

**ENERGY
SAVING**

MADE IN ITALY

AGRATI
DIE CASTING MACHINES

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AGRATI SYSTEM FOR CAST CONTROL WITH CAMERA

The use of the camera in the die-casting process has the function of safeguarding the correct functioning of the mould, by verifying the presence or absence of foreign bodies of zamak inside it after the cast has been extracted.

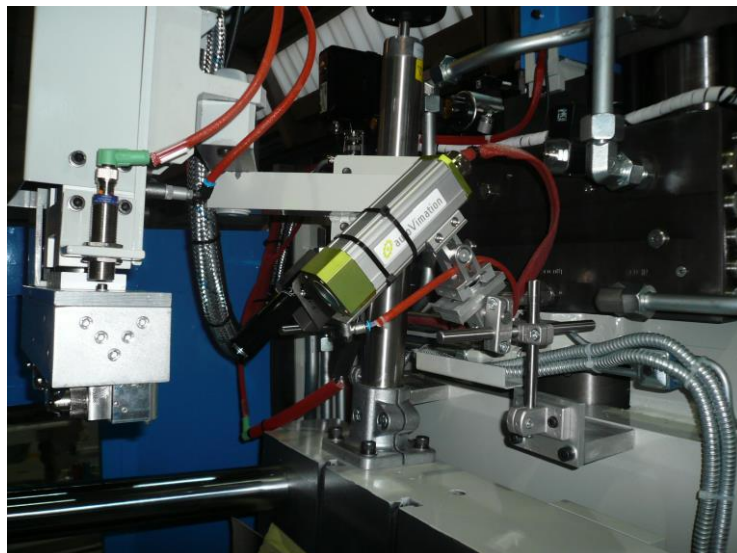
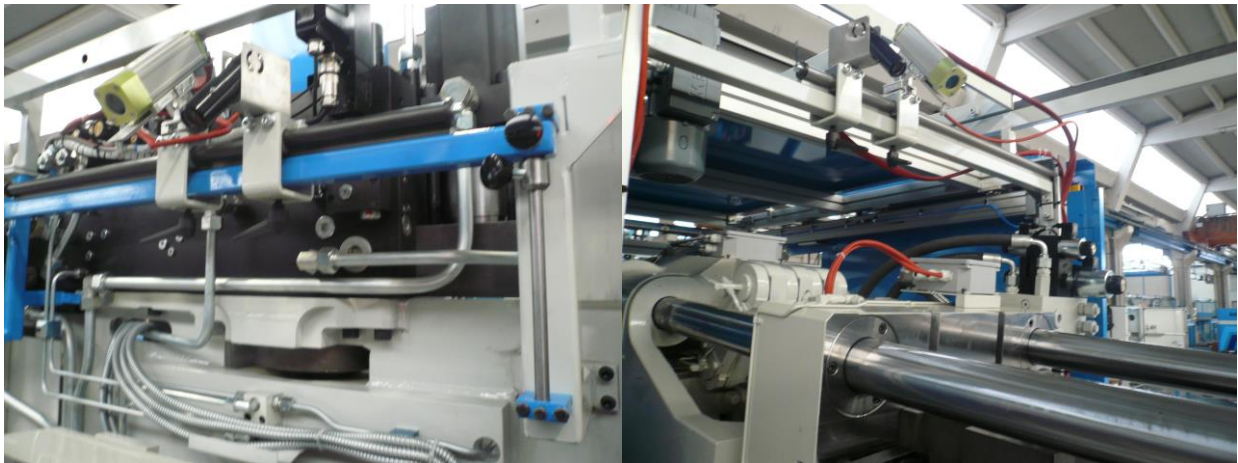
As it is well known, the presence of even a small zamak residue can cause, with the subsequent closure of the mould, the breaking of the mould itself, with the consequent long machine stops and loss of production hours, as well as the obvious expenses for repairs.

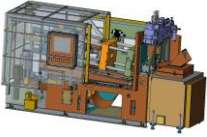
This system minimizes the possibility of closing the mould with residues inside it and offers an excellent contribution to productivity and to the integrity of the mould and the machine.

The system consists of two cameras, one for each mould part (fixed part and moving part), two illuminators and a computer capable of processing images in an extremely short time.

Both the cameras and the illuminators work on the infrared spectrum, so that any artificial light present in the work environment (such as shed lighting or other) is irrelevant for the purpose of viewing and controlling the image.

The cameras and illuminators are mounted directly on fixed parts of the machine, on sliding guides, or articulated positioning systems. Here are some examples (in the absence of a vertical lubricator or in the presence of a vertical lubricator).





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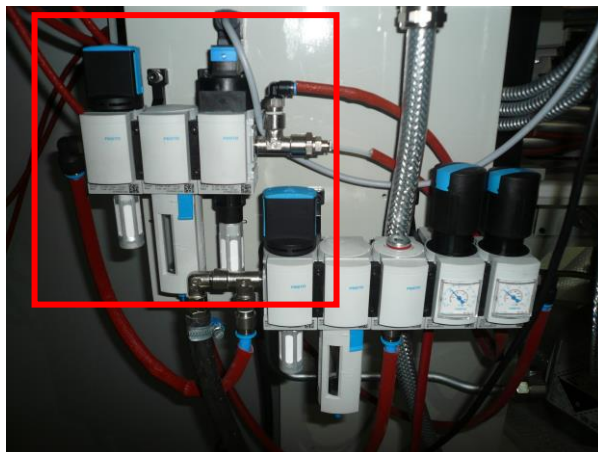
The integrity of the cameras is guaranteed by a shell with IP67 protection rating. On the front surface of the enclosure, in front of the camera lens, a jet of air is directed in order to keep the lens protection glass clean.

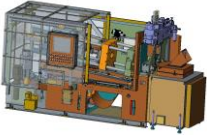
Given the environmental conditions of a foundry (lubricating oils, fumes, vapors) a glass cleaning of the protective casing is recommended every 3/4 hours of work.

Here is the photo of the detail:



The screen cleaning system, by means of an air jet, is operated by a pneumatic valve, activated by the commissioning of the cameras; upstream of the valve is a filter for cleaning it.





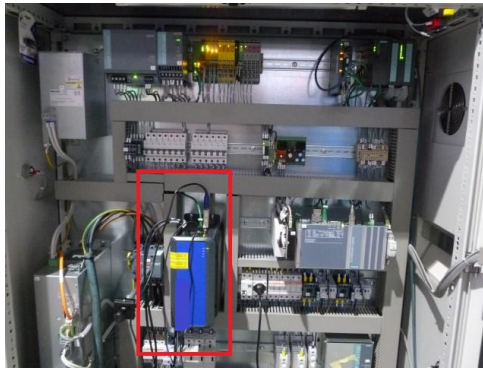
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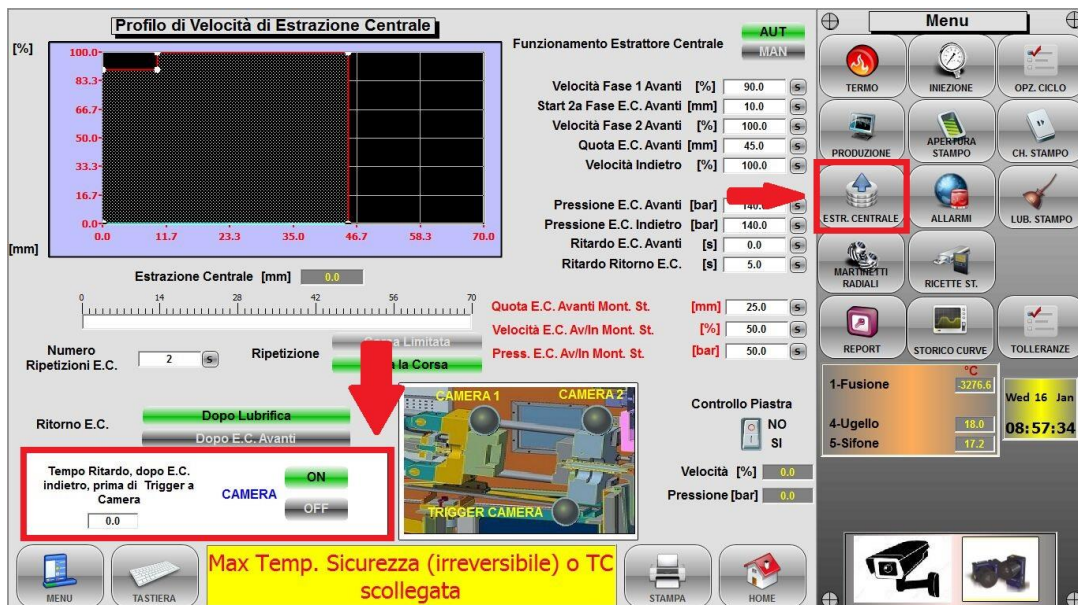
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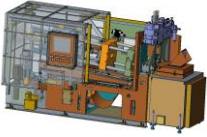
In case of installation on a new machine the system control apparatus is inserted inside the main electrical cabinet of the machine; for non-original equipment applications it is necessary to check the space inside the cabinet and possibly provide an outdoor installation.



The whole system is managed by a dedicated program controlled by the machine's touch screen. In order to facilitate image setup operations, a keyboard and an external mouse are also installed. Here is the control enable page on the machine screen:



Enabled the control, in automatic, the air flow for cleaning the screen is activated and, when the machine motor is running, the two illuminators are powered.

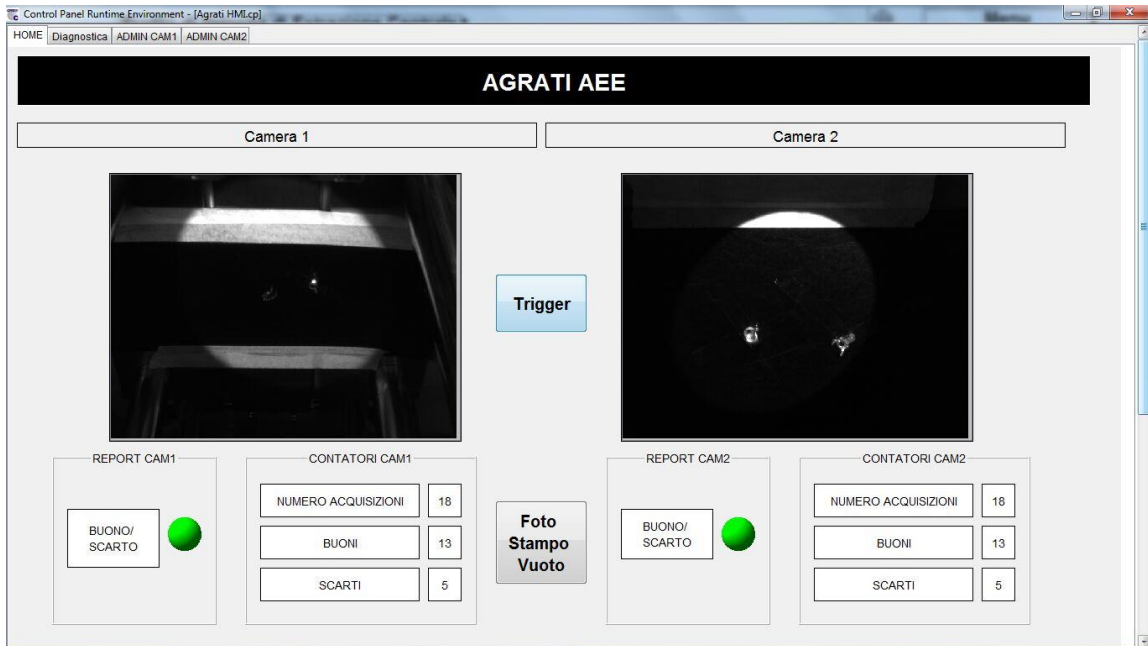


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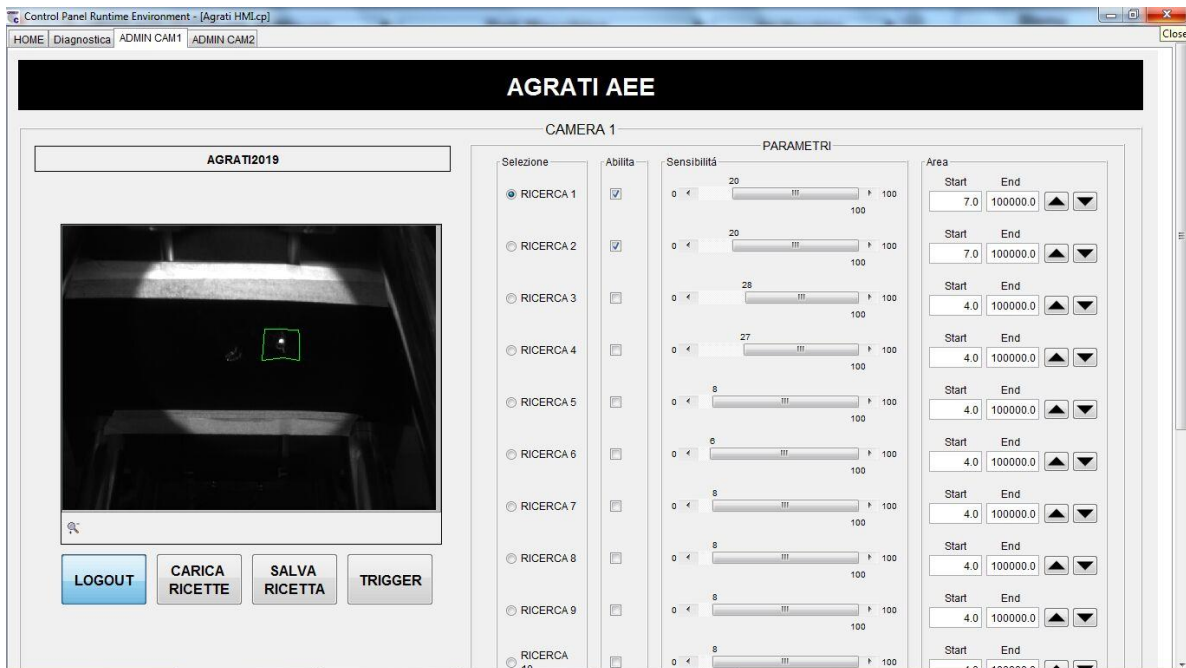
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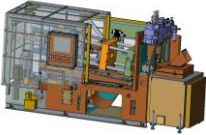
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The initial phase involves the vision and the centring of the image of the mould to be checked, going to set the various areas to be controlled. Up to 32 zones per mould can be controlled (16 for the fixed part and 16 for the mobile part). The control can be carried out by selecting figures such as polygons, circles or rectangles



It is then possible for each controlled area to assign a tolerance (in percent on a grey scale) and control the number of pixels on the selected area (fine / coarse) through two selectable values for each zone.



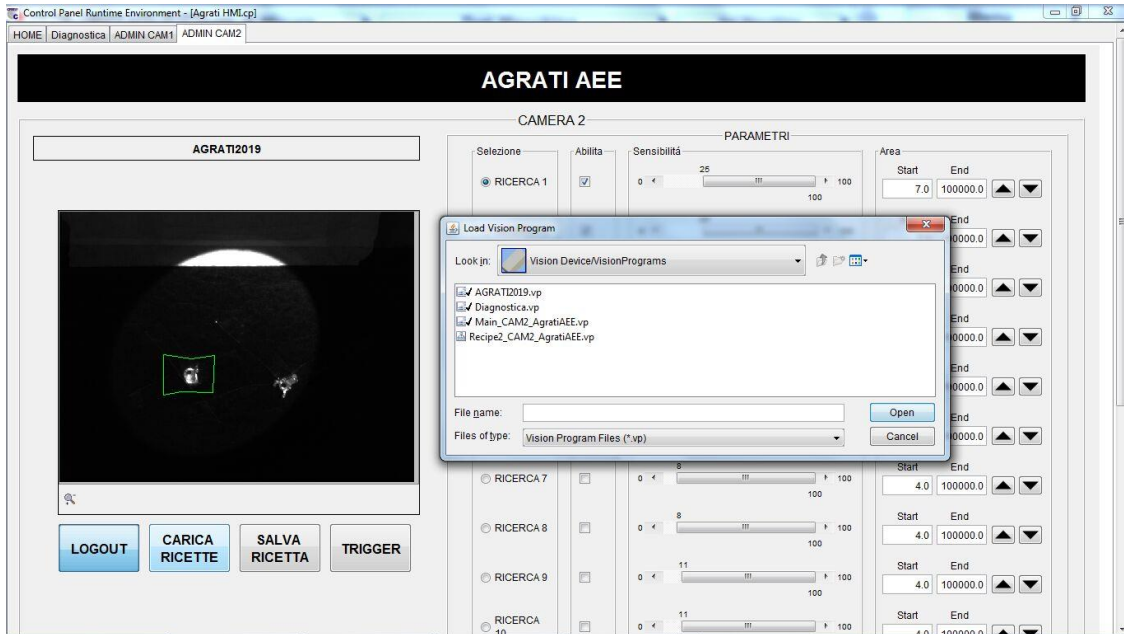
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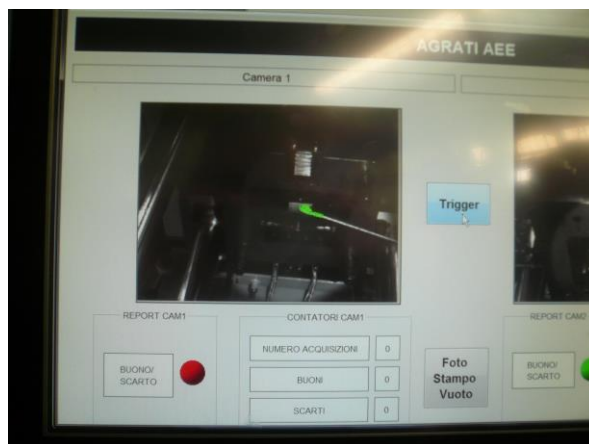
Once the areas to be checked have been selected, it is possible to save the recipe of the mould in order to then recall it to the next use of the same mould.



Before starting production, we proceed to make a photo of the void mould, resetting the counters on the screen, and then proceeded to casting. The setting operation, unlike other systems on the market, is very fast and intuitive.

During production, in order to make less frequent the possible problems that the fumes or the mists of the lubricants could have on the images, the system is able to perform up to 25 acquisitions and verification of the image in the arc of only half a second. The acquisition and comparison time for a single image is 0.02 seconds.

In the event that after these checks the image is different from the original state, the system puts itself in alarm and stops the cycle.



The purpose of this system is to preserve the mould and still guarantee an adequate productivity. The optimal conditions of use have to be tested on every single mould and on specific working conditions.