SnT 2025 8 SEPTEMBER ONLINE DAY 9 TO 12 SEPTEMBER AT HOFBURG PALACE, VIENNA & ONLINE
CTBT: SCIENCE AND TECHNOLOGY CONFERENCE

Lessons learned SAUNA III

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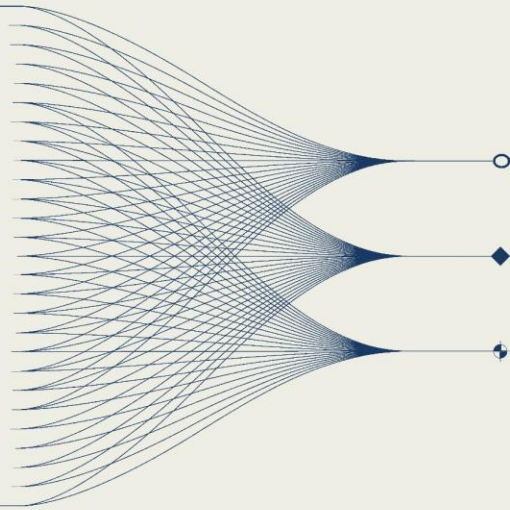
Scienta Envinet

CTBTO PREPARATORY COMMISSION

INTRODUCTION AND MAIN RESULTS

Since its certification, several SAUNA III systems have been installed in the field as well as one laboratory system based on the SAUNA III platform. In this e-poster we report on the lessons learned from the first years of operation and on how these experiences are taken into account to improve the quality, reliability, and long-term sustainability of our systems.



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Lessons learned from a growing network of SAUNA III

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Introduction

SAUNA III stands out as the premier option for detecting remote nuclear activities with exceptional clarity.

Highlights

- CTBTO certified
- Remote operation and diagnosis
- Automatic energy drift correction
- Modular for easy upgrades from SII
- High uptime
- MDC:
  - 📊 Xe133: 0.2
  - 📊 Xe133m: 0.15
  - 📊 Xe131m: 0.15
  - 📊 Xe135: 0.35
- 6h sampling time
- N2 carrier gas

Network

Since its launch, the installed base of SAUNA III systems has grown swiftly, reflecting the confidence and trust customers have in the SAUNA III and the support provided.

5 SAUNA III in the IMS network and more on the way

2 SAUNA III at independent customers

1 SAUNA III TXL at an independent customer

Initial Challenges Overcome

⚠️ **Xenon Volume Instability**

Early samples varied (2.2–3 ml vs. 3 ml target).

✅ **Resolved via tuning and timing optimization**

⚠️ **Pump Durability Issues**

EVP wear and vibration due to supplier defects and pressure variations.

✅ **Replaced pumps and added buffer volume. New model under evaluation**

⚠️ **Drain Failures**

Corrosion in metal and plastic versions.

✅ **New water filter supplier under evaluation**

⚠️ **Software Instability**

Crashes and data loss without internet.

✅ **Training, bug fixes, and modernization**

Key Learnings:

- 📌 Clear specs and documentation reduce risk
- 🤝 Frequent customer dialogue builds trust
- 🎓 Training and proper tech handover ensure reliability

Bottom line

SAUNA III has evolved through real-world challenges into the most advanced and reliable xenon detection system available today. With CTBTO acceptance, proven IMS deployments, and a future-proof design, it delivers unmatched sensitivity, automation, and operational stability. Unlike other systems still undergoing evaluation or limited to national use, SAUNA III is globally trusted and field-proven. Its engineering resilience, modular upgrade path, and robust service infrastructure make it the preferred choice for institutions seeking long-term reliability and precision in noble gas monitoring.

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