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## EUROSICMA AUTOMATION DEPARTMENT



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# PC BASED TECHNOLOGY

To grant a qualified and efficient long-term after-sales assistance for the mechanical, mechatronic and software parts, Eurosicma Group invested a lot in order to increase and stratify as much as possible its specific know-how also as far as control axis systems is concerned.

Since the nineties, due to the rapid electronic components' development and their very fast intrinsic obsolescence, **Eurosicma**, instead of employing many heterogeneous and low performance control systems available on the markets, **chose to develop a parameterized control axis software and optimized for its products which it would be able to preserve the value of the application and know how developed in the years to come.**

Preserving the value of the application and the know-how consist in **the intrinsic system's capacity of evolving together with the technological development that makes usable even more complete and performance Hw and Sw, with no significant costs and granting the interchangeability.**

To satisfy such corporate needs, in 1990 the Company **O.A.SYS, Open Automation Systems**, owned by Eurosicma, was founded.

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The driving goals that led to the development of the control axis system have been:

- the absolute separation and independence **between the employed hardware parts and the software**;
- both the components as **standard** as possible, that is independent from the manufacturer, and for that reason available from multiple sources;
- use of software components, such as Operative system and fieldbus, that are both standard and **“open source”**.

The most suitable technology to achieve the main requirements was found to be the **PC Based Technology**.

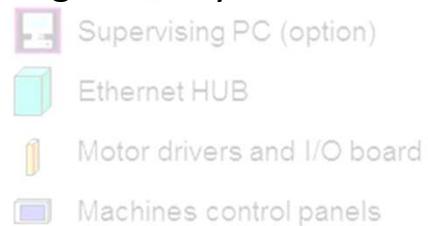
Thanks to this courageous choice, Eurosicma was and is still able to support its Customers, supplying autonomously the electric and electronic spare parts primarily installed or, in case of components out of production, Eurosicma is able to supply the currently ones, granting the full compatibility. **Our machines have the great quality of rejuvenating and updating with minimal costs. Past, present and future become one thing.**

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Since 1997 the PC based architecture has drastically simplified the realization of any project. All the projects, from the simplest to the most complex ones, are equal and what changes is only the number of the linked elements.

The configuration is essential:

- industrial PC
- an open operating system
- a fieldbus that interconnects the I/O cards, and the control drivers of the brushless motors.



**Since 1997 up to now, over than 1500 controls have been employed and over than 15.000 fully digital servo-drives have been linked to the fieldbus. In 2011 have been installed 200 controls and 1.500 fully digital servo-drives.**

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To achieve all the aims, Eurosicma has dedicated continuous investments and evaluations of which standards have to be employed, reaching the complete project realization in 2011, with the following features:

- A free choice industrial PC (wide choice of the producer)
- An “open source” operating system, more reliable and safe such as “LINUX”
- A fieldbus that is “Ethercat”, the only one able to grant the four essential requirements:
  - ✓ **high technical characteristics in terms of speed and reliability;**
  - ✓ **open source;**
  - ✓ **ETHERNET HW standard support**, present in any PC without the need of additional interface cards;
  - ✓ **A standard universally and even more spread on the market.**

This grants interchangeability of the components of different producers since they correspond to the rules and specifications of the Ethercat Technology Group (ETG).

**Hardware and software elements are two separate entities**, therefore it is possible the updating of only one part to implement and improve the performance of the machine.

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Eurosicma has paid significant attention to the **organization of the software** according to rules and choices, able to grant evolution and long-term protection.

- The operating System Linux allows to benefit from all the intrinsic safety and protection options and allows to use all the standard existing connection characteristics.
- The application software has been organized and divided into specific layers according to the dedicated function, that is:

- ✓ **HMI-Human Machine Interface**
- ✓ **Integrated diagnostics**
- ✓ **General management of the machine according to the state functional chart**
- ✓ **Axis control**

All the layers mentioned above are developed autonomously in order to be updated and separately used also on different HW platforms and they exchange the necessary information by means of the usage of shared memory areas and according standard protocols.

In this way, it is possible to share all on a unique CPU with a suitable processing capacity or, as alternative, using an intelligence for the HMI, a separated one for the machine control and eventually a separated one for the axis control. This allows, upon request, to use and combine different HW configurations.

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The machine software has gradually evolved, from a programming language “C” to standard ISO languages and according to the rules expected from the unions “**OMAC**” – Organization for Machine Automation and Control and “**PackML**”, which are more specific for the Packaging sector.

All the components, that is the Linux operating system, of the software configuration options are registered in a **continuous updating library** by the Automation Department. The methodology requires and grants the principle of the **compatibility of the releases, therefore the latest versions of the software can be installed also on machines previously supplied.**

Practical examples of the advantages coming from the employment of the PC Based Technology are that **applications realized 15 years ago can be easily adapted to the current technologies and that, for all the machines supplied, for the oldest ones too, any kind of spare parts are always available.**

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