that vapour phase vessels put users at risk more than fully liquid filled vessels. Vapour phase vessels keep on reporting a very low temperature until all liquid has evaporated. By the time a user gets the temperature alarm there is very little (if any) time left to respond. Just monitoring temperature alone is not an appropriate risk mitigation strategy for cryo facilities with vapour phase tanks."*

### The Results

Having successfully retrofitted CryoFill controllers to the existing cryo vessels, the lab has finished setting up the controllers to fit in with their procedures and working hours. Alarm limits have been setup and delays times optimised, all which is visible from the XiltriX real-time dashboard. Staff is trained on how to use the controllers and is ready for the last step of the cryo facilities' overhaul. In the upcoming months the bulk tank and new VIP lines will be added to the lab, completing the overhaul of this facility. By adding in the Cryomatic, new control options will be unlocked and efficiency savings introduced. **Dr Gregoire noted:** *"By the completion of this process we have future proofed our cryo facility and made it scalable for the intended growth. This was achieved by raising quality control, reducing risk and spending the public money provided by the NHS responsibly."*