Product Goal

# 1. Project Overview

**Project Name:** Understanding from Numerical Control Driven machine  
**Business Case:** To analyze information collected by the numerical control and stored in high frequency to bring human-understandable hints.  
**Objective:** Develop a user-friendly system that processes data, track energy use and generate alerts.

# 2. Scope

**In Scope :**

* Data collection and structuring from the Numerical Control Driven machine system.
* Analysis of the operational periods, sequences and energy metrics.
* Development of an interface for data visualization.
* Detection of anomalies and contextual alerts.
* Documentation of methodology and algorithms.

**Out of Scope :**

* Direct machine control or hardware modifications.
* Integration into existing industrial control systems.
* Predictive maintenance application.

# 3. Success Criteria

* User-friendly visualization of results through the interface
* Data processing
* Provide alerts
* Accurate estimation of energy demand per program
* Documentation

# 4. Key Needs / Requirements

* Identify operation periods and working segments.
* Create a UI for easy interaction.
* Detect repeated operation sequences.
* Determine timing and energy demands per program.
* Identify relevant variables affected by operations.
* Determine alerts and contextualize them.
* Document the approach and algorithms.
* Access to data (PostgreSQL connection).

# 5. Constraints

* Time/planning
* Limited data processing capacity (high frequency)
* Data quality: large dataset may contain missing or noisy values

# 6. Assumptions

* All necessary data is provided
* The provided data is accurate and reliable
* The data comes from the same machine
* Energy demand can be estimated from available variables without installing new sensors

# 7. Stakeholders

* **Product Owner:** Joaquin Ordieres
* **Users:** factory operators / supervisors / maintenance team / data analysts
* **Developers:** us ?

# 8. Timeline / Milestones

* **Sprint 1:** 29/09/2025 – 12/10/2025 – Identify the relevant data from the database to have a clear dataset ready for use and analysis.
* **Sprint 2:** 13/10/2025 – 26/10/2025
* **Sprint 3:** 27/10/2025 – 09/11/2025
* **Sprint 4:** 10/11/2025 – 23/11/2025
* **Sprint 5:**  24/11/2025 – 07/12/2025
* **Sprint 6:** 08/12/2025 – 22/12/2025