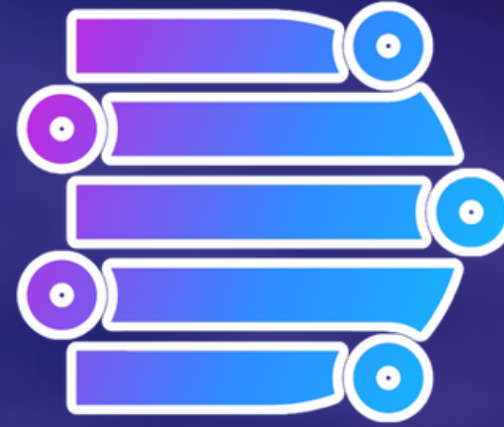




DEDUCE
DATA SOLUTIONS

Industrial Process Intelligence

Industrial intelligence that turns plant data into physical, operational, actionable understanding to optimize complex processes.

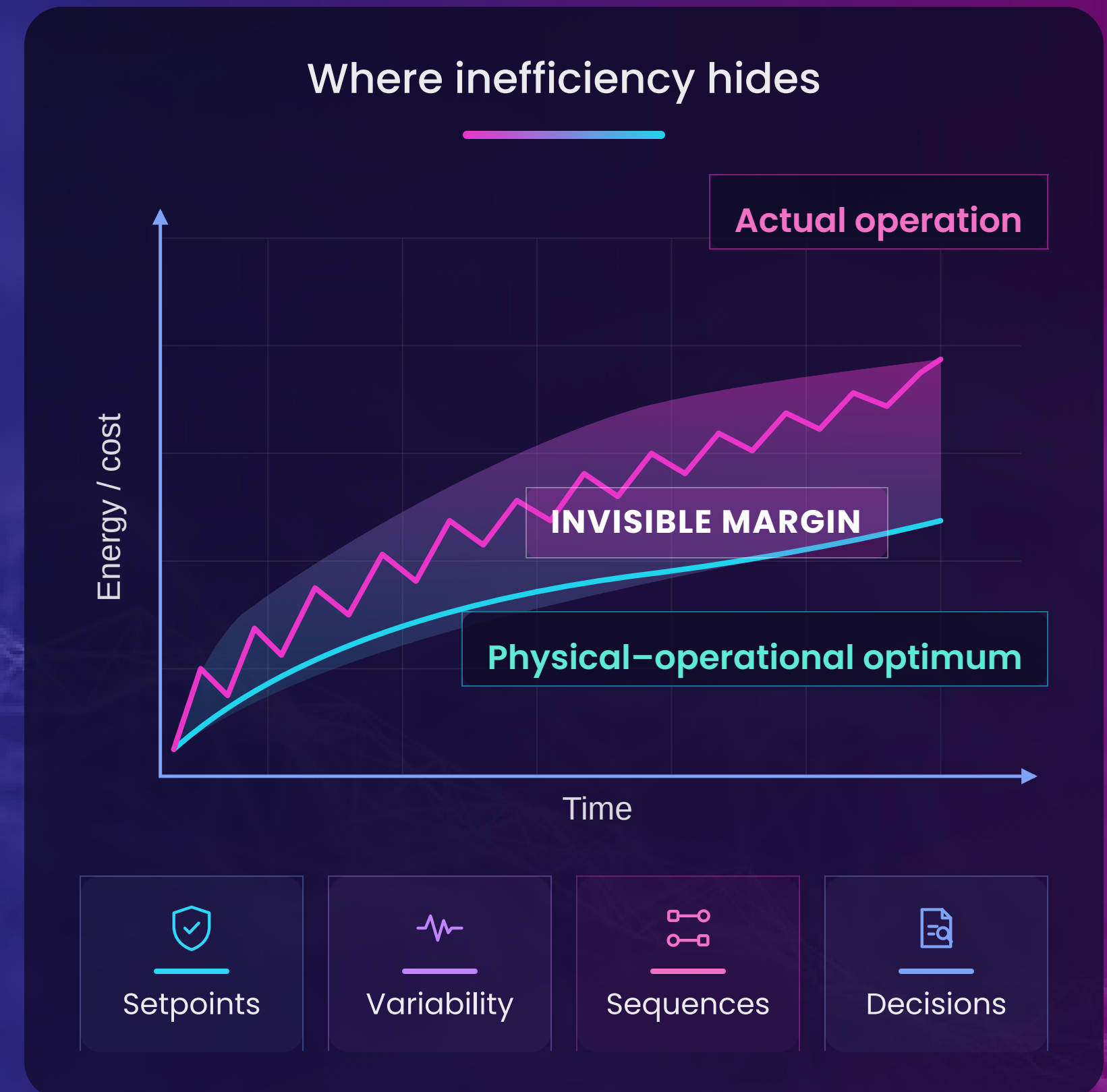
Understand before optimizing

DEDUCE DATA SOLUTIONS · 2026

The invisible margin you pay for every shift

In energy-intensive, high-variability processes, inefficiency rarely shows up on a dashboard. It hides where nobody measures it.

- Safety margins and conservative setpoints that cost energy every shift.
- Quality variability, scrap and unanticipated downtime.
- Suboptimal production sequences and untraceable operational decisions.
- Models that predict without explaining: pilots that never transform operations.



We analyze the physical and operational root of your processes to go beyond prediction — **to understand why things happen**. That understanding becomes transparent, explainable, actionable decisions.

Optimization starts with understanding



Industrial Process Intelligence: an intelligence layer that turns plant data into physical, operational, actionable understanding of complex processes.

OUR DIFFERENCE IS STRUCTURAL

Predicting is not enough: you must understand the structure

Generic AI looks for patterns in clean, abundant data. Industrial data is **scarce, noisy, incomplete** and shaped by **physical constraints**.



Causal analysis

Understanding the real relationships between variables, not just correlations.



Physics-Informed NNs & Neuro-Symbolic AI

Embedding physics and expert knowledge into the learning process.



Knowledge Graphs

Representing and reusing process relationships.



Explainable AI (XAI)

Transparent, measurable and defensible decisions.

1

PLANT DATA

sensors · SCADA · production

2

PROCESS STRUCTURE

physics · causal relationships

DDS
METHOD

*We don't just model data. **We model how the process works.***

3

INFORMED MODELS

PINNs · knowledge graphs · XAI

4

INDUSTRIAL DECISION

prediction · counterfactuals · optimization



DEDUCE
DATA SOLUTIONS

PYTH-IA: the cross-cutting industrial understanding layer

It turns complex plant data into **interpretable structures**, **comparable scenarios** and **actionable decisions**. It unfolds across the three pillars.

PILLAR 1

Energy & Thermal

Identifies which physical, production and operational variables explain energy consumption and where to act.



PILLAR 2

Stability & Quality

Detects the causes of variability, rejects, anomalies and failures before the process drifts.



PILLAR 3

Decision Intelligence

Compares scenarios, visualizes trade-offs between alternatives and justifies operational recommendations.





Industrial Process Intelligence · DDS

CAUSAL ENGINE ONLINE

2 ANOMALIES

20:11:32

LOAD CASE

01

Nissan · Cubilote

PROCESS STABILITY & QUALITY

02

Iberdrola · Hydraulic Pumping

PREDICTIVE EQUIPMENT HEALTH

03

Bridgestone

ENERGY & THERMAL OPTIMIZATION

01 / 05

Classic view

02 / 05

Causal network

03 / 05

Counterfactual

04 / 05

Prediction

05 / 05

Horizontal

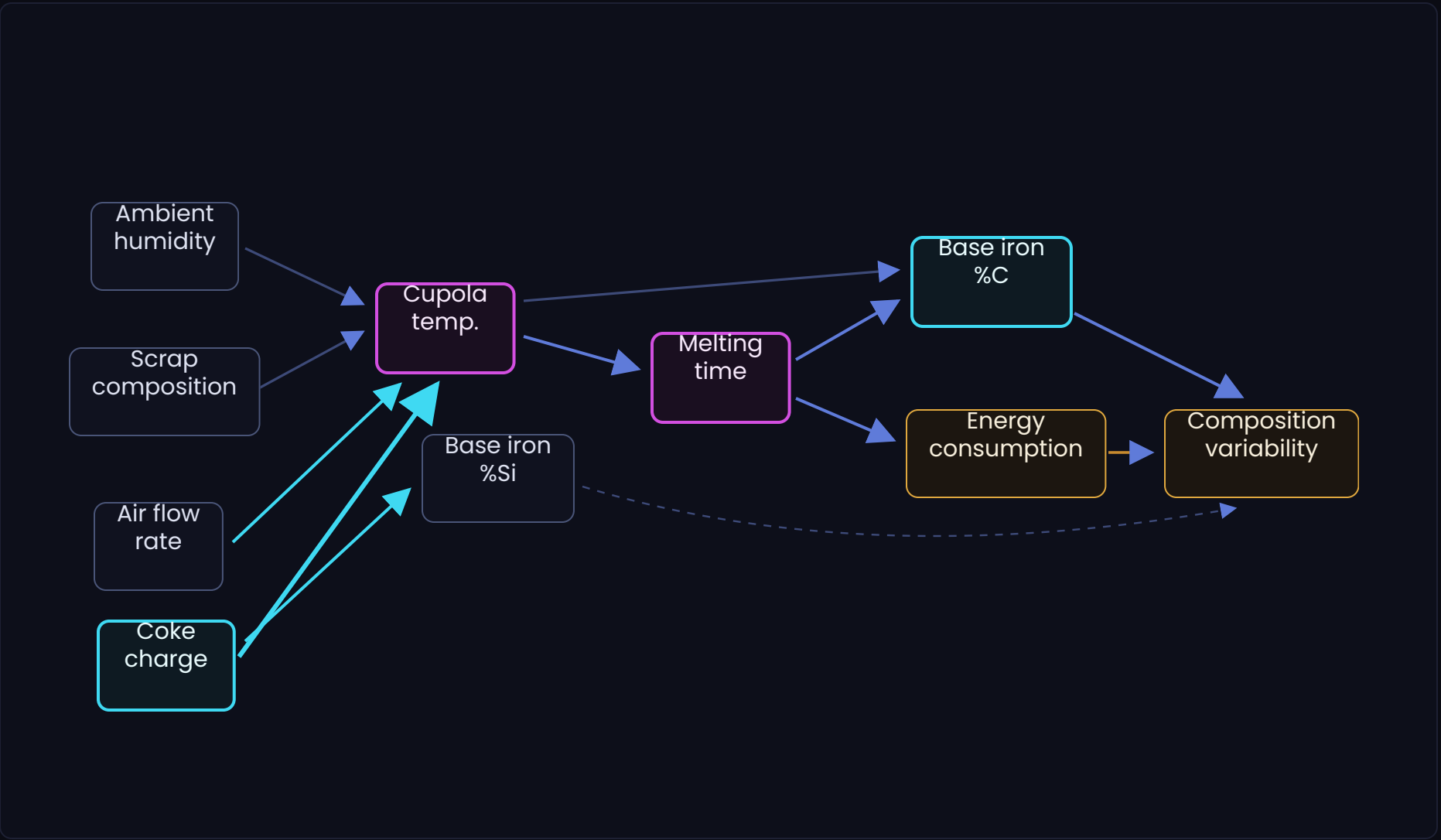
ACT 03 · COUNTERFACTUAL

Slider active. Adjust the coke charge at 11:30 and watch how the day changes. This can't be done with correlations — only with causality.

NEXT →

Causal dependency network

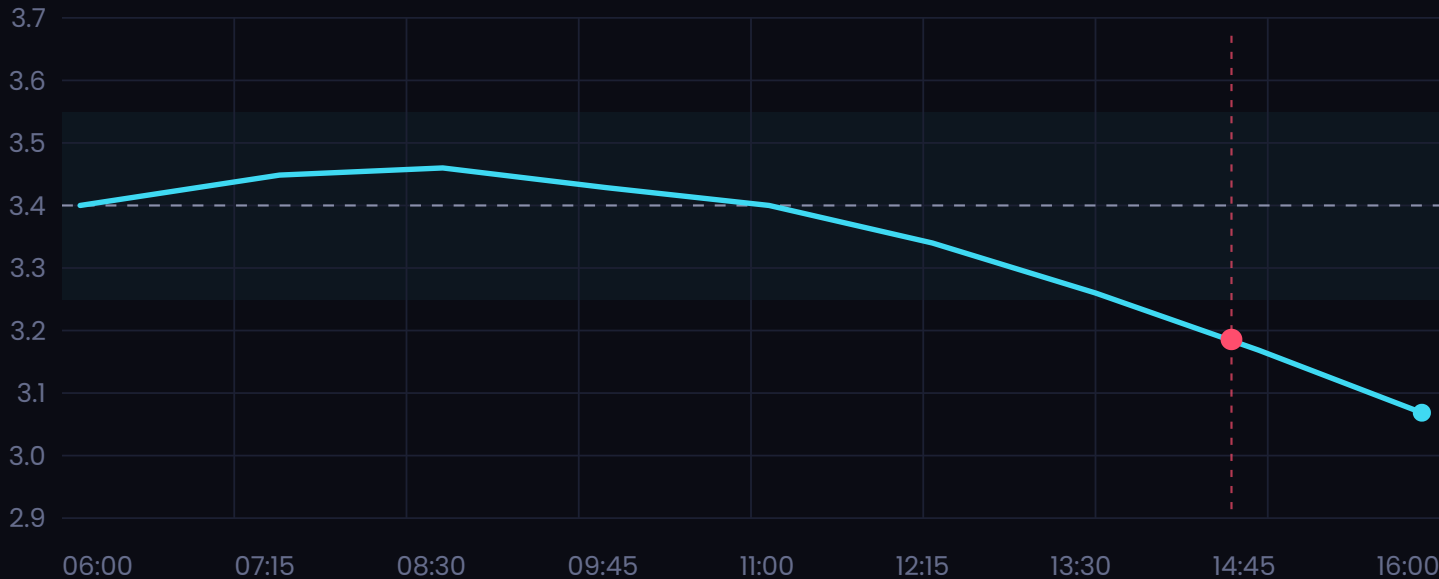
DAG · CUBILOTE NISSAN



%C composition — current shift

TARGET 3.40 ± 0.15

ANOMALY 14:30



CURRENT COMPOSITION

3.07

-0.33 out of band

ENERGY CONSUMPTION

812 kW

+8.4 % vs optimum

EXPECTED REJECTION RATE

14.2%

next heat



How much is this deviation costing me?

⌘K

ASK

One platform, many products



The Industrial Process Intelligence platform



Energy and thermal processes



Planning and scheduling



Logistics and simulation



Natural language over data

THEY TRUST DDS



Ingeteam

RUBI ESTAMPACIONES RUBI, S.A.U.
GRUPO IPM



enel

F REINOSA
Forgings
Castings



Gamesa



AWARDS:



APTE 2024 / 2023



TOP 101 · ENISA

DISA casting furnace (NISSAN)

Certified energy optimization of the induction furnace

DESCRIPTION

The furnace keeps molten iron within a thermal range that varies with the part being produced. Power is applied through an electric inductor with discrete levels, and operators manually adjust the setpoint based on the measured temperature.

DDS SOLUTION

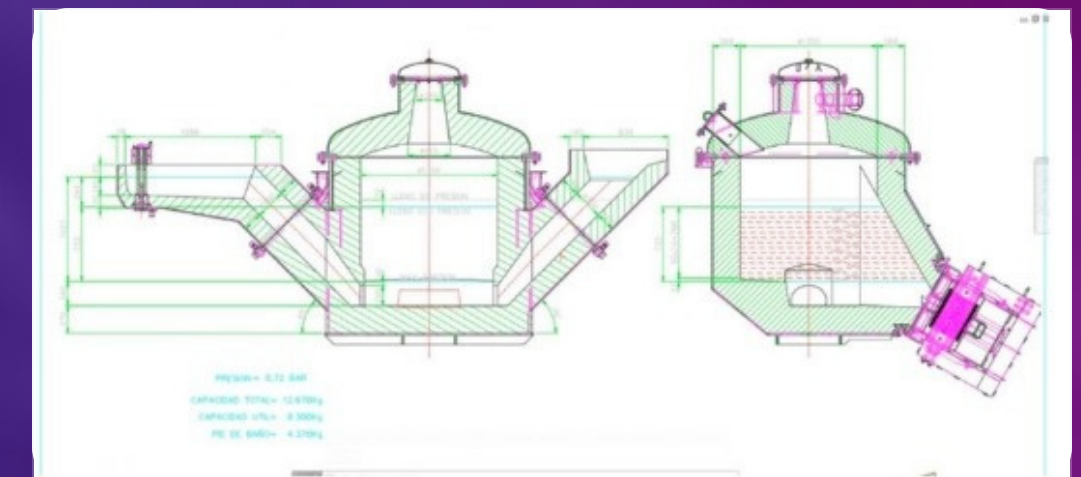
A **physics-informed DDS-NN model** that integrates the furnace's energy balance with real operating data. It works with limited data, extrapolates beyond the historical record and recommends the minimum safe power.

PAIN · CHALLENGE

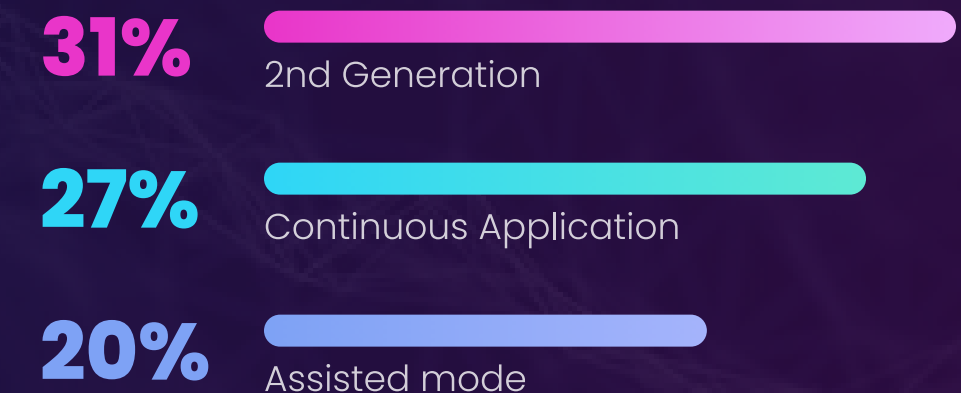
- No clear power-temperature relationship: high variability.
- Tendency to overuse power (minimum ~100 kW).
- Temperature measured with noise and time lag.

RESULTS

- New operating minimum: from **100 kW down to 80 kW**.
- Real-time minimum safe power recommendations.
- Up to **20–30% measured savings** after one year in operation.



MEASURED REDUCTION IN PLANT ENERGY CONSUMPTION



Hydraulic dams (Iberdrola)

MOLINO Project — Diagnostics and predictive maintenance

DESCRIPTION

Concrete hydraulic dams monitored through vibration signals. The goal is to anticipate risks before they evolve into fissures, cracks or high-cost failures.

PAIN · CHALLENGE

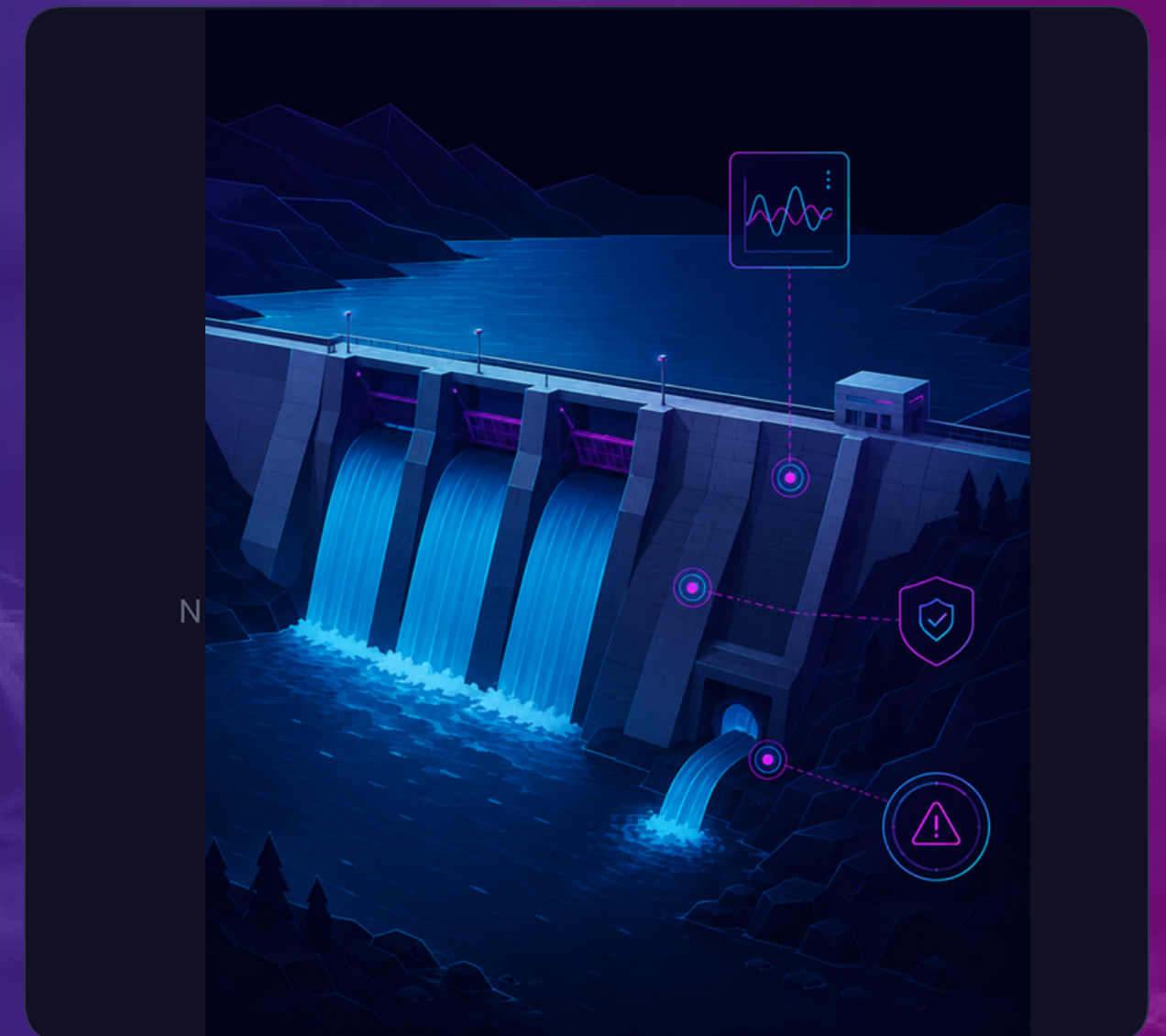
- Structural damage risk that is hard to detect early.
- Large volumes of vibration signals with no clear model of normal behavior.
- A need to move from reactive inspection to data-driven preventive alerts.

DDS SOLUTION

A diagnostic system that monitors more than 30,000 vibration signals to learn the dam's normal behavior and detect anomalous deviations. The system generates early alerts to anticipate potential structural degradation.

RESULTS

- Early detection of anomalous vibration patterns.
- A normal-behavior model for continuous structural monitoring.
- Preventive alerts before critical damage appears.



Rotor impregnation – GAMESA – SIEMENS

METHIS PROJECT — Production order optimization

DESCRIPTION

Impregnation area for rotors and stators of wind turbine generators. The production sequence used to be decided manually by an operator.

PAIN · CHALLENGE

- Manual, slow, suboptimal sequencing.
- Machinery and safety constraints that are hard to coordinate.
- Slow reaction to production incidents.

DDS SOLUTION

An optimization model that, from the weekly parts list, proposes a schedule that minimizes production time and frees up the operator, with automatic re-planning when incidents occur.

RESULTS

- Minimized production time.
- No more manual sequencing decisions for the operator.
- Automatic regeneration of the optimal plan.
- Machine and safety constraints always respected.



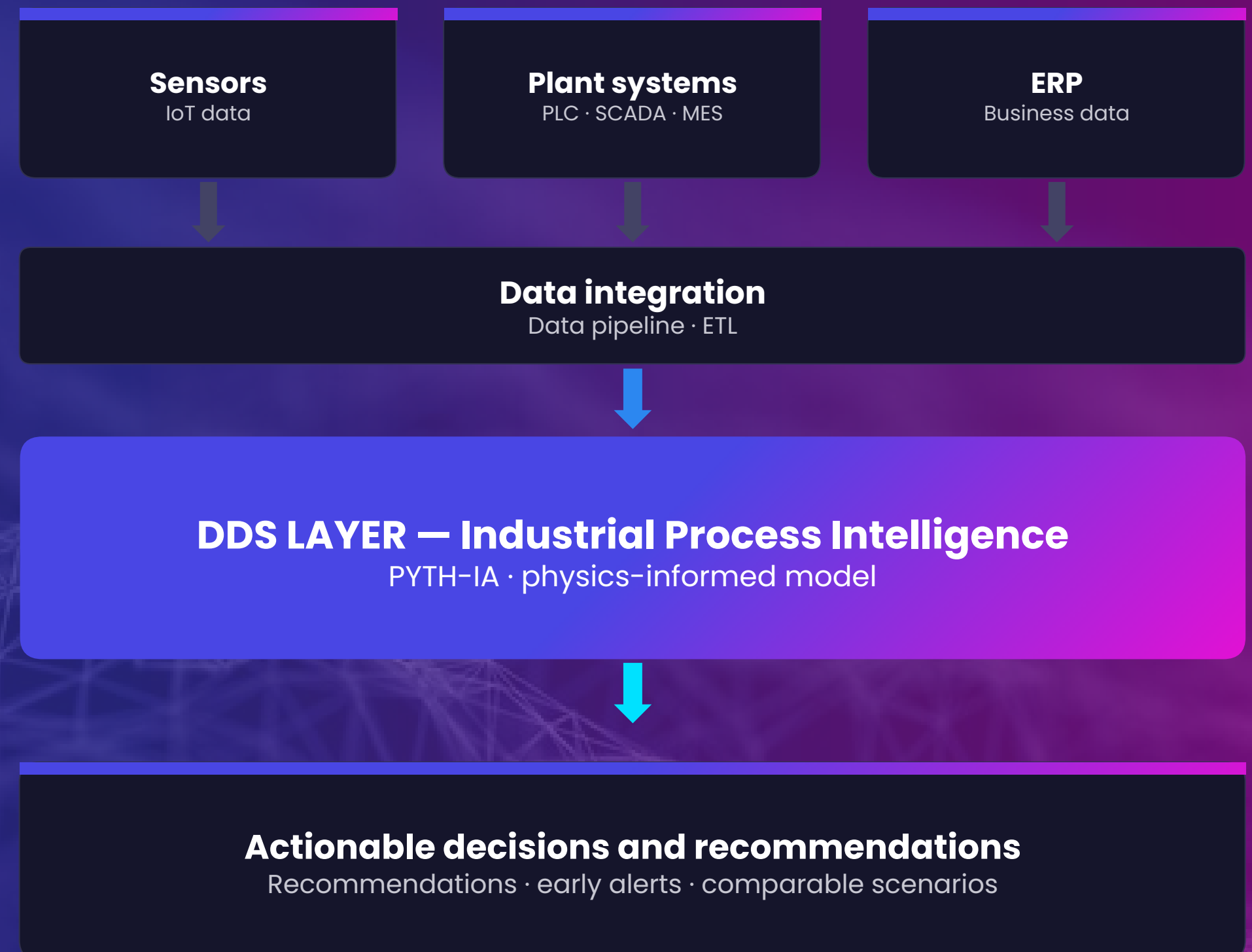
We integrate with your existing plant

DDS requires no changes to your infrastructure.

An intelligence layer on top of already-installed assets and sensors.

Brownfield & retrofit: no major CAPEX.

"We do not replace your operations — we connect what already exists to make it smarter."



Engagement model: Land — Deploy — Expand

LAND

Operational diagnostic

- Process diagnostic in a few weeks, with a fixed scope.
- Proof of value at near-zero risk for the client.
- Eligible for co-funding, with a money-back guarantee.

Deliverable: a technical report and a clear operational roadmap.

DEPLOY

Core project

- Implementation of the core use case, with milestone-based billing.
- Model integrated into the real operational flow.
- Explainable, traceable recommendations.

Deliverable: a live, integrated, measurable system.

EXPAND

Platform and continuous improvement

- Continuous optimization as a recurring service.
- New process lines and new pillars.
- Ongoing system learning and improvement.

Goal: a long-term, recurring partnership.

Understanding that translates into results

Physical–causal understanding

No blind correlation: we understand why it happens

A layer on top of your assets

Brownfield and retrofit, no major CAPEX investments

Explainable decisions

Measurable, traceable, defensible results

EXPECTED RESULTS

–15 to 25%
process energy cost

–20% downtime · +6 maintenance days

Indicative ranges observed in similar projects;
actual results depend on the process and scope.

Let's start with a 4-week operational diagnostic on one process.

Understand before optimizing

WHO WE ARE



A scientific team, not an AI consultancy

Founded in November 2020 with the mission of bringing academic rigor (University of Cantabria – IFCA · École des Mines) to industry. We've been doing Machine Learning and physical process modeling since 2009.

Specialized, stable team

16 highly qualified people, low turnover, working in collaboration with researchers from IFCA (Cantabria) and École des Mines (Paris, France).

24+ projects in the last 4 years

Across the industrial, automotive, and energy sectors.

Scientific authority

+100 scientific papers, co-editorship of 2 AI books, and chapters in 6 ML books.

Recognition and locations

2025 SME Innovation and Digitalization Award. Offices in Santander and Vigo.

WHAT'S NEXT · GET IN TOUCH

WHAT'S THE NEXT STEP?

We can start with a joint diagnostic,
or simply open a conversation that makes sense.

We don't promise miracles. We think with you. And
if it makes sense, we build together.

SHALL WE TALK?

Book a call or request an initial diagnostic



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