PRIMECoPILOT®

DEEP LEARNING-BASED MOTION-STEP POKA-YOKE PROCESS MONITOR

THE TECHNOLOGY TO PROTECT YOUR WORKFORCE AND PREVENT WASTE

Designed for real time checking of human-machine interaction, human, or machine actions within manufacturing. Guides human and/or machine actions with human-like, collaborative vision in order to improve efficiency, production quality and safety.

ULTIMATE FRONTIER OF **POKA-YOKE**

Primeconcept presents PrimeCoPilot: the innovative system which makes any rule-based process error-free.

Errors and anomalies are inevitable in any manufacturing process. But if mistakes are caught at the right time, the consequences can be prevented. The initial elimination of defects reduces the cost of errors, in many cases down to zero.

Our solution PrimeCoPilot uses **3D machine vision** and **artificial intelligence**, applied in **collaborative mode**, to understand the events that occur within a certain workspace. Thus, PrimeCoPilot puts a **motion-step method-based poka-yoke** in place, checking if all the

tasks of a given process have been performed correctly, in the preset order and times. PrimeCoPilot is a **real-time process monitoring** system that helps you achieve **zero-defect manufacturing** and maximize efficiency, quality and safety.

DEEP LEARNING AND 3D MACHINE VISION

Understand, classify, locate. **All in three dimensions**.

PrimeCoPilot takes advantage of an exclusive combination of cutting-edge technologies, making it unique in terms of performance and flexibility of use.
Deep learning makes the system capable of recognizing multiple elements moving in the scene – including objects which can vary in shape – without getting confused by distortions, different perspectives, variable contrasts, or objects which look not really sharp.

Furthermore, the **learn-by-example** algorithms that characterize deep learning allow the AI quotient to

increase indefinitely, with no need for human intervention. **3D machine vision** grants the system the ability to see with maximum realism what happens at any moment, with the spatial perception typical of human vision. So, you get:

▸ **A real-time contactless control, free from changes in performance over time.**

▸ **A constant, impartial, evaluation capability which allows you to classify both quality and efficiency of your process.**

A **CONTINUOUS MENTOR**

Like a real copilot, it collaborates before and during, preventing any risk.

Setting up a process control with PrimeCoPilot is easy and intuitive, in fact a **wizard** suggests how to set up the system. It is not necessary to write even a line of programming code: the approach is **totally visual** and does not require specific competencies.

After the configuration phase, PrimeCoPilot turns its attention to the workspace and interacts with human operators, machine or both, providing directions, reporting any mistake in the performance of the process under control and nipping potentially dangerous situations in the bud. Thanks to the ability to analyze **seamlessly**, even multiple simultaneous events, PrimeCoPilot offers **unprecedented reactivity** in the event of anomalies.

MAN-MACHINE
SYMBIOSIS

CONTINUOUS
IMPROVEMENT

TIME-AND-**MOTION**

The ideal copilot for never losing your way and always reaching your destination on time.

Optimizing **time-and-motion** means improving efficiency and productivity, enabling your staff to manage and execute production processes correctly.

This is the way to get great savings, eliminating all waste and minimizing costs. But the optimized work cycle is often difficult to respect, for humans and sometimes also for machines.

PrimeCoPilot works alongside those who work, whether this is the man or the machine or both at the same time.

It **collaborates** with them, in a non-intrusive but inflexible way: it **monitors** and **guides** their work in order to maximize efficiency, quality and productivity, while preserving the safety of operators as well as the performance and integrity of the machines, since it can intervene promptly in case of danger.

QUALITY

Eliminating defects at the beginning is no longer a pipe dream.

Industrial manufacturers must always solve two problems and bear two costs: identifying defective parts and removing them from production lines. Wouldn't it be better to **get only compliant items** and be free from inspecting the whole production and to discard bad parts?

PrimeCoPilot **picks out the actions** that cause defects, stopping them in their tracks thus preventing the creation of non-compliant products and **saving a lot of time and money**.

SAFETY

Eliminating risks to work in harmony.

The ever closer cooperation between man and machine, the centerpiece of the breakthrough **Industry 5.0**, harmonizing human and artificial intelligence, aims to create new forms of added value in production but poses new challenges on the front of the **safeguard in the workplace**.

PrimeCoPilot monitors in real time the safety of human operators as well as machine or both, and acts as a supervisor of their activities, establishing a climate of optimum **health and safety**, with all the benefits that result in terms of **flexibility**, **speed and competitiveness**.
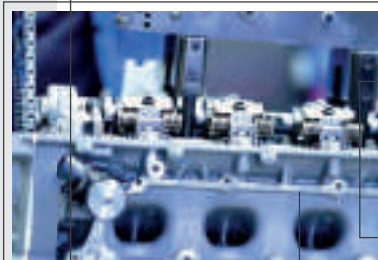
PREDICTIVE MAINTENANCE

Eliminate surprises by guessing ahead.

Opting for a model based on predictive maintenance on the factory floor is a strategic choice that has a positive impact on **business continuity**, but it is not always possible to create a direct connection with machines under control in order to acquire the necessary data.

PrimeCoPilot replaces material connections with **observation**, characterized by continuous-time and three-dimensional vision, through which it detects drifts in motion, position and pace of work. The seamless analysis of such data allows the system to predict and thus **prevent failures** that could generate damage machine downtime and safety issues.
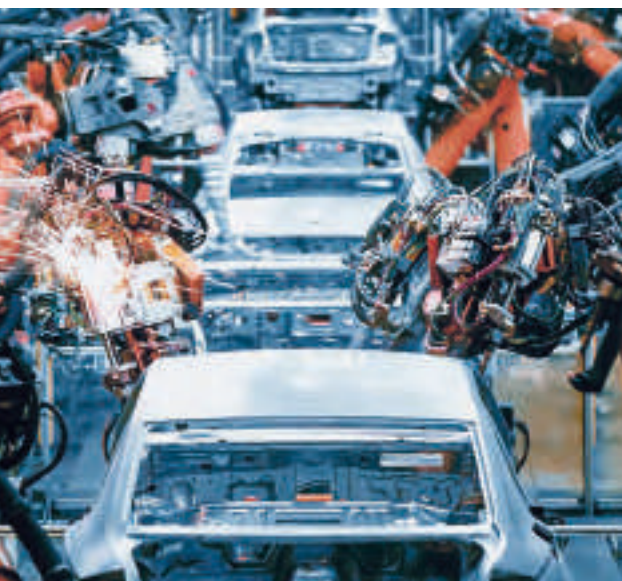
APPLICATION SCENARIOS

PrimeCoPilot's excellence is recognizable in every context

MANUAL PROCEDURES

▶ Manufacturing cannot sometimes ignore the dexterity of the human being. But this is by nature prone to error. The quality control of the manufactured items would require a subsequent control phase, not always feasible because you cannot always detect all construction defects in the finished product.

▶ PrimeCoPilot allows construction and quality control to be condensed at the same stage of production, putting into practice real-time monitoring that helps human operators, allows them to work safely, prevents mistakes and thus avoids the production of non-compliant items.

AUTOMATIC PROCESSES

▶ Any machine is prone to progressive wear and aging. This drift simultaneously affects any built-in sensors. Even if the machine is not equipped with its own alarm devices, there is no way to notice the deteriorations and failures in a timely manner. In both cases it is difficult, if not impossible, to classify performance declines and malfunctions.

▶ PrimeCoPilot is the ace up the machine builders and end users' sleeve: it is an impartial judge, independent of machines, who never loose concentration nor need breaks.

HUMAN-MACHINE COLLABORATIVE PROCEDURES

▶ Harmony between man is machine is not taken for granted. Interacting with machines is not like interacting with other people: collaborative robots don't fully anticipate human distractions either. Cobots cannot have security algorithms that are suitable for any use and can dynamically adapt to the unexpected.

▶ PrimeCoPilot dramatically lowers the risk of accidents: avoiding collisions is better than only mitigating its effects. Exploiting the capabilities of intelligent machines and technologies, and achieving full man-machine symbiosis to make production qualitatively better, is the goal of Industry 5.0.

WE LOOK BEYOND THE OBSTACLES.
WE GUARANTEE CONCRETE RESULTS

We do not stop where the others stop, but instead look ahead and ride on, always reaching targets, backed up by the most innovative technologies on the market and fueled by the desire of doing our best. Your needs, whatever they are, represent the fuel for our professional drive. Our race starts from here, the finishing line of which will be the answers to your questions by means of tangible and results. All of which will be tailored because every race has its own starting line, its path, its finishing line and more.

PRIMECONCEPT®
DEEP VISION SOLUTIONS

2007·2022
15
YEARS OF INNOVATION
PRIMECONCEPT

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