

ALLIANCE-MIM

*to  
those who  
think  
otherwise*

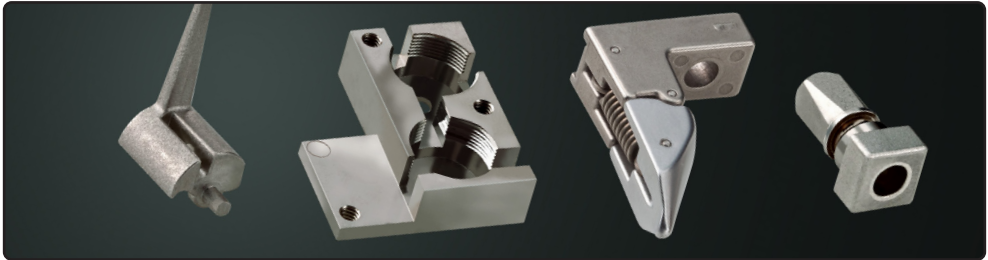
SINCE 1995

**Alliance-**mim

THE DIRECT MANUFACTURING COMPANY

**Alliance-MiM** designs, manufactures, and sells microtechnology products and solutions with a high metallurgical and technological content. Our expertise rooted in attention to detail has led us to several sectors in which we have become specialists.

Watchmaking and appearance parts - Critical technical and aeronautical components Biological and medical engineering - Miniaturised mechanisms and locksmithing.



Our objective is to make the use of metal injection moulding (MIM) essential for the manufacture of complex technical and microtechnical products. Our vision, centred on technical expertise, is to do this through collaborative engineering with our partners. We live **BY** the technology and **FOR** the customer. Our ambition is to deliver our customers with the right products, at the right time and in the right quantity. We see no alternative. To achieve this, Alliance-MiM has put the lean strategy at the heart of its engineering and manufacturing. The quality structure is certified by ISO 9001, ISO 13485 (medical), EN9100 (aeronautics).

**To control our lead times and guarantee performance, we have chosen to internalise the majority of the operations, from the design and manufacture of moulds to the finishing operations, including a complete metallurgy laboratory.**

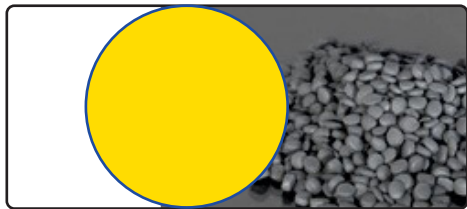
The combination of innovative, clean, material and energy-efficient technology with a lean vision makes it possible to develop and produce responsibly in order to support the greatest challenge facing all of us: zero emissions.



### LEAN & GREEN MANIFESTO

- Anytime there are quality flaws, it impacts the environment. Building quality is an eco-friendly act.
- Each time stock is created, natural resources are wasted. Lowering stock is a green initiative.
- Each time a poor process is implemented, pollution is generated into the environment. Designing within the process boundaries is a sustainable move.

## Les étapes clefs du process Alliance-MiM :

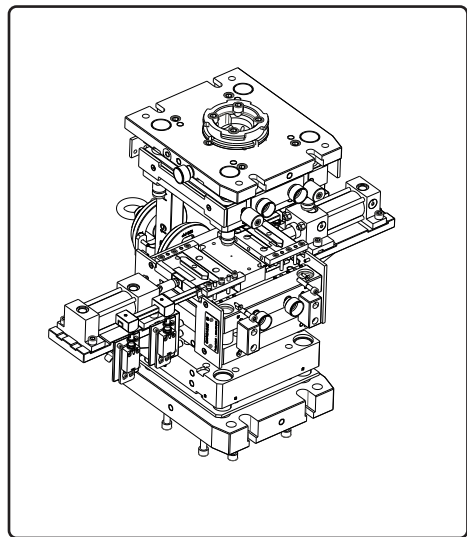


### N°1 — (☺ figure on the left)

The base material, called feedstock, is a mixture of ultra-fine powder (20  $\mu\text{m}$ ) and polymers. This is the starting point of the technology. The following steps transform this material into products that can be used by our customers.

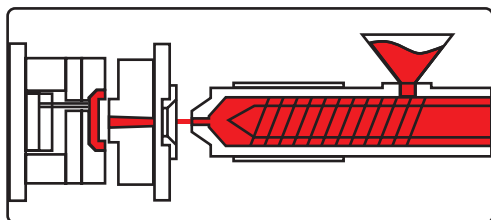
### N°2 —

Engineering in collaboration with the customer to define together the best possible MiM product, with a view to its integration into the final assembly. A part delivered by Alliance-MiM is not a product in itself. It is a component of a larger whole and must interface perfectly with the other parts of the whole. As such, we consider that a product does not exist until its control plan is perfectly defined. A dedicated project manager for each customer is in charge of defining this control plan. The resulting specifications serve as starting point for the design and production of the required tooling.



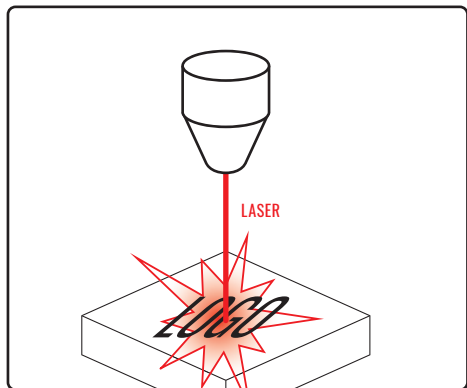
### N°3 — (☺ figure on the left)

The injection tooling and all peripherals are designed and built in-house. The use of simulation software allows us to quickly evaluate critical points and to carry out rapid developments.



### N°4 — (figure above ☺)

Shaping by injection or printing (see dedicated paragraph) to obtain an injected part also called a green part.

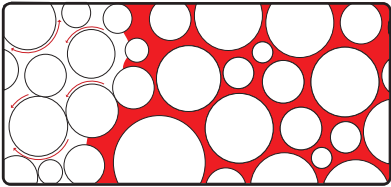


### N°5 — (☺ figure on the right)

Possible additional operations on the green part. Moulding does not allow for all types of shaping and is not always suitable for multi-versioning. In order to control costs as much as possible, Alliance-MiM works on the green part before the rest of the process. For example, the injection points can be engraved, micro-drilled or milled at this stage with great efficiency and without burrs.

**N°6 —**

Placing the parts and building up the loads for the rest of the process. Qualified operators check and deburr the moulded parts and arrange them on special supports in the most appropriate way. This is a stage where attention to detail is of the utmost importance and ensures the compliance of edges and surface finishing to requirements.

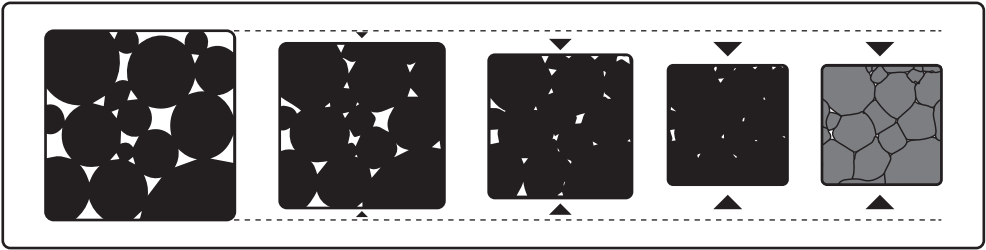


**N°7 —** (☺ figure on the left)

The debinding process removes the thermoplastic binder while retaining the shape. powder, plastic

**N°8 —** (figure below ☺)

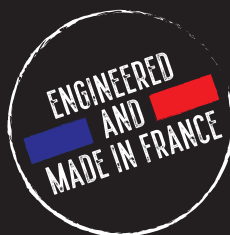
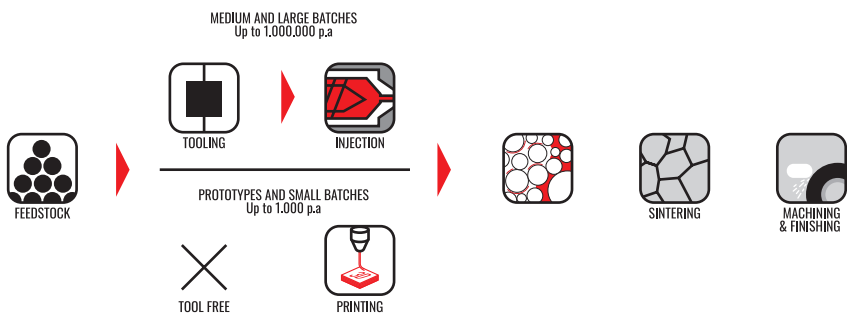
Sintering based on atomic diffusion, which gives cohesion and density to the whole the that guarantee the standard properties of the material. This treatment is accompanied by controlled shrinkage.



**N°9 — Additional operations and finishing** (figure below ☺)

After being fired at high temperature, the parts are often slightly deformed. A recalibration step may be necessary to guarantee the geometries and tolerances typical of the micromechanical industry. The parts can also be completely finished, as Alliance-MiM has in-house control of all the classic complementary operations (multi-axis milling, tapping, turning, polishing, welding, gluing, lacquering) with the exception of heat treatments and surface coating processes.





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