



The Challenge

Argos set out to achieve carbon neutrality, with the pyroprocess at the heart of the challenge: energy accounts for **up to 40% of total production costs**.

With more than 30 variables interacting non-linearly, rule-based control could not optimize the kiln, leaving performance dependent on **continuous manual intervention** by operators.

SUCCESS STORY

Real-Time AI for Pyroprocess Optimization

With Barbara's support, Argos deployed a **three-layer edge architecture** across its cement plants, connecting to existing PLCs and control systems without replacing or disrupting them. Using Barbara's Platform, Machine Learning models **run inference locally in milliseconds** on live kiln data and feed their outputs back into the process.

Closed-loop control remains entirely at the edge, where process dynamics require it, while Barbara's Platform manages the deployment, updates, and lifecycle of every model across the fleet.

Key Results



Lower Energy Use and Emissions. Specific energy consumption fell by up to 6% and clinker factor by up to 5%, reducing CO₂ per ton.



Higher Production Output. Production increased by 2% to 10% as process stability improved and manual variability decreased.



Proven Replicability. 38 control loops automated across plants and grinding stations, reaching over 90% of plants by 2025.