20 years of experience at your service.

We have been designing artificial vision systems dedicated to product quality control and production line management for over 20 years. Every day we put our know-how at the disposal of companies, helping them create added value for their customers.

Industry 4.0

All the software developed by Imago meets the requirements of Industry 4.0.
The IOT, the network interconnection between machines, allows production data to be always available and to intervene in real time in case of drifts and repeated errors due to variables on the machinery. This allows us to constantly maintain a high production standard.

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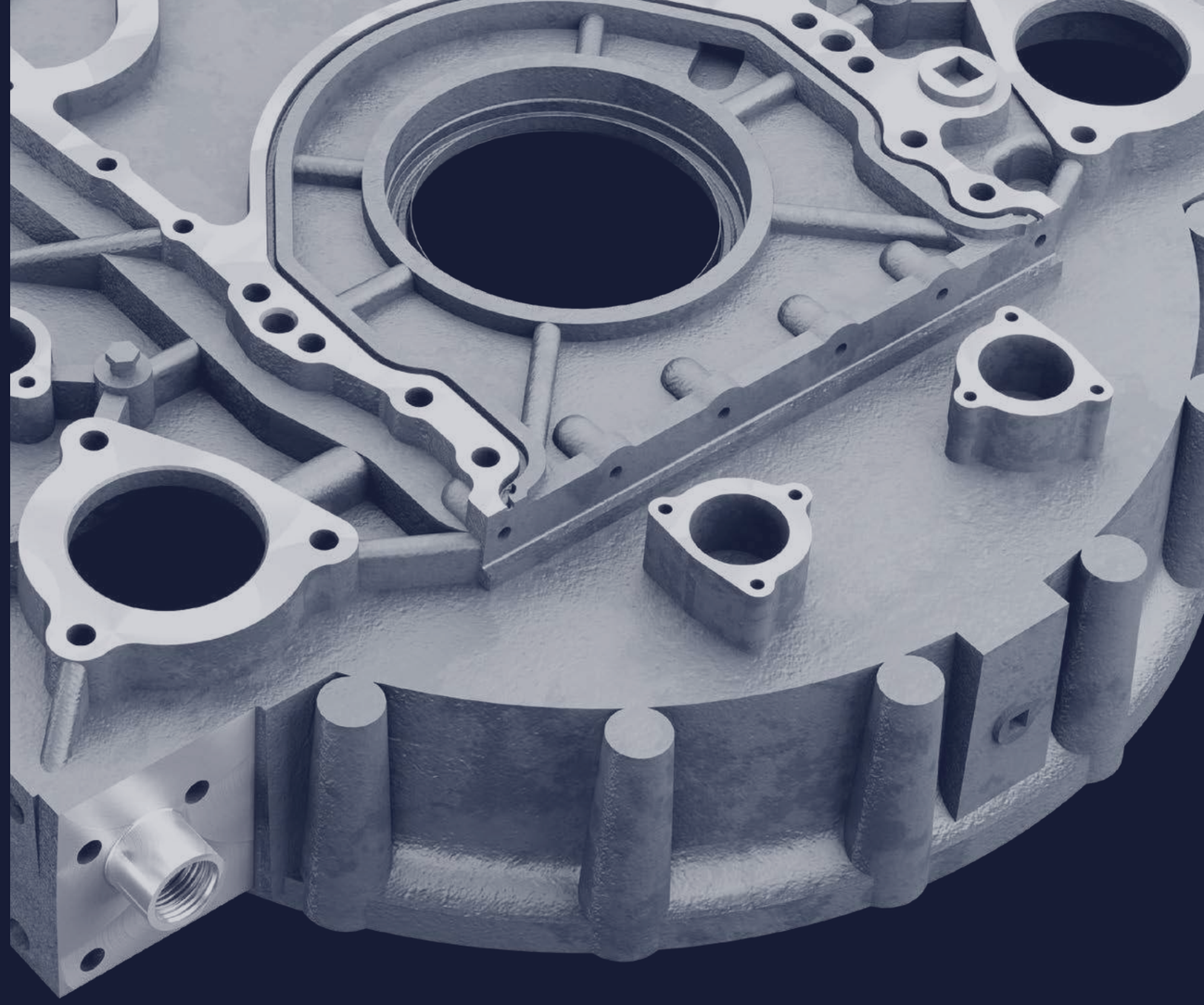

Vision systems for die **casting**

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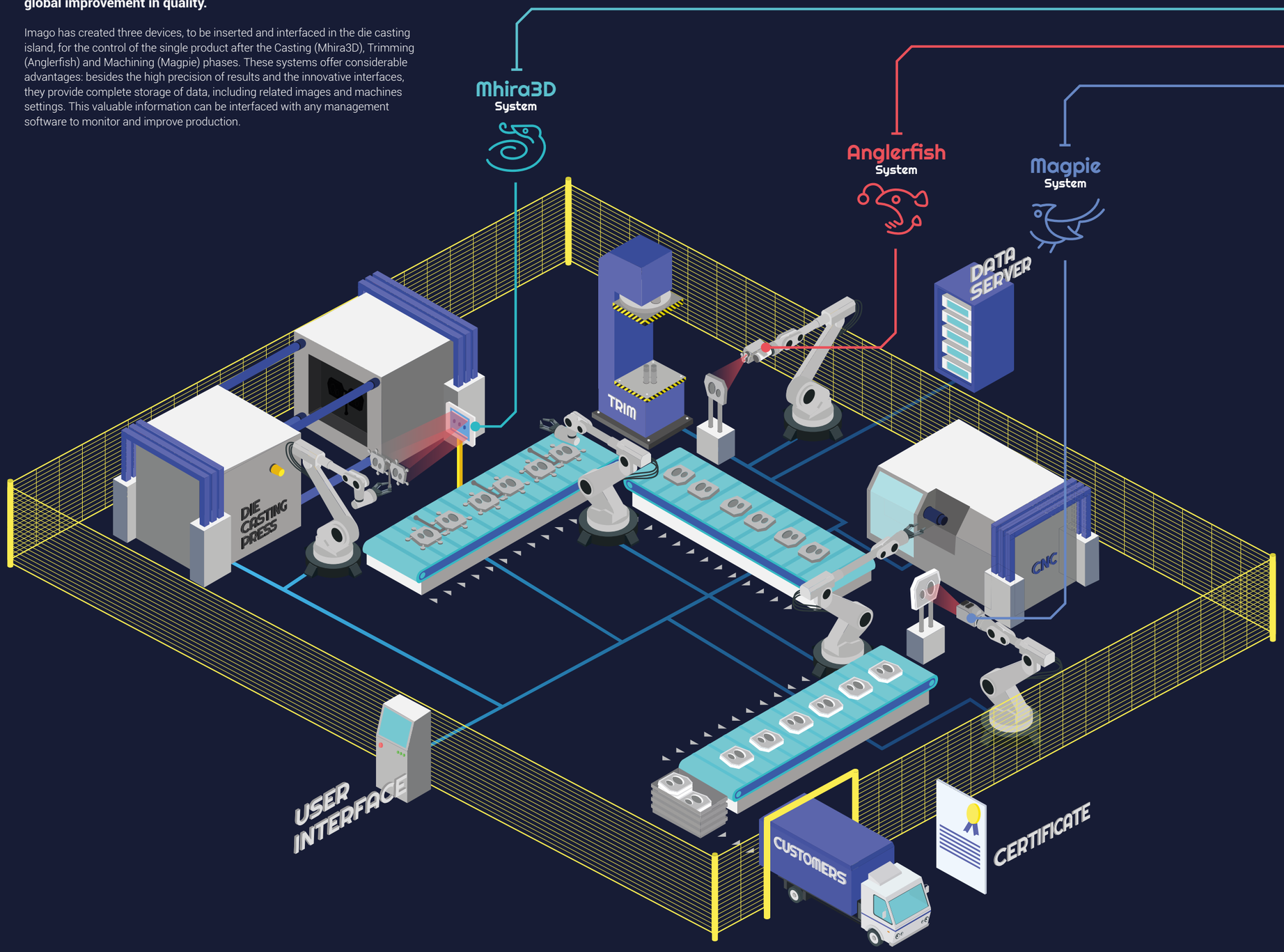
Modern die casting products require specific, objectified and documented quality controls. This kind of technology can't anymore rely on the naked eye for the searching of defects. Besides an effective inspection, a complete control during all the production cycle phases allows to trace the whole production and to interact in real time with the machines, for a consequent global improvement in quality.

Imago has created three devices, to be inserted and interfaced in the die casting island, for the control of the single product after the Casting (Mhira3D), Trimming (Anglerfish) and Machining (Magpie) phases. These systems offer considerable advantages: besides the high precision of results and the innovative interfaces, they provide complete storage of data, including related images and machines settings. This valuable information can be interfaced with any management software to monitor and improve production.



Mhira3D

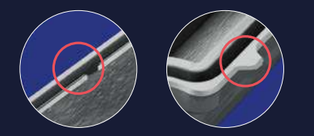
Casting integrity control, thermal analysis and thermoregulation management immediately after extraction from the press

As soon as the piece is extracted from the press, it is immediately checked by the robot in the clamp (as is done with the proximity sensors). The vision system is three-dimensional and is able to verify the integrity of the piece with extreme speed and precision even in its most hidden parts. At the same time the instrument carries out a thermographic mapping that shows any thermal drifts even in small areas of the piece. In addition, the gripper is checked to prevent damage in the subsequent Trimming phase. Thanks to the thermographic map, it is possible to act on the cooling and identify any defects in the die. All this with a cycle time of less than one second. Mhira 3D is the first device to allow defects control in the piece and thermographic survey at the same time.

Anglerfish

3D integrity check, post-Triminig deformations and breaks

After Trimming, it is very important to check the integrity of the piece. Anglerfish performs this type of control in 3D and inspects the flatness and regularity of the trimmed areas, detecting excesses or defects of material up to 0.2 mm and eventual, even partial, occlusions of the holes. By this method, defects that become visible only after Machining can be prevented, thus avoiding waste.



Magpie

Checking machined surfaces at end-of-line

Machining can bring out types of defects that are not visible before, such as porosities, and that can cause damage, such as broken edges or non-compliant burr residues. Thanks to Magpie the porosities are identified by size, density and distance. Centesimal burrs are detected both in the holes and on the edges, whose integrity and regularity are checked. The following are also checked: the degree of surface finishing of the work, the presence of cracks, breaks and dents. This total end-of-line control allows us to supply the customer with only compliant parts.

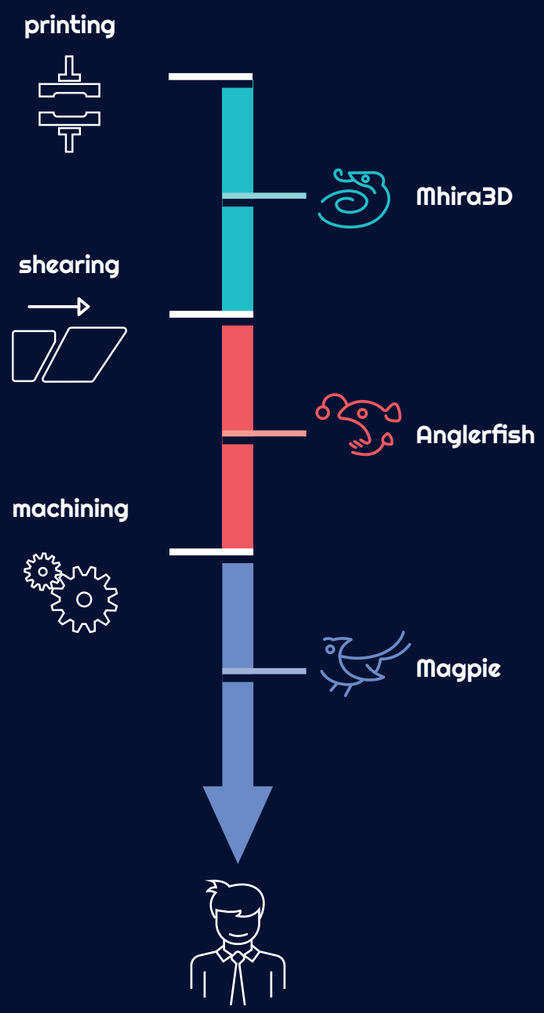
Industry 4.0

All the software developed by Imago meets the requirements of Industry 4.0. The IOT, the network interconnection between machines, allows production data to be always available and to intervene in real time in case of drifts and repeated errors due to variables on the machinery. This allows us to constantly maintain a high production standard.

Productive
process

Imago has developed three devices for total control of the die-casting production process.

These systems, which were designed to be inserted and interfaced into the die-casting island, are used to carry out the checks after the moulding (**Mhira3D**), blanking (**Anglerfish**) and mechanical processing (**Magpie**) phases.



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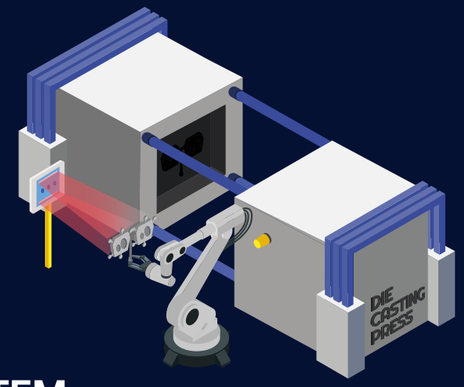
Mhira3D



VISION SYSTEM FOR DIE CASTING

Mhira3D

Print integrity control, thermal analysis and thermoregulation management immediately after extraction from the press

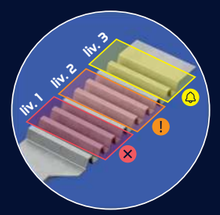
3D ANALYSIS
Verification of integrity and completeness of the print

▸ 3D.01
Proofs of injection
Checking the presence of all injection proofs by an easy and intuitive configuration

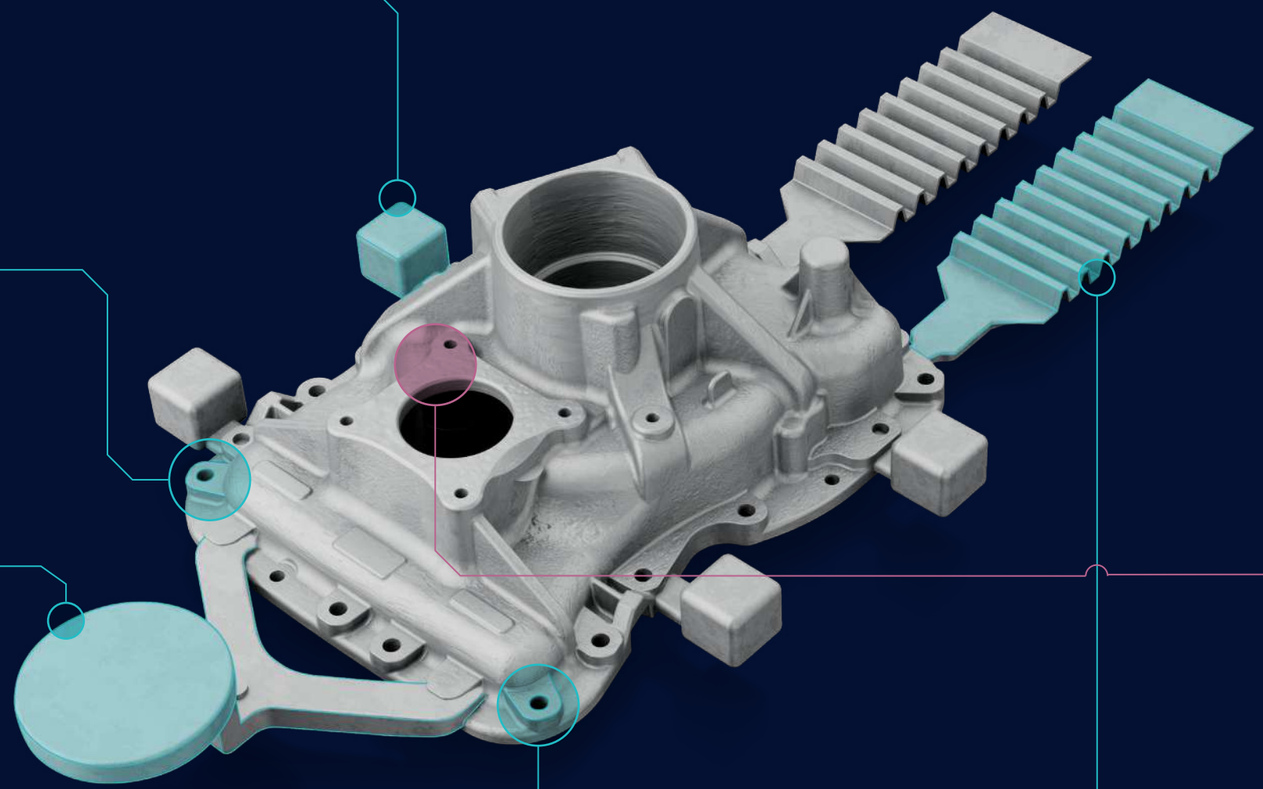
▸ 3D.02
Integrity
Integrity check of the piece and checking the presence of all the figures of the print (for Multi-print molds)

▸ 3D.03
Grip
Control of the gripping position in a robot gripper for the following depositing in shears

▸ 3D.04
Broken pins
Identification of any broken plug*



▸ 3D.05
Chill-vent
Measurement of the chill-vent completeness according to the expected criticality levels

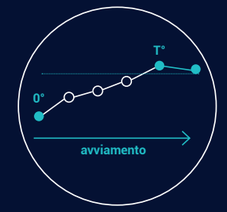


Track & Trace and Production Reports
Objectified and tracked checks for each individual piece. Data storage and display for statistical analysis of production and process optimization

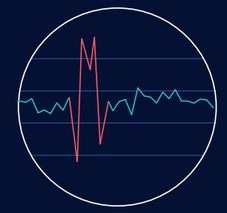
Three alarm levels
A different criticality level can be associated with each 3D control to offer differentiated management depending on the defect found

THERMOGRAPHIC ANALYSIS
Thermographic mapping of the piece for an early interception of thermal drifts and consequent optimization of the production process

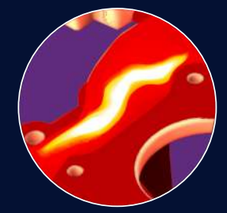
TH.01 ◂
Start-up
Start-up control to optimize the number of initial waste



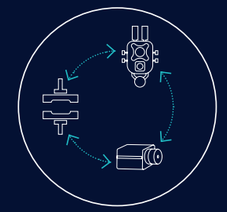
TH.02 ◂
Monitoring
Detection of mold temperature variations and possible production drifts



TH.03 ◂
Local overheating
Detection of thermal anomalies in the most critical areas of the piece



TH.04 ◂
Thermoregulation
Automatic interaction with the thermoregulation and lubrication systems in the test phase



* subject to conditions

Productive
process

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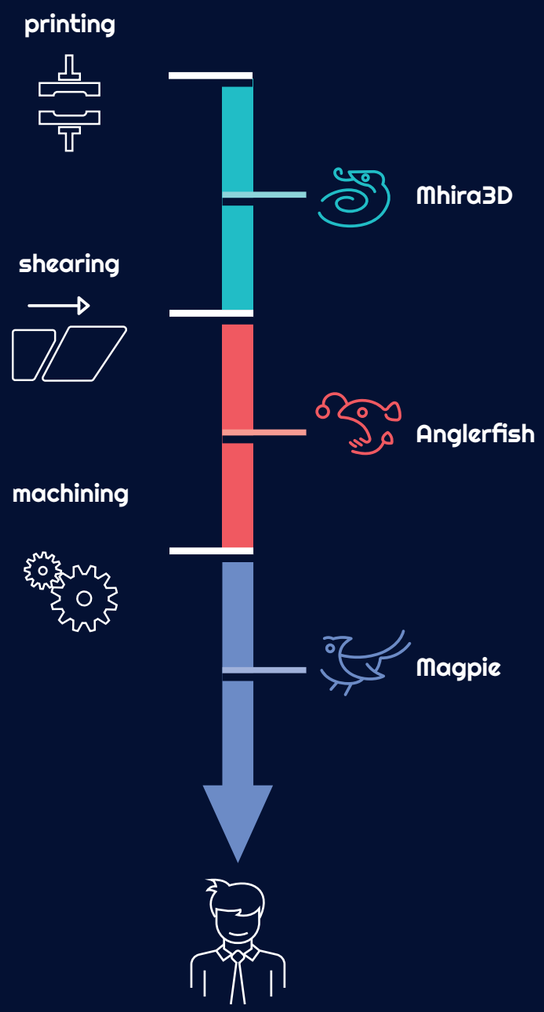

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Anglerfish

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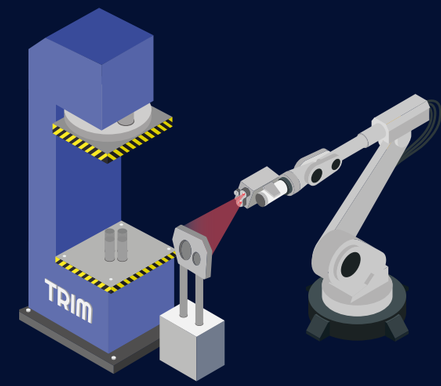
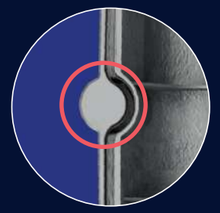


VISION SYSTEMS FOR DIE CASTING

Anglerfish

3D integrity check,
post-shearing deformations and breaks

▸ 01
Dimensional Control
Complete control of the integrity and conformity of the piece through reconstruction and 3D models comparison

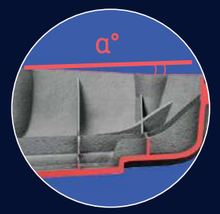


▸ 02
Occlusions
Checking the opening of holes and interception of occlusions (even partial) due to the presence of burrs or broken plugs

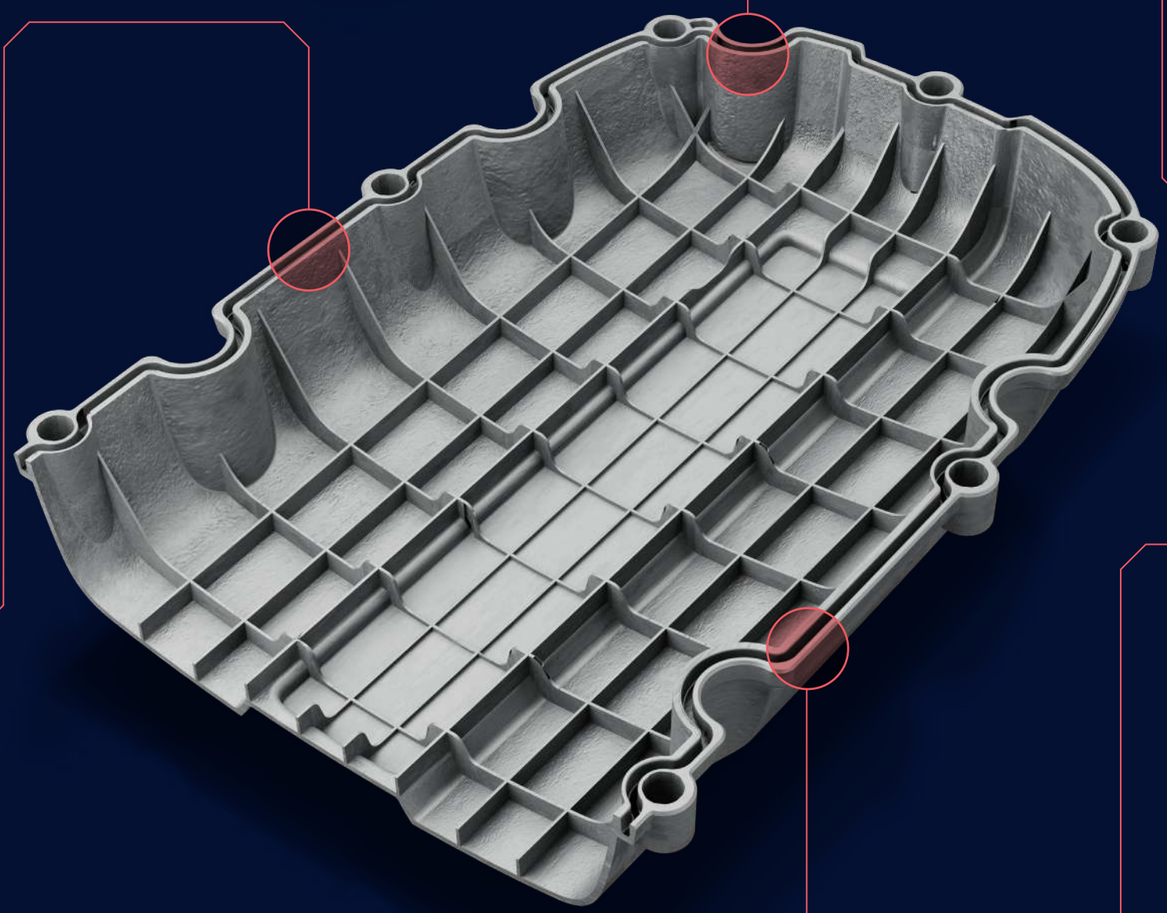
▸ 03
Cracks
Detection of cracks in the surface areas of the piece*

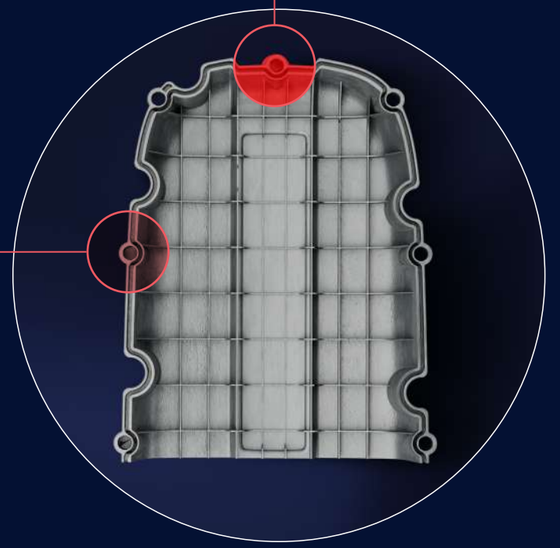
▸ 04
Lack or abundance of material
Identification of material excesses or lacks due to molding or shearing problems

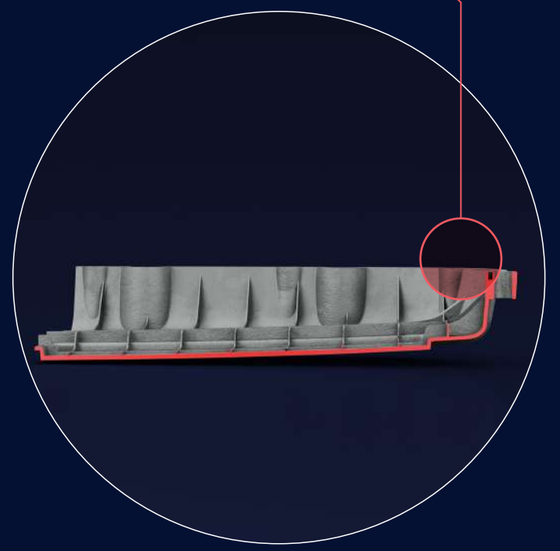
▸ 05
Regularity
Regularity check of cut areas



▸ 06
Flatness
Detection of any planar deformations of the piece







Tracking & Reporting
Objectified and tracked checks for each individual piece.
Data storage and display for statistical analysis of production and process optimization

Product identification and marking
Reading and marking of DataMatrix, QR code, Barcode and various types of stamps

* subject to conditions

Productive
process

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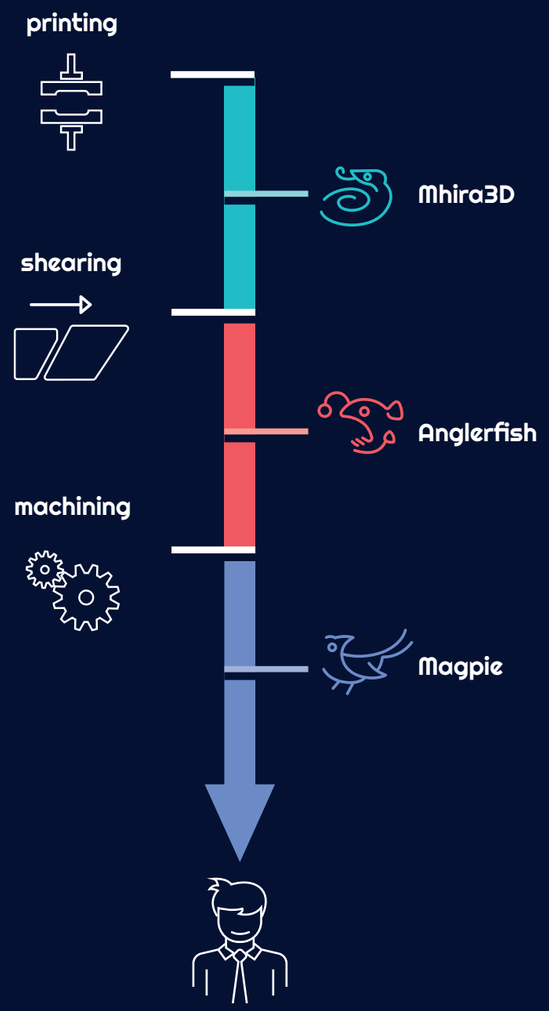

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magpie

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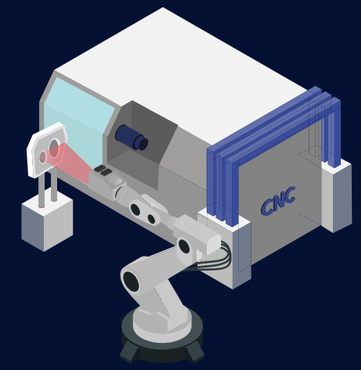


VISION SYSTEMS FOR DIE CASTING

Magpie

Checking machined surfaces at end-of-line

01
Porosity Control
Detection and measurement of porosity; the acceptance criteria can be set according to your needs

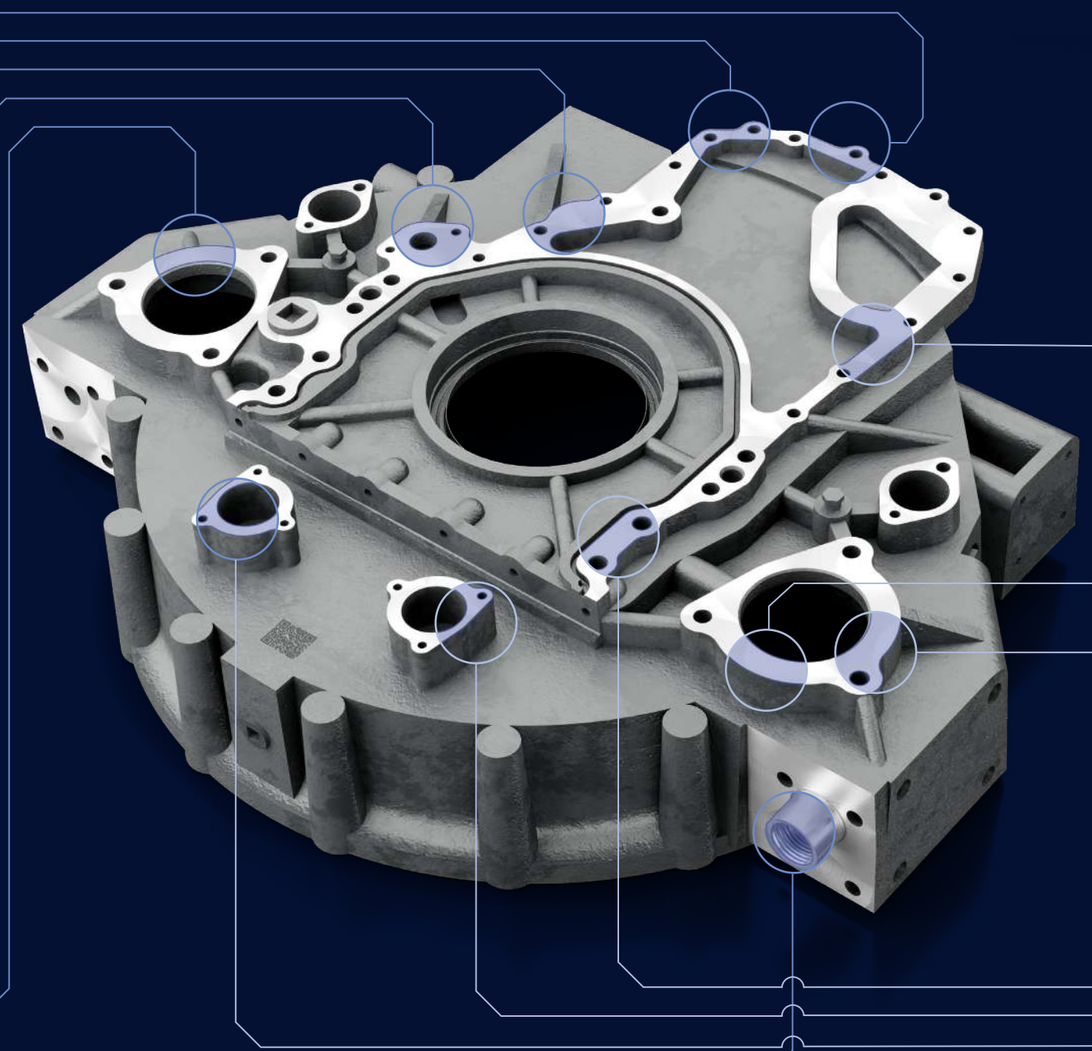
02
Size criterion
to select porosities based on their maximum size

03
Numerosity criterion
to select porosities based on number and size

04
Distance criterion
to group porosities based on size and distance, both between them and with respect to the edge

05
Concentration criterion
to analyze the concentration of porosities in a specific area

06
Internal porosity
Porosity control inside less than 10mm diameter holes



Tracking & Reporting
Objectified and tracked checks for each individual piece.
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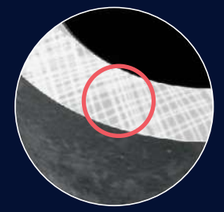
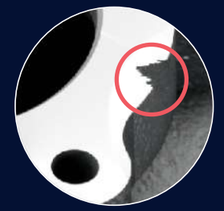
Product identification and marking
Reading and marking of DataMatrix, QR code, Barcode and various types of stamps

07
Burrs and chips
Identification of residual burrs and shavings both in the holes and on the edges

08
Finishing
Superficial finishing degree and completeness control for possible defect on the weft or lapping



09
Unfinished parts
Detection of unmachined areas



10
Edges
Integrity and regularity check of the edges, as well as dimensional control of the machined surfaces both in an absolute sense and by comparison with a reference master

11
Cracks, Breakages & Dents
Identification of the main surface defects on the machined areas*

12
Measurements
Dimensional checks of holes and processed shapes by the use of optics without distortion and by hi-tech systems.

* subject to conditions