



XiltriX Monitoring System Installation in the IVF Department of the University Medical Center Maribor

Enhancing Environmental Control and Data Integrity Through Advanced Real-time Monitoring Solutions

Introduction: Scientific Advancement in IVF Laboratory Monitoring

Precise environmental conditions are critical in assisted reproductive technology, directly affecting gamete and embryo viability. The IVF laboratory at the University Hospital of Maribor initiated a systematic upgrade of its monitoring infrastructure to optimize laboratory outcomes and ensure compliance with rigorous scientific and regulatory standards. This post details the installation of the XiltriX monitoring system, emphasizing its selection based on an established track record in international IVF clinics, the leadership of [Professor Borut Kovačič](#), integration with Miri benchtop incubators, deployment of real-time visualization screens, and continuous remote support facilitated of the XiltriX cloud service.

University Hospital of Maribor and Laboratory Requirements

Serving as a leading Slovenian institution for reproductive medicine, the University Hospital of Maribor's IVF program relies on strict environmental control to maintain sample integrity. As laboratory operations scaled and new equipment was adopted, a robust monitoring solution became necessary to maintain consistent conditions, meet quality assurance standards, and align with international best practices. **Dr. Kovačič noted: “In the selection process we were very methodical and checked international references. We wanted to select not just the best system for our lab, but also make sure that service, support and after-sales would be of the same high quality. After careful consideration, XiltriX was selected as the preferred solution.”**



Evidence-Based Decision Making

The decision to implement XiltriX was grounded in its proven reliability within other international IVF clinics, where it demonstrated high levels of accuracy, uptime, and user adaptability. Peer-reviewed benchmarks and technical evaluations indicated that XiltriX provided comprehensive environmental tracking, automated alerts, and seamless integration with laboratory equipment. Professor Kovačič, supported by the technical led by Mr. Igor Rojs, led a multidisciplinary team evaluating several systems, ultimately recommending XiltriX for its scientific rigor and successful deployment history in comparable settings.

Mr. Han Weerdesteyn, CCO for XiltriX International commented: “XiltriX is proud to be recognized as the industry standard in the field of IVF. Our team has many years of experience in integration of XiltriX in IVF labs internationally and strives to provide the best possible service safeguarding precious samples every day.”

Systematic Implementation and Quality Assurance

Installation followed a methodical workflow by the XiltriX specialist team, beginning with infrastructure mapping and sensor calibration. Collaboration between laboratory staff and XiltriX engineers ensured optimal sensor placement for temperature, humidity, and CO₂ monitoring, and other parameters crucial to embryo culture and gamete preservation. Detailed risk assessments and validation procedures were performed to minimize disruptions and verify system performance. The system was retrofitted to an existing laboratory with a very high finish level. Special care was taken integrating the systems with the same eye for detail as was found in the rest of the lab.

The successful configuration and validation of the XiltriX monitoring system were also made possible thanks to the expertise and dedication of embryologist, Rok Miklavčič, who collaborated closely with the XiltriX team throughout the process. Reflecting on the experience, **Mr. Miklavčič shared, “It was truly rewarding to contribute to a project that raises the standard of laboratory monitoring and directly benefits patient care. Working with the XiltriX team was very easy. The team was responsive and professional which made the entire implementation process both efficient and enjoyable.”**



Integration of Esco Miri Benchtop Incubators: Technical Synergy

A key selling point was the integration of XiltriX with Esco Miri benchtop incubators, recognized for their precision in maintaining microenvironments for embryo development. Real-time temperature and alarm integration allowed for continuous, automated logging of incubator conditions. The system's analytics enable trend analysis, deviation detection, and facilitated rapid troubleshooting, supporting both laboratory protocols and regulatory documentation.

Real-Time Visualization: Data-Driven Decision Support

Visualization screens were deployed at strategic locations within the IVF laboratory, providing staff with immediate access to live environmental metrics. These dashboards incorporate threshold-based alerting for critical parameters, enhancing situational awareness and promoting timely intervention. The visual tools support ongoing quality assurance by enabling retrospective analysis and audit trails.



24/7 Remote Support and Cloud-Based Data Management

XiltriX's cloud server infrastructure was established to provide seamless remote access and continuous oversight. Personnel from the XiltriX IT-team proactively monitor the infrastructure, whilst authorized personnel monitor the laboratory conditions in real time from any location, receiving automated alerts for out-of-range values. The cloud solution supports robust data archiving, facilitating compliance with international regulatory frameworks and enabling longitudinal studies of laboratory performance.

Local Support by Marin Tadic and ODOG

The successful implementation was further supported by [Marin Tadic](#) and the technical team from ODOG, who provided localized support services and rapid response to operational queries. Their involvement ensured that the system installation was well prepared, adapted to the specific requirements of the Maribor laboratory and continued to function at optimal capacity. ***Mr. Tadic added: “It was a pleasure working with the XiltriX team. The communication and cooperation were professional. We are very happy supporting more installations going forward.”***

Outcomes: Scientific Validation and Laboratory Impact

Post-installation audits indicate measurable improvements in environmental stability, data reliability, and operational efficiency. The integration of real-time analytics and automated alerting has decreased response times to environmental fluctuations, while cloud-based archiving has streamlined documentation and compliance. The laboratory now operates with enhanced scientific control, supporting both clinical outcomes and ongoing research.

Conclusion: Evidence-Based Laboratory Modernization

The adoption of XiltriX at the University Medical Center Maribor IVF department exemplifies an evidence-based approach to laboratory modernization. Under Professor Borut Kovačič's guidance, the project leveraged international best practices and robust technical evaluation. The outcome is a laboratory environment that meets the highest scientific standards for safety, data integrity, and operational excellence.