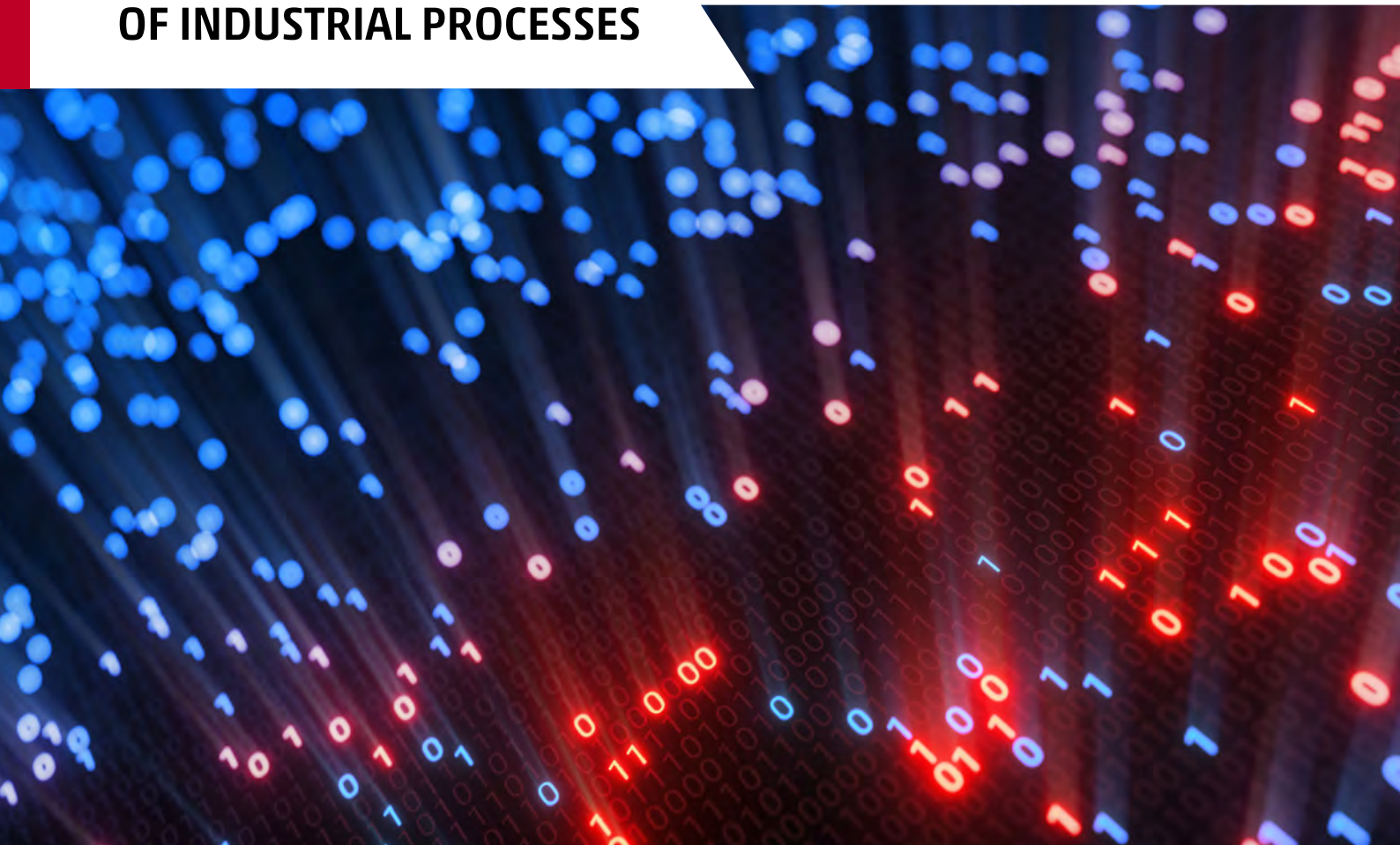


COMPANY PROFILE



Industrial Cyber-Physical  
Systems

**CONSULTING AND SOLUTIONS  
FOR DIGITALISATION  
OF INDUSTRIAL PROCESSES**



## Camozzi Group

Products, components and solutions  
for industrial automation, machine tools,  
textile machinery and processing  
of raw materials through digitisation

### CAMOZZI GROUP

DIVISIONS:



**CAMOZZI** AUTOMATION  
division



**CAMOZZI** MACHINE TOOLS  
division



**CAMOZZI** TEXTILE MACHINERY  
division



**CAMOZZI** MANUFACTURING  
division



**CAMOZZI** DIGITAL  
division



### Lodovico Camozzi

Chairman and CEO  
of the Camozzi Group

*"Every day, we work to develop  
technologies and products to meet the needs  
of our customers, paying special attention  
to their social impact and respecting  
the environment. The opportunity to lead  
the Camozzi Group is a great honor  
and a great responsibility".*

# THE FUTURE OF MANUFACTURING INDUSTRY 4.0



Industrial Cyber-Physical  
Systems

Camozzi Digital, a **Camozzi Group company**, was founded in 2015 with the aim of supporting the digitalisation of companies operating in different manufacturing sectors and which want to develop digital innovation and IIoT solutions.

The evolution of the industrial world has led Camozzi Digital to develop solutions to connect machinery, storage and logistics systems, plants and buildings to the Cloud, transforming them into Cyber-Physical Systems (CPSs).

The innovation and digital integration of production processes is based on the skills of a team of engineers and data scientists specialised in applied mathematics and structured software development. Together they create bespoke algorithms and feedback systems which optimise production processes and energy consumption, as well as improving materials and spare parts management. These techniques are suitable for a wide range of manufacturing sectors, including high volume production.

FROM  
**2015** ■ DIGITAL  
SOLUTIONS

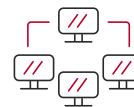
**10** ■ COUNTRIES WITH  
ACTIVE CLIENTS

**12** ■ INDUSTRIAL  
SECTORS

## SMART SOLUTIONS



■ ADVANCED  
ANALYTICS



■ CYBERMES



■ DRM



■ SMART  
APPLICATIONS



# CAMOZZI DIGITAL DNA



Through experience gained within the Camozzi Group, the Digital division has developed wide-ranging skills in various application areas: from textiles to manufacturing, from machine tools to industrial automation.

Through the **domain knowledge** and a consolidated methodological approach, Camozzi Digital transform the data collected through IIoT solutions into true added value. Our methodological approach involves several stages:

- 1 • Technological analysis of the customer's production/industrial assets
- 2 • Analysis of monitoring parameters and metrics.
- 3 • Parameter correlation related to maintenance, status of the components, energy consumption and production efficiency
- 4 • Study and construction of prototypes for component stress tests
- 5 • Development of customised Cloud solutions for data collection
- 6 • Data mining services and set-up of Machine Learning algorithms during the prototyping phases
- 7 • Remote maintenance and process digital engineering services

# INDUSTRY 4.0 SOLUTIONS

## From big data to big added value

Camozzi Digital offers a **digital platform** for connecting machinery and systems, enabling you to benefit from a vast array of intelligent functions that bring clarity to your data.

By rationally integrating complex process data into the factory management infrastructure in real-time, it is possible to make significant improvements in overall operational efficiency.

The procedure is implemented in three phases:

### Digitisation

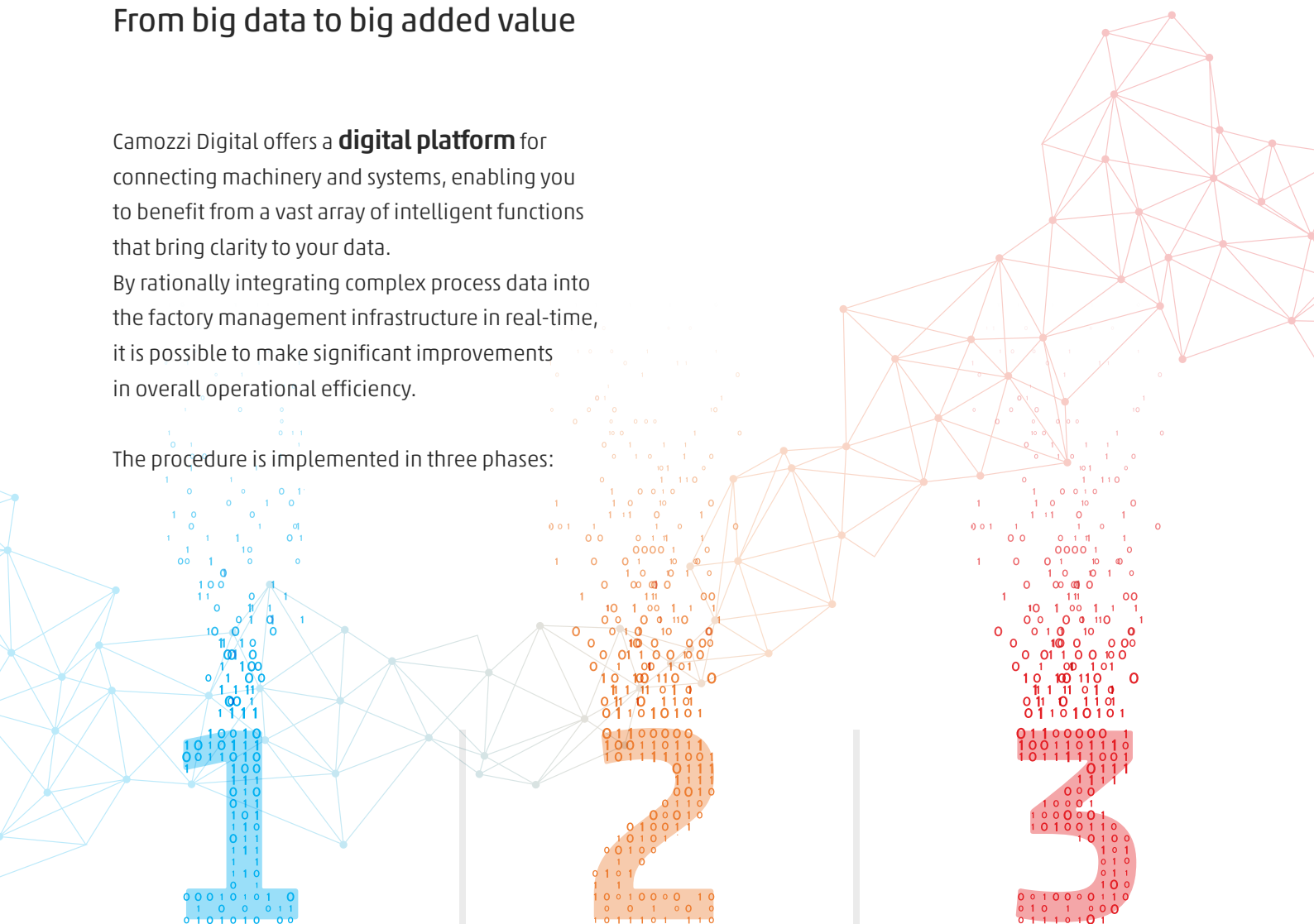
of productive assets (IIoT): Installation of smart sensors, data loggers and recorders and direct connection to the machine's automation system, in order to constantly monitor essential parameters.

### Processing and analysis

of raw data: Data flows are sampled and analysed statistically then compared with predefined models to identify trends, correlations and anomalies.

### Modelling

Reference models are created and compared for each machine or specific component, with the aim of obtaining consistently up-to-date information about their performance.





# ADVANCED ANALYTICS

## CONSULTING SERVICES

We offer innovative services based on the application of cutting-edge **advanced analytics** to monitor the performance of processes and correlate the working conditions of the machines, energy consumption, the status of components and to carry out **predictive analyses**.

We create **cloud-based data collection** platforms, and we offer digital process engineering services that allow you to manage your production line intelligently and carry out remote maintenance.

We explore and determine the right metrics and install appropriate sensors onto the production machines to collect the data. From this we create **algorithms that guarantee effective management** of unforeseen interruptions of the production process.

Monitoring the production process is via predictive analyses that examines the working conditions of the machine, energy consumption and the status of components.

Through our consulting services you can:

- **Minimise production process costs**, increase efficiency and business performance
- **Reduce machine downtime and maintenance costs**, exploiting the data analysed by means of customised algorithms regarding the status and functioning of the systems
- **Optimise financial costs** associated with spare parts warehousing



## ALGORITHM DEVELOPMENT

We implement **statistical and recursive algorithms** capable of recognising anomalous patterns and calibration problems.

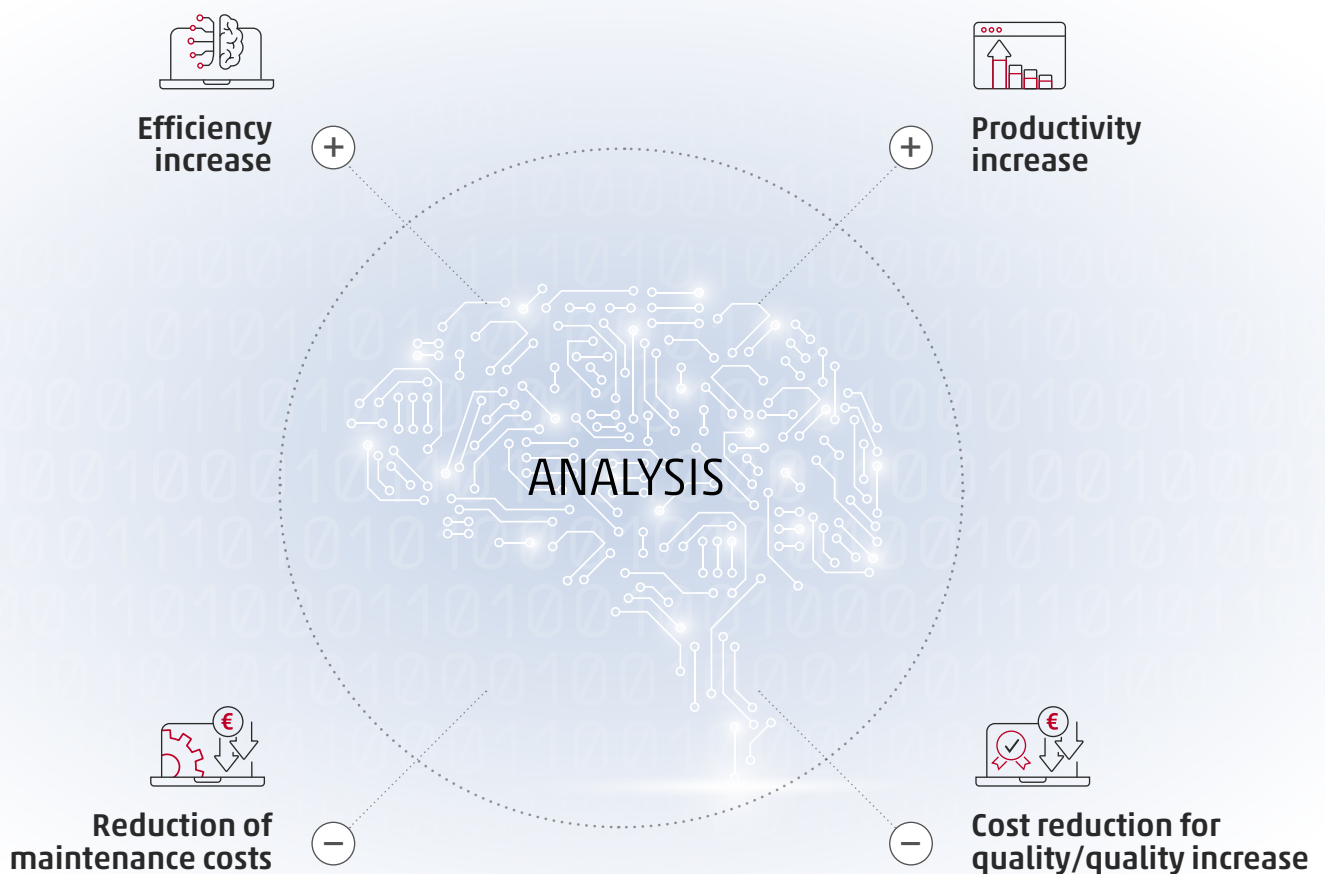
This allows us to conduct predictive analyses through the application of **customised machine learning techniques**.

Gathering metrics from sensors and preparing them for delivery to the Cloud is the **technological core of any Industry 4.0 project**.

By building **models based on physics, statistics and artificial intelligence** the data can be analysed in real-time to produce high value predictive reports and recommendations.

The **domain knowledge** developed by our mathematicians within the Camozzi Group enables us to create **custom-built algorithms** in only a matter of weeks.

This method of analysis allows us to **reconstruct the operational costs**, in order to assess the main actions and interventions in terms of:



# CyberMES

Simplify, streamline, control.

CyberMES is the solution developed by Camozzi Digital that **collects and analyses, in real-time**, all the information necessary for continuous and proactive monitoring, enabling:

- **Full control** of the processes
- **Monitoring** of material spillages even on the machine
- **Optimal use** of all productive resources
- **Reduction of waste** in terms of scrap reduction, errors, downtime and unnecessary handling
- **Improvement** of customer service in terms of speed, punctuality, quality and accuracy in deliveries

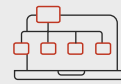
CyberMES models the entire production system and its environment, using the **complex and reciprocal interactions of multiple parameters and components**.

It employs a scientific approach that takes into account emerging and changing qualities and uses a **multidisciplinary method** to define relationships between variables and model basic parameters, to produce an **accurate simulation of the system's dynamics**.

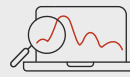


## CyberMES

Main functions:



Real time production monitoring



Efficiency charts: utilization KPI, machine efficiency and utilization time



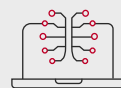
Visual trouble shooting: alarm and warning localization, direct access to machine documentation and to messages description



PMS: real time and historic trends of energy consumption



Machine downtimes: detailed information about downtimes reasons and causes



Production planning and scheduling



## YARNET

### NEED

Control and manage the entire yarn spinning process and all the individual machines through just one interface.

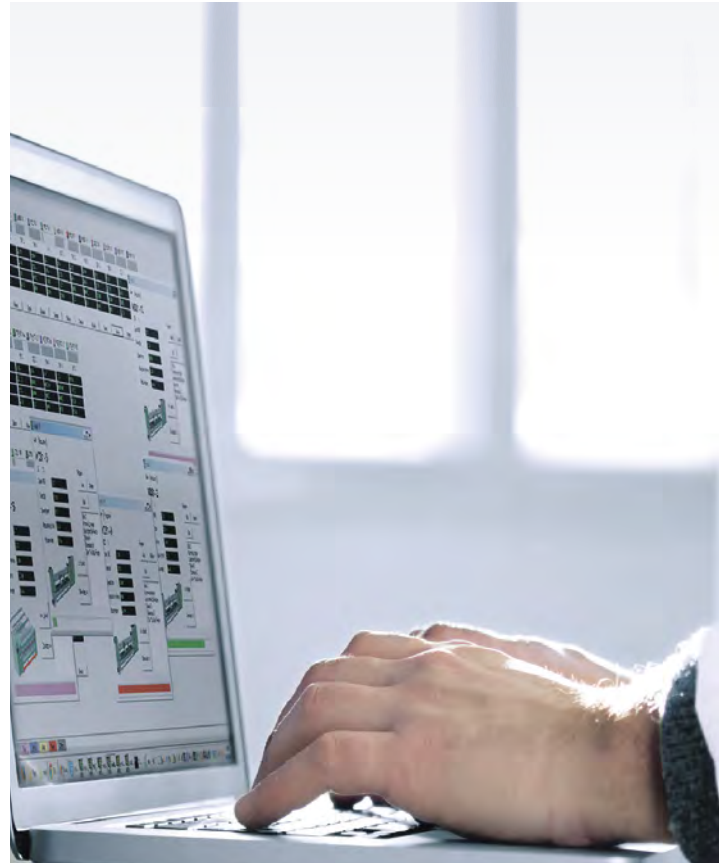
### SOLUTION

YarNet allows you to:

- Visualise production data
- Track the history of each product
- Monitor quality continuously and strategically
- Analyse the collected data to obtain useful information in the form of intuitive reports, developed to quickly highlight bottlenecks
- Create, modify and save an unlimited number of recipes, to save time and limit the possibility of human error during batch changes.

### ADVANTAGES

Easy, quick and real-time monitoring of the entire spinning process, thanks to continually updated information.



## IBNET

### NEED

Optimise production management in the machine tool sector.

### SOLUTION

IBNet is a platform developed for this sector that allows you to:

- Collect and save production data, operating conditions and machine settings
- Analyse information continuously and in real-time thanks to tables, graphs and diagrams
- Interact with machines to import and assign work programmes
- Organise the production and machine downtime according to maintenance cycles

### ADVANTAGES

Complete, real-time and centralised control of the entire system.



## DRM - Digital Remote Maintenance

Digital Remote Maintenance, is the software that enables the **immediate and automatic identification of any technical malfunction** while machines are running, with automatic alerts sent to the client.

Main functions:

- **Predictive monitoring:** preventive and predictive control of plants' technical operating conditions (mechanical and electrical) through preventive alarms
- **Real-time control:** access to real-time information through sensors (temperatures, currents, air consumption, vibration etc)
- **Trouble shooting:** analysis of possible operating faults through comprehensive real-time and historic information of overall operating performance
- **Performance optimisation:** advanced analysis support tools for the optimisation of plant Key Performance Indicators or KPIs (power consumption, efficiency, inspections, etc)
- **Maintenance management:** maintenance support through on-line planning; tracking and control of maintenance operations; maintenance alarms on scheduled operations; access to machine documentation

Using the predictive algorithms and apps developed by Camozzi Digital, you can remotely monitor and control your system.



Advanced Analytics

INDUSTRY 4.0





## MRM - Remote Maintenance

### NEED

Predict technical malfunctions that could compromise the efficiency of the entire production line.

### SOLUTION

MRM is a remote maintenance solution that allows you to:

- Stay constantly up-to-date regarding the condition of machines while they are running
- Diagnose possible problems and communicate any maintenance requirements via an alert system based on the constant comparison of collected and benchmark data
- Continuously optimise energy consumption and machine efficiency levels.

### ADVANTAGES

Optimal planning of maintenance operations, reduction of operational costs and constant increase in machine performance.



IoT Platform by Microsoft\*



## IBRM - Remote Maintenance

### NEED

Predict malfunctions and carry out predictive maintenance operations for machine tools.

### SOLUTION

IBRM is software that allows you to:

- Monitor symptomatic and physical parameters, operational conditions and the status of automation systems
- Immediately and automatically identify any technical malfunction and, through an automatic alert system, inform the client

### ADVANTAGES

Reduction of maintenance times and increase of production efficiency.



IoT Platform by Microsoft\*





# SMART APPLICATIONS FOR SMART OPERATIONS

## DIGITAL BOX

Digital Box is Camozzi Digital's self-installing and **customised kit** of hardware and software required to connect machines to the internet so that their metrics can be sent to the "Azure" Cloud.

This solution allows customers to **remotely monitor the physical parameters and operating conditions** of their components, actuation systems and electrical panels, for productivity, efficiency, energy consumption and status.

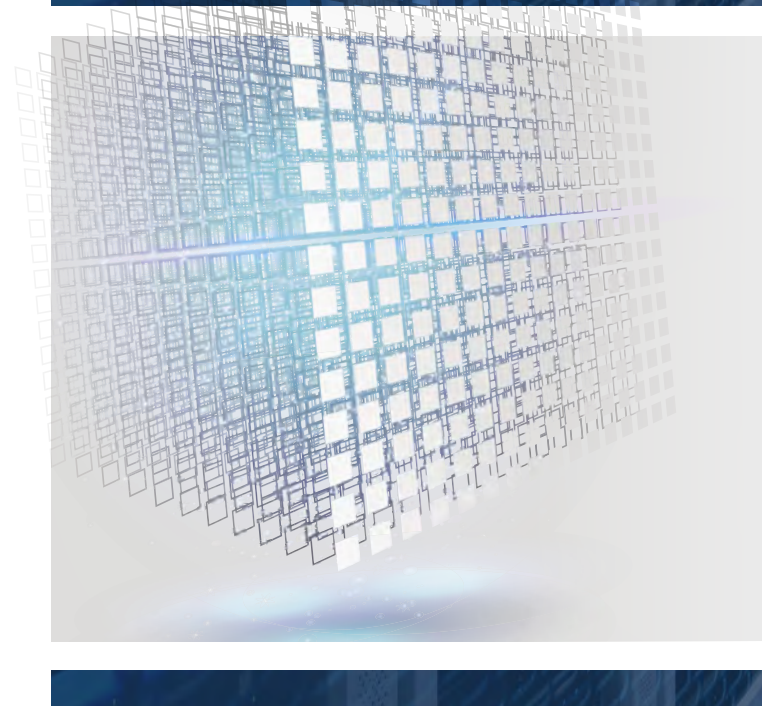
The collected data is displayed in an intuitive way through user interfaces that are available around the clock, anywhere and on any device.

## BRAIN BOX

Brain Box is the intelligent solution that **optimises the manufacturing process.**

It is made up of a hardware device set up to **communicate with the machine** and can accommodate artificial intelligence. The Brain Box thus makes it possible to control the parameters of the machine in order to **maintain the highest production and efficiency levels** with the lowest possible energy consumption in the prevailing conditions.

Once installed the Brain Box monitors production requirements, machine speed, efficiency and energy consumption data. After two weeks the artificial intelligence then activates itself to drive the machine, **constantly optimising and re-optimising settings and throughput.**





**+ DIGITAL BOX**

**+ BRAIN BOX**



Edge Computing



Plug and play



Lower TCO



**5.5%** Increase in production



**8%** Increase in efficiency



**1.5%** Energy saving

## Contacts

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**DIGITAL**

Industrial Cyber-Physical  
Systems

