INDUSTRY 4.0

Predictive Maintenance

HOW CAN TELEFÓNICA TECH HELP?

Boost the efficiency, competitiveness, security, and sustainability of your processes by optimizing your maintenance thanks to predictive maintenance.

Downtime is the period in which a machine or installation stops working, especially due to a malfunction. This problem is common to all industries and represents one of the biggest challenges that organizations must address, as it has a significant impact on customer confidence and productivity:

- In **45%** of cases, unexpected downtime prevented the promised product or service from being delivered on time.
- In **37%** of situations, this unscheduled downtime resulted in lost time in the production of critical assets.

On the other hand, 82% of organizations have experienced at least one unplanned outage in the last three years. Manufacturers also manage, on average, 800 hours of downtime annually. Given these numbers, it is not surprising that 81% of companies consider **digital tools to be key** to overcoming the challenges associated with unplanned outages.

In this context, companies are adopting different maintenance strategies to reduce downtime and optimize their production, and **Predictive Maintenance** is positioned as one of the most effective solutions.

WHO IS THIS SERVICE FOR?

The solution is designed for companies in any sector that need to monitor the health status of their assets or machinery through sensorization, including:

- **Manufacturing:** automotive, food, pharmaceutical.
- **Logistics.**
- **Mining.**
- **Energy:** oil & gas, wind, hydro.

OUR VALUE PROPOSITION

Our service

Our **Predictive Maintenance** solution is based on monitoring the health status of industrial assets (rotating machinery, electrical transformers and alternative machinery) through their sensorization (wired and/or wireless) and the use of advanced analytics (AI, ML, DL models), with the aim of anticipating possible future failures.

- Predictive maintenance uses several techniques to accurately monitor the current status of industrial machinery and equipment, using local or cloud-based analytical solutions.
- **Objective:** Optimize, defer or incorporate maintenance actions to prevent failures in critical assets by detecting signs of incipient degradation.
- **Result:** Equipment failures are predicted, allowing preventive measures to be taken in advance.

Our end-to-end proposal includes a co-creation approach with the customer through the consultation, pilot, and implementation phases. The solution combines sensorization, connectivity, and a predictive maintenance platform, and is organized into three main components:

- **Sources of information:** IT (SCADAs, DCS, etc.); OT (wireless or wired sensors of different types: vibrations, dissolved gases, oils, thermal cameras, among others).
- **MEC (Mobile Edge Computing):** Gateways and edge devices that allow for initial processing of the information collected.
- **Cloud platform:** Advanced data processing; monitoring of the current health status of assets and application of Artificial Intelligence models to detect incipient degradation and predict future anomalies.

What does it allow you to do?

The use of different sources, both IT and OT, allows its application in a wide variety of industrial assets:

- **Rotating machinery**: Turbines, rotary compressors, electric motors and generators, centrifugal pumps, fans and blowers, gearboxes and reduction gears. This is achieved by placing vibration sensors (accelerometers) at key points on the machinery.
- **Electrical transformers:** Monitoring by means of dissolved gas sensors (single-gas and multi-gas) in the dielectric oil, which indicate cellulose degradation and possible incipient failures.
- **Alternative machinery:** Equipment such as combustion engines and piston compressors are monitored using various techniques to detect failure modes, worn or broken parts, leaks, excessive loads and liquid ingestion.

Our cloud platform offers the following functionalities for any of these use cases:

- **Monitoring the health status of assets:** Automated diagnosis and identification of diagnosed faults; management of alarms and associated statistics.
- **Detection of anomalies:** Unsupervised machine learning algorithms that perform complex analyses taking into account all defined variables; identification of anomalies and explanation of associated operating modes.
- **Classification of anomalies:** Machine learning algorithms that analyze the interaction between variables; determination of the criticality and habituality of the detected anomalies, providing clear explanations of the results.
- **Prediction of anomalies:** Deep learning (DL) models that predict future values, anticipating possible failures.

Benefits

Predictive maintenance is a strategy adopted by companies that seek to minimize unforeseen downtime and, at the same time, avoid the cost overruns derived from excessive maintenance. Its main benefits include:

- **Multiplication of ROI:** Increases return on investment (ROI) up to 10 times compared to strategies that do not include predictive maintenance.
- **Reduction of unplanned downtime:** Reduces unplanned interruptions by up to 50%. By predicting problems before actual failures occur, lost uptime is minimized.
- **Increased asset life:** Increases the life of monitored assets by up to 20%, thanks to the lower frequency of breakdowns and rapid and timely responses.
- **Reduction in maintenance costs:** Allows savings of up to 30% in maintenance tasks, by avoiding both unnecessary scheduled interventions and extensive diagnostics, as the PdM system directly identifies the source of the problem.
- **Energy saving:** Optimizes energy use, labor costs and machine time, achieving savings of up to 20% and avoiding waste of resources.
- **Reduction of workplace accidents:** Reduces workplace accidents by up to 20%, thanks to the improved condition of assets and the reduction in the number of interventions required.

Telefónica Tech's differential value

- **Advanced Machine Learning Models:** Implementation of different automatic learning models:
  - Algorithms that not only identify anomaly alerts but also provide explanations to understand their origin.
  - Classification of anomalies based on expert knowledge of analysts, ISO standards and user feedback.
- **Personalized visualization:** Our platform is accessible from multiple devices (web, Android app, etc.) and allows each user to customize the dashboards according to their professional profile and specific needs.
- **Data ownership:** We guarantee access to and interpretation of the data, ensuring that it always remains the property of the customer.
- **Integration with customer systems:** As well as including asset sensing, our solution can be integrated with the customer's IT systems, such as DCS, SCADA, EAM or CMMS.
- **End-to-end services managed from our NOC:** Our Network Operations Center (NOC) centralizes and manages all services provided to the customer, ensuring a comprehensive and seamless experience.
- **Reliable and validated solutions:** Telefónica has an open IoT laboratory, TheThinX, where partners and customers can certify and validate new solutions and devices in real network conditions. This guarantees that our solutions are launched on the market with maximum reliability.
- **Quick response and agility:** The integration of our products within the Telefónica ecosystem allows for a quick reaction to business opportunities, offering efficient solutions

EQUIPMENT, TEAMS AND ACHIEVEMENTS

Our teams

Local and global capabilities

- An over 100-strong team of dedicated people geographically distributed across Telefónica Tech regions.
- **+30** product development experts.
- **+50** pre-sales, bid management and business development experts.
- **+20** operations, maintenance, and service management experts.

Regional focus

- **Europe:** +20 sales and business development experts.
- **LATAM:** +15 sales and business development experts.
- **Global:** +5 sales experts and business development resources.

Achievements

Telefónica has more than 350 million users managed and supported on its cellular networks worldwide and is internationally recognized by customers and analysts.

- Industry IoT network leader (IDC & Analysys Manson).
- Gartner Magic Quadrant leader for IoT for the 11th consecutive time.
- Private LTE/5G Provider Champion (Kaleido Intelligence).
- GSMA Smart Manufacturing Chairman.

BUSINESS MODEL

Our **comprehensive solution** includes everything necessary to guarantee efficient deployment and optimal operation:

- **Hardware:** Wide variety of compatible tag models, specifically designed for industrial environments and adapted to diverse operational needs.
- **Software:** Full licenses guaranteeing access to all functionalities. Ongoing technical support and maintenance to ensure operability.
- **Services:** Visit, technical project, installation, calibration and implementation, training, and production start-up.

In addition to the deployment of complete projects with an end-to-end scope, we offer the possibility of carrying out **proofs-of-concept (POCs)** in controlled environments. This allows our customers to evaluate the technology in their own environment before large-scale implementation.

RELATED SERVICES

Remote Operation

Includes methods for acquiring, processing, analyzing, and interpreting real-world images to extract quantitative or qualitative parameters. These parameters can be transmitted to PLCs for production machines to make decisions, integrated into databases or ERP systems, or used in real-time for continuous decision-making, such as guiding robots or AMRs.

Private Mobile Networks

An industrial network enables critical business operations by ensuring continuity, flexibility, and mobility in processes, supporting the rapid adaptation of production chains. It provides real-time responsiveness with low latency, depending on business criticality.

Industrial Management Software

It is a comprehensive solution that optimizes efficiency in end-to-end manufacturing processes. It offers management of APS/SCM planning, DCS/SCADA/MES production, QMS quality, SGA logistics, and GMAO maintenance.

Contact us to start the digital transformation of your organization.