

PROOF-OF-CONCEPT UNIT OPERATIONAL AND READY FOR TESTING

Following three years of joint development, design, and construction, the Proof-of-Concept (PoC) unit of the CANMILK project is now fully operational at VTT's Bioruukki testing facility. With the unit up and running, the project enters an important testing phase focused on improving the system's methane reduction efficiency, optimizing operational performance, and validating the technology for future scale-up.

The CANMILK project aims to reduce methane emissions from cattle using a plasma-based system designed for direct operation in barns. The technology converts dilute methane in barn air into CO₂ through combined plasma and catalytic processes. To demonstrate the feasibility of the concept and to investigate how plasma and catalyst components can be optimally combined, a Proof-of-Concept unit was designed and constructed. This unit allows the project team to validate experimental concepts and optimise system performance under realistic conditions.

The design and development process has been highly collaborative, with all project partners actively involved in monthly design discussions. Throughout the process, technical performance and safety aspects have been carefully assessed to ensure compliance with operational and regulatory requirements. A key element of the PoC unit is the plasma reactor developed by UM, which has been enhanced with advanced laser diagnostics and integrated into the PoC setup at VTT. The system was constructed as a movable unit to allow flexible testing and adaptation.

With the Proof-of-Concept unit now operational, the CANMILK project takes a significant step forward in developing innovative solutions to mitigate methane emissions from livestock farming. Initial testing will use simulated barn air with defined gas composition and flow rates to replicate real conditions. The goal is to achieve stable operation and generate data to guide further design improvements and optimize a future prototype.



Figure 1 - Completion of the CANMILK PoC unit at VTT.

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