Armal®

Discover how Zerynth supported Armal in developing an IoT system that allows remote monitoring of their production machinery parameters.

20 YEARS	Machines' age to digitalize	**40%**	Power consumption reduction	**4** MONTHS	Return on IoT investment

> "Thanks to the collaboration with Zerynth, we have a real-time IoT monitoring system of our production line that allowed us to reduce the energy costs of machinery by 40%, recovering our investment made in IoT technology in just 4 months."
>
> **Andrea Fornarelli – CEO, Armal**

The Challenges

Process optimization, today, is a key factor for any manufacturing organization to reduce the time of production cycles, increase product quality, and reduce costs.

Armal has injection molding machines that produce plastic components of different sizes. Each machine has an **average lifetime of 15-20 years**, however, at the production level they are still in good condition. Concurrently, Armal needed to modernize their entire workflow in order to remotely monitor the machines and optimize their production. In the past, they used Arduino boards, but data losses occurred often, and the monitoring process was not reliable.

One of their main problems was **tremendous energy consumption**. Armal was unable to monitor the performance of the machines, so they were looking for a solution that was capable of controlling the energy consumption of each machine in real-time so errors could be eliminated and they could proceed with improvements on the systems themselves. Another problem was wasted time **calculating and monitoring the quantity of products** produced. Accordingly, Armal urgently needed to automatically calculate their produced products so manual work could be reduced and the **number of defective components** could be minimized. Another challenge was storing the data regardless of connectivity because the machines didn't have any internal storage capabilities.

COMPANY NAME:
Armal SpA

LOCATION:
Italy

INDUSTRY:
Recreational Facilities & Services

PROFILE:
Armal is a leading company in the production and supply of a vast range of high quality products. They manufacture portable toilet systems and target companies in the construction industry as well as for event management, sports events, agriculture, transportation, and emergencies that result from crisis situations and environmental disasters.

RESULTS:

Increased Automation
24/7 remote monitoring

Improved Production
More accurate production KPIs

Decreased Consumption
€€€ saved by optimizing power consumption

The Solution

The Zerynth team provided Armal with an **Industrial IoT system for real-time monitoring for power consumption of their industrial machines and the entire production cycle**. It is built using an industrial-grade 4ZeroBox control unit connected directly to the Cloud via **Zerynth Device Manager**.

A **4ZeroBox** device was installed on each machine to collect 4 signals in retrofitting mode. Thanks to this collection of signals and their derivatives, Armal is now able to **monitor their entire production flow** from simple customized dashboards with the purpose of making machine data easily analyzed by Management, and being able to make strategic decisions. A monitoring system for the lighting system in the production plant was also implemented in order to optimize energy consumption.

Custom Dashboards

Zerynth provided Armal with **4 different dashboards** that present information about the status of machines (on/off/alarm), the amount of energy consumed for certain periods of time, and allows comparison of current data with historical data.

The dashboard also allows **constant production performance monitoring** by being able to control the number of injections, cycle times, automatic production time, manual production time and alarms for each machine.

MAIN FEATURES

- Data Acquisition, logging and visualization.
- Retrofitting to legacy and modern machines.
- Improved visibility on equipment efficiency.
- Predictive maintenance to prevent costly repairs and unplanned downtime.
- 16+ different industrial **sensor channels**, for acquiring sensor data.
- **Wifi and Ethernet** for sending and receiving data, monitoring, and for controlling devices.
- MicroSD for local and secure data logging without internet connections.
- Industrial **Relays** for remotely controlling their assets.
- Edge Processing Capabilities and Ready-for-AI on the Edge Applications.
- Easy to expand with GSM 2G, 3G, GPS, Motor drivers, displays, and additional sensor channels.

PRODUCTS USED:

4ZeroBox
Zerynth Device Manager

"Today we can remotely monitor all production machinery from a single simple, intuitive and accessible dashboard from any device and at any time. In this way we can immediately identify anomalies, take the necessary measures and we can analyze reliable data in order to make strategic decisions."
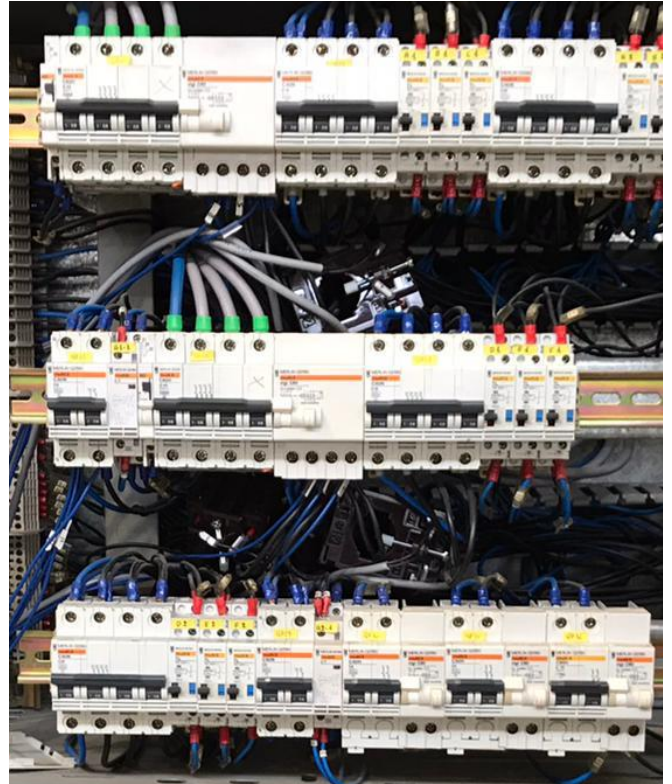
Andrea Fornarelli - CEO, Armal

The Results

Armal has successfully completed its digitalization journey by obtaining an **IoT solution** capable of **real-time power consumption monitoring** for each machine. Thanks to this process, the **costs for energy consumption** of their machinery has been reduced by **60%** compared to the earlier technologies used, and by **40%** compared to the previous generation. In only 1.5 years Armal recovered their implementation costs. Moreover, in only **4 months their investment**, made in IoT technology, was recovered.

Zerynth technology enables Armal to calculate the time required to produce 1 component for each type of machine, as well as monitor **the total number of produced products**, in real-time.

Armal is planning further improvements to their monitoring process: they would like to manage the **product traceability** for each machine in order to calculate the production costs of each individual component, compare it with the production plans, and send automatic notifications if the target is not reached.

Why Armal chose Zerynth

Zerynth provided extensive **industrial IoT experience** and **expertise** for the requirements needed to optimize the monitoring of industrial production. Development and management teams successfully supported Armal by applying the best practices and products certified by official sources.

Zerynth quickly implemented the perfect tool to achieve all of the project's goals and objectives. This also allowed Armal to significantly **reduce production costs** thanks to the **monitoring of energy consumption** in real time. They fully recovered their investment, made in IoT technology, in just 4 months.

"We have machines that are 20 years old that are still in good condition but it was not possible to monitor their status and production. We therefore needed to develop a remote and real-time control system to improve energy efficiency, immediately identify any machinery anomalies and control the production of our products."

Andrea Fornarelli – CEO, Armal

Zerynth ®

Enabling IoT

About **Zerynth**

Zerynth helps companies easily get their industrial processes digitized and bring innovative connected products to the world. The Zerynth IoT Platform is a full set of hardware-software tools designed by IoT experts to enable digital transformation in a fast, flexible, and secure way.

Founded in 2015, Zerynth has grown steadily. Today Zerynth has 35+ team members with deep IoT expertise and industry knowledge with over 100 customers across many industries. Headquartered in Italy, Zerynth provides support globally thanks to an extensive network of partners in Europe and pan-global locations.

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LET'S TALK!