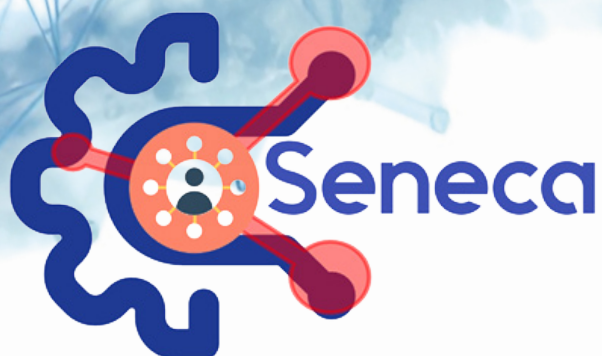




Secure Neural Edge Computing Architecture

SENECA™

Welding Machinery Cybersecurity



FINANCIAL PROGRAMME

UE NEXT GEN MIMI START 4.0

SENECA™ is a secure Edge-as-a-Service platform that uses Edge AI to optimize industrial processes, reduce latency, and enable real-time decision-making directly on machinery. Developed with leading partners and compliant with EU regulations, it supports a safer, smarter, and more sustainable Industry 4.0.

Next Generation EU (PNRR)
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Ministero delle Imprese
e del Made in Italy



About SENECA™

SENECA™ is an Edge-as-a-Service (EaaS) platform designed to optimize industrial production, boost predictive maintenance, and enforce quality control through a secure-by-design architecture. By processing sensor data directly on edge devices connected to machinery, it reduces latency and minimizes reliance on centralized systems.

To meet growing cybersecurity challenges in interconnected OT and IT systems, SENECA™ implements a secure architecture aligned with key EU regulations (New Machinery Directive, Data Act, AI Act). The platform supports real-time, distributed AI—potentially using neuromorphic chips—and is developed in collaboration with top academic and industrial partners, including KNOWLEDGE™, MYWAI™, the University of Genoa, IIS, TICASS, and WALTER TOSTO™.

Tested in high-stakes environments like welding for energy and petrochemicals, SENECA™ aims to shape a safer, smarter, and more sustainable future for Industry 4.0.

Edge AI & Edge Computing

Edge AI processes data directly on devices, enabling real-time responses and improved data security.

Edge Computing brings computing closer to data sources, reducing latency and increasing reliability.

OBJECTIVES

SENECA™ Security Architecture

- Seneca protects industrial sensors with secure communication and vulnerability checks.
- Seneca secures AI algorithms on edge devices, with optional neuromorphic chip support.
- Seneca certifies Explainable AI using MLOps and distributed technologies for transparency.

All components are tested in real industrial settings, including weld defect detection at the Italian Institute of Welding with WALTER TOSTO™.

knowledge
no edge to know how

Coordinator
Knowledge
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Partners

walter tosto 

