BILSA

MANUFACTURING TECHNOLOGIES

about

Bilsa was founded in Istanbul in 1993, and it is currently located in one of the leading industrial areas in İstanbul. Bilsa has been manufacturing components with metal injection molding I MIM, machining, investment casting, forging, and extrusion methods since its establishment.

Bilsa is a solution partner that manages unique customer relations to understand the needs of its customers. As Bilsa, we serve professionals in many industries, specializing in defence, automotive, medical, steel, electric, hand tools, and textile industries.

Mission Statement

To provide quality products to today's essential sectors by adapting to technological developments and minimizing the margin of error.

Vision Statement

To become a worldwide supplier with our production methods that we continuously innovate and develop.

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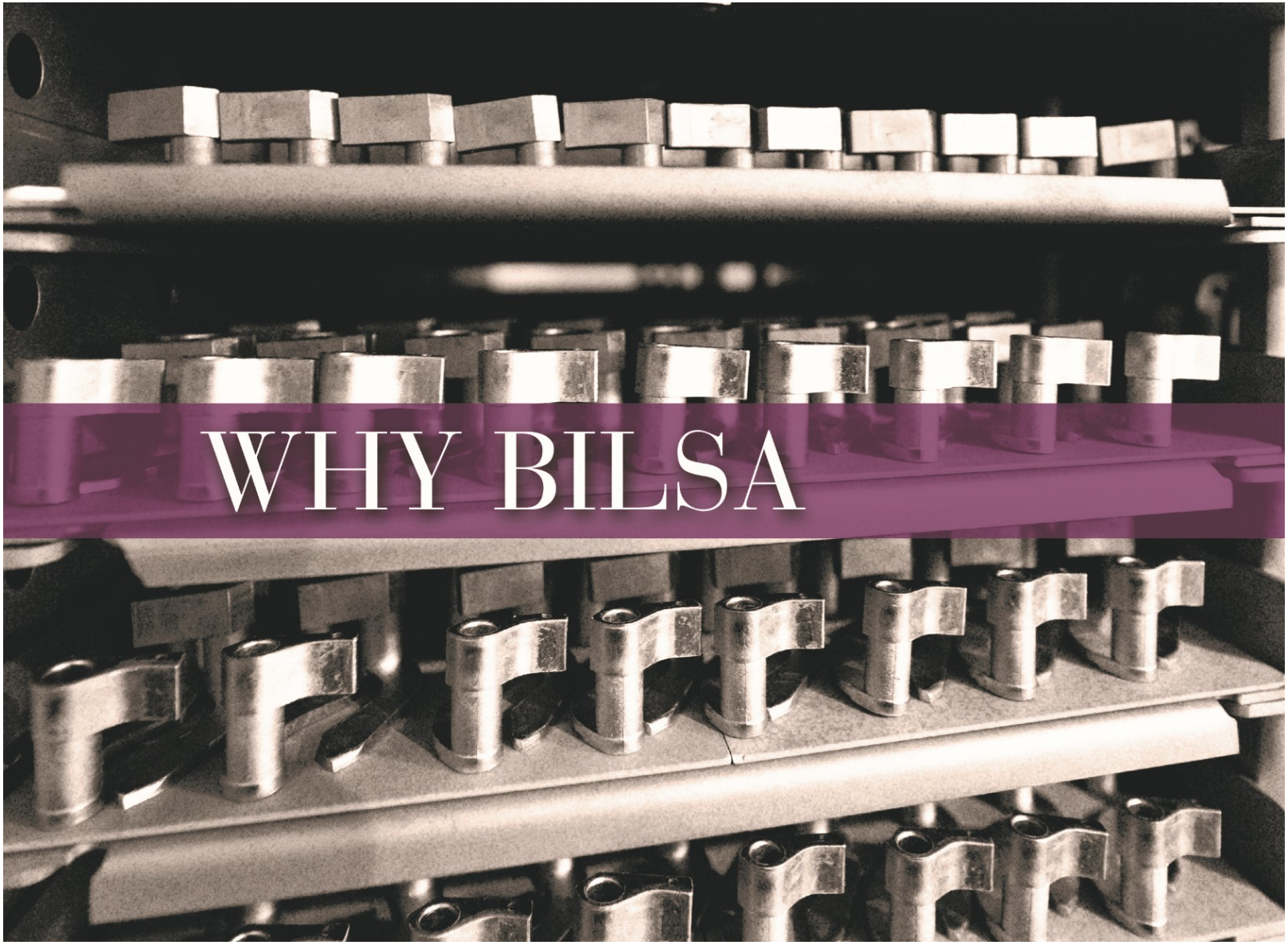

WHY BILSA

Bilsa offers a customer-oriented manufacturing service with its expert team, high-quality machinery, and quality control department. We eliminate potential problems that may arise during the production process to perform high-quality production. Technical capabilities and production dominance, which make Bilsa a preferred name in the sector, are observed in every product we produce.

To achieve the privilege that you need in your products, we are at your service with our expert team and advanced production methods.

Process Innovation:

Bilsa is committed to providing the quality and the performance that you and your customers deserve. Our team of experts who strictly follow innovations, help you overcome production issues. After analyzing the components, we share all the information with you to make sure you understand why innovating the standard manufacturing process is important. We ensure to present the components you need with a production method that will advance the components.

Performance:

The production method that can improve the performance and the function of the components is determined, and production is carried out at the lowest cost. We consider every part we produce special that we ensure to perform the necessary controls and applications for the most effective use of the components.

Also, metal injection molding helps us to provide faster results than other known production methods: it reduces lead times and inventory cost.

Efficiency:

As Bilsa, our goal is to provide low-cost and high-quality production. Production of large parts can easily be carried out through standard manufacturing methods – casting, forging, or machining. However, manufacturing smaller and more complex parts are not as simple as it is with larger parts. Metal injection molding enables us to produce high-volume, small, and complex components efficiently at virtually any scale.

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WHAT
WE
DO

COMPONENT MANUFACTURING
INNOVATIVE PROCESS
SOLUTION PARTNER

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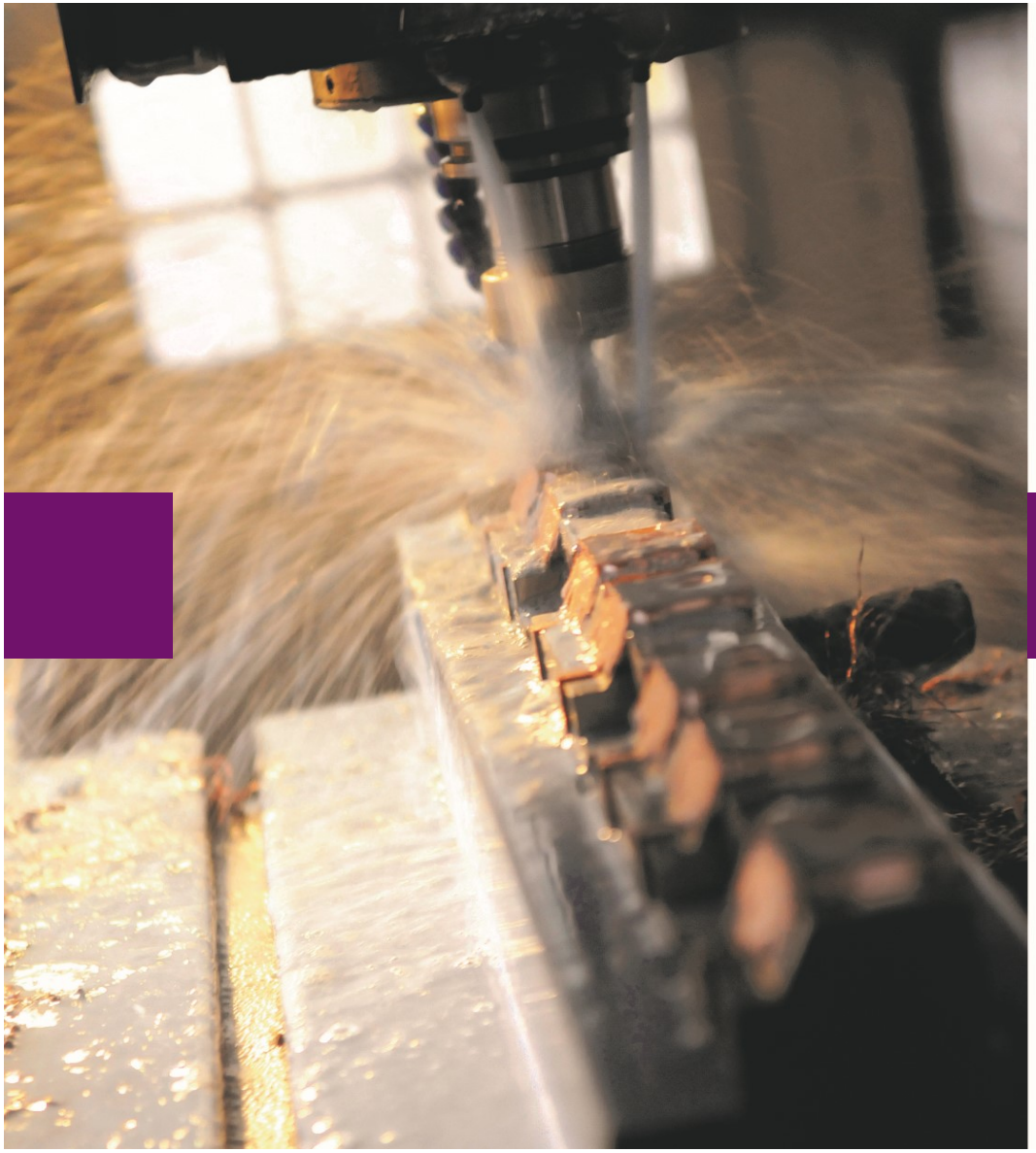

Bilsa manufactures high-quality components to suit the tightest specifications. We produce your parts in a host of shapes, sizes, and materials.

Using advanced machinery, and systems and the benefit of decades of experience, Bilsa has the capability to deliver high-end, precision-engineered components to its clients.

We offer you efficient manufacturing, kind customer service, and professional support that has built our reputation amongst leading part manufacturers and an expert production team dedicated to the excellence of your products. We strive to provide superior customer service by being responsive to our customers, presenting unique solutions, offering competitive pricing, and shortening the production process.

We specialize in making high-quality and high-performing parts.

Component Manufacturing

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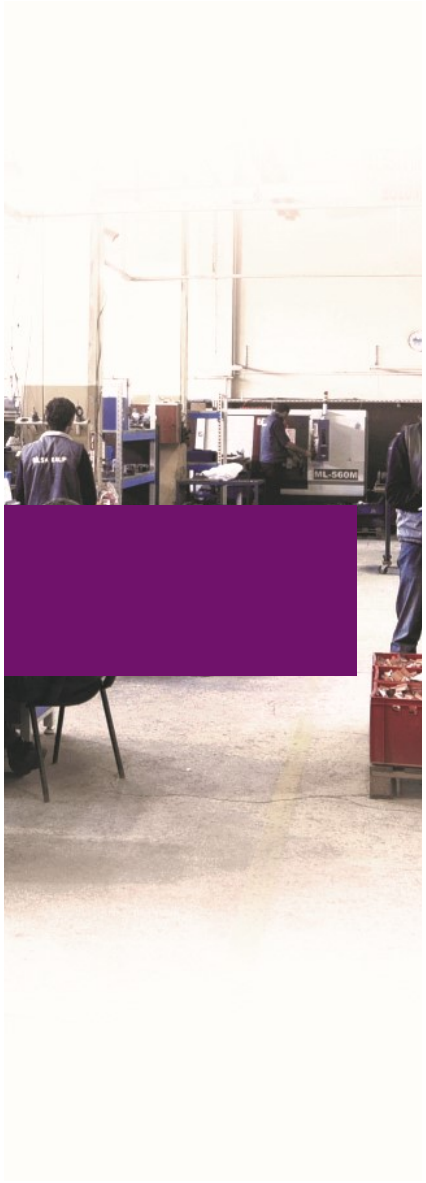
Innovative Process



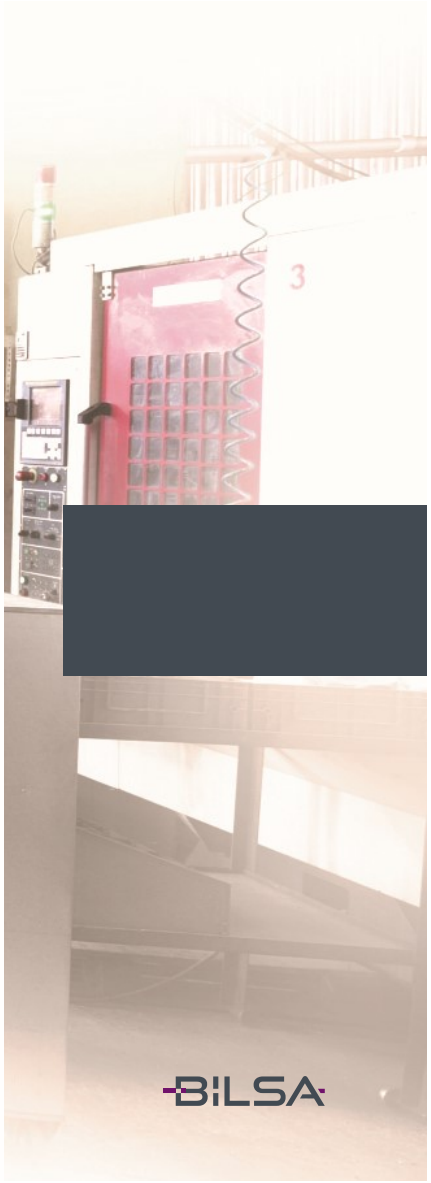
Innovation in Bilsa refers to the introduction of a new quality of a good or a new method of production. The innovation process creates a clear framework that structures and systematically implements the development of products. Our presentation of an innovative process begins with the generation of ideas, and finally, aligning the process with the same ideas.

As a follower of innovation, we ensure to meet the performance expectations for every component we manufacture. We aim to reduce cost and lead times; meanwhile, manufacturing more advanced components. Our efforts help customers to get maximum efficiency from their products. As a result, they will deliver more advance products to their customers, and their products will stay ahead of the pack.

An example of our work in the innovative process is as follows:

- We changed certain components' manufacturing method from investment casting to forging and extrusion.
- Successfully, the cost was decreased, and the conductivity, which was necessary for that particular component, was increased.

While the efforts carried out delights our customers, what we add to the process and the product ensures our pleasure.




Solution Partner
We collaborate and partner with our customers who have problems in the production process and need solutions. We assist them in producing their parts in the most efficient and problem-free production method. We ensure to provide you with a solution-oriented service during the production process.
Bilsa adopts a customer-oriented approach by keeping customer satisfaction at the forefront. We produce every product within the required specifications, and on time, that will delight our customers.
We guarantee to shorten the production process and eliminate extra costs.
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about Metal Injection Molding

Since the 1920s, the injection molding method has been applied to metal and ceramic powders as well as traditional plastic applications. This new technology applied to metal powders is known as powder metal injection molding (MIM). It is serving as a part manufacturing process that shows continuous development to today's major industries such as hand tools, optics, medical, firearms, textile, electronics, and automotive industries.

Metal Injection Molding | MIM

Metal Injection Molding can produce complicated and challenging parts in high quantities concerning their precision and fineness, and it offers several advantages over other manufacturing methods.

- **High surface quality**
- **Reduced production time**
- **Mechanical properties superior to castings**
- **Ability to meet narrow dimension tolerances**
- **High density**
- **Mass production**
- **Net-shape manufacturing with minimal material waste**

MIM eliminates the limitations and long efforts in standard production methods. It is a superior production method with other advanced applications, and also an advantageous option at a low cost.

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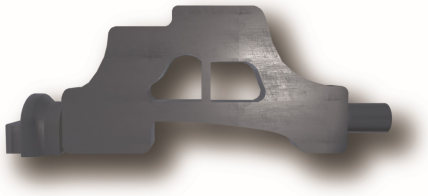
MIM process

MIM | Tooling

Tooling is the very first stage of the production process. It is essential to choose the right mold manufacturer to achieve the desired product quality and efficiency. Our advanced tooling process promises you low-cost tooling and efficient production.



Manufacturing Process

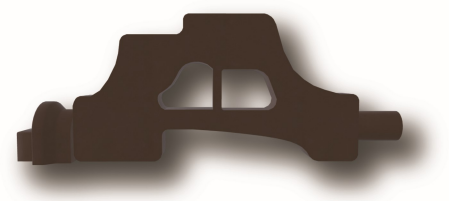
Feedstock

Fine metal powders are combined with binders to form the material to be used in production. The binder allows the metal powders to be held together and the material to be easily injected into the mold.

Molding

Molding is the process of injecting the feedstock into the mold cavity at a certain temperature under high pressure. The molding process allows parts to be shaped in a single step.

The obtained part is called a "green" part, and it is about 20-25% larger than the final component to allow the shrinkage during the sintering.



De-binding

The "green" part is heated in a low-temperature furnace to remove most of the polymer binders, which are only required for the molding.

After completing the process, the part is called the "brown" part, and it is ready for the final phase.

Sintering

The "brown" part is sintered by the diffusion method right below the melting temperature. The sintering phase allows metal particles to be densified.

The process removes pores from the material, causing the part to shrink to 75-80% of its molded size. The shrinkage occurs uniformly and can be accurately predicted. The parts that complete the process are obtained as metal parts.

Metal Part

After completing the sintering process, the part achieves its final dimensions and final geometry, and it is ready for assembly.

No secondary operations are required to improve tolerance or surface finish. However, components that need secondary operations, such as adding features, and improving material properties are processed at this stage.

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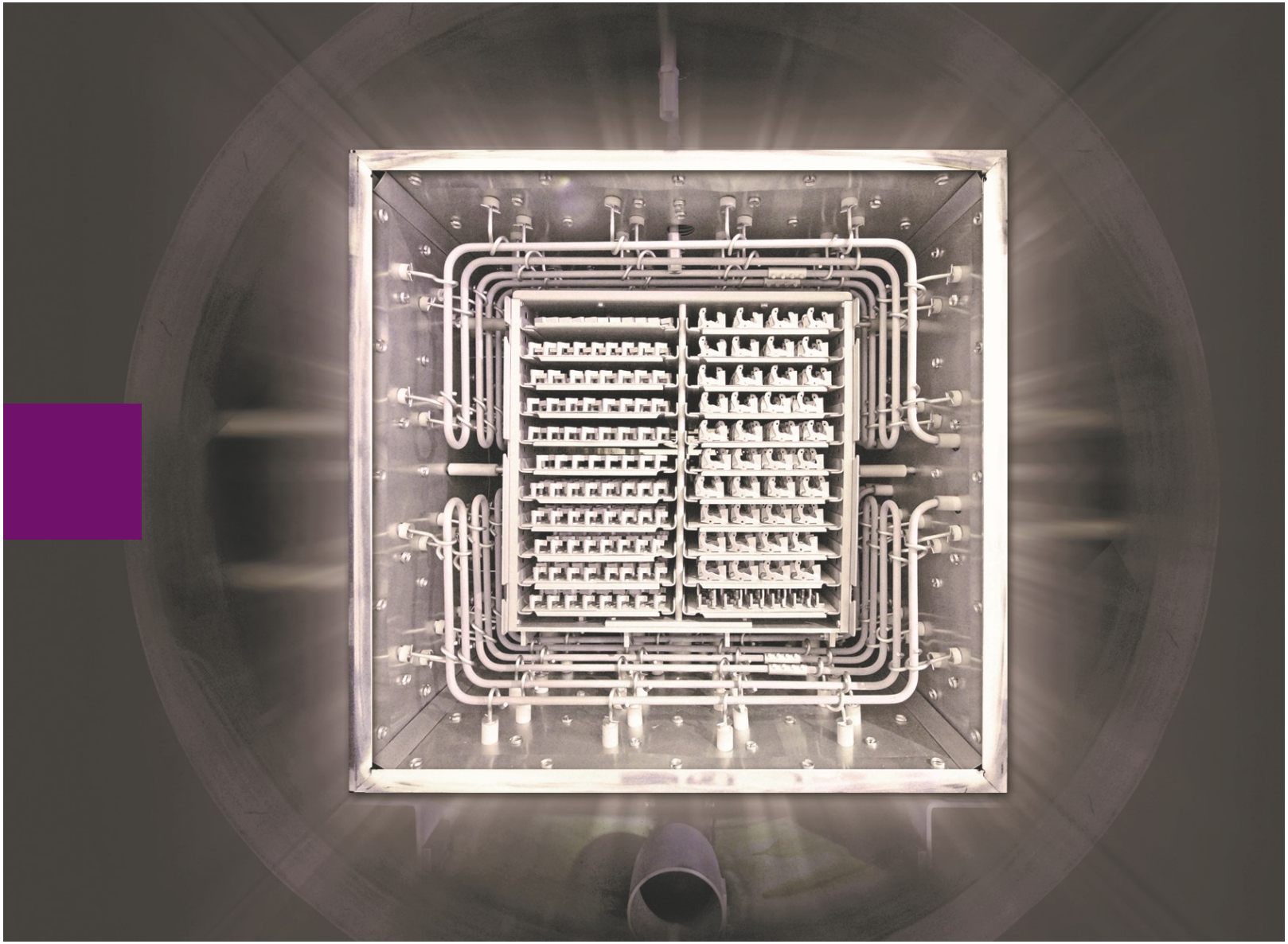
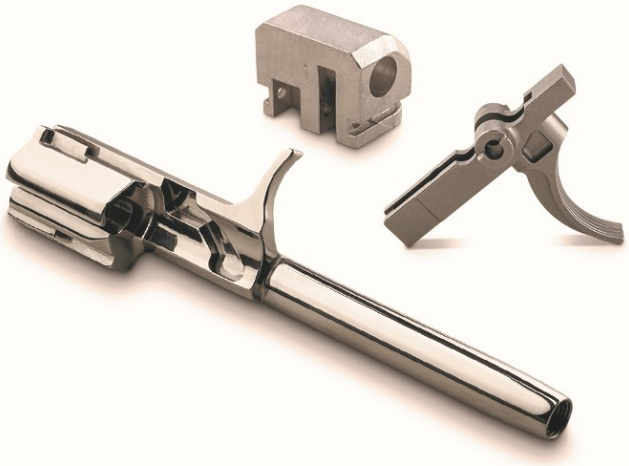


Who We Serve

Bilsa works with many companies around the globe - in the industries of defence, automotive, medical, electric, hand tools, and textile.

Our customers are well aware that they choose us not only for production but the service we provide them. Our experts will lead you to receive the best manufacturing quality. No matter what the volume is, we make sure to meet the desired quality and the performance.

We manufacture to create the excellence that our customers deserve.



Defence

Since its establishment, Bilsa has undertaken and completed many projects in the defence industry – producing precision components through various manufacturing methods.

The firearms components must perform at the right level. Regardless of the circumstances of the situation, failure is never an option. Manufacturers have no choice but to produce high-performance and durable products. Many manufacturers prefer Bilsa for obtaining the components that require precision, strength, and durability.

Components that we produce, including:

- Firing Mechanism
- Fire Control
- Sights

Our firearms-specific experts guide you about all aspects of design for production. They manage the process from start to final production to get the high-performing components you deserve.

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Automotive

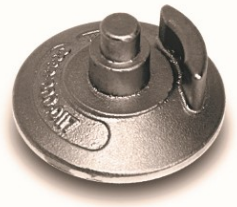
Innovations in the automotive sector are based on the development of new models to meet the growing customer demands of manufacturers. While Bilsa undertakes the production of the components designed with this approach, it determines the most accurate production method based on the features and design of the part to be produced.

While the high number of components in the automotive sector obtain difficulty for many manufacturers, Bilsa offers its customers the capacity to produce complex and high-volume parts at almost any scale.

Examples to the components we manufacture for:

- Seatbelts
- Turbochargers

Components that we produce offers excellent strength and durability.



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Electric

The parts that serve the electrical industry may not have the desired properties due to the choices made in the production process, and results may be disappointing for the manufacturers. Our process innovation avoids any of these problems. It is why leading companies choose to work with us.

A particular example of the parts that we manufacture:

- Contact Plates

The manufactured parts must have a certain level of conductivity. Choices that we make in the production changes the properties of the parts and improves them. We deliver high-quality components using forging, extrusion, and machining methods for over a decade.

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Medical

Components for the medical industry must never be questioned over functionality or performance.

We serve medical product manufacturers to deliver components across a variety of applications, including:

- Reusable Products
- Disposable Products

We offer our customers the high-performance that they need to deliver in every product. We produce medical components in the most efficient ways.

A particular example of the components that we manufacture for:

- Biopsy Forceps

We help our customers make their parts compatible with MIM to increase production efficiency. Not only that, but we give them the freedom to choose from a variety of materials.

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Hand Tools

Many products require small and complex parts to be manufactured. Producing such parts may take a long time for manufacturers because of the limitations on the standard manufacturing methods.

Hand tools are one of those products that need such components. Manufacturers may face difficulties when manufacturing these parts. They partner with Bilsa because we offer them the functional precision and the performance they need to offer in their products.

Bilsa produces many of these parts using one of its production methods – metal injection molding that provides faster and more economical production to all manufacturers.

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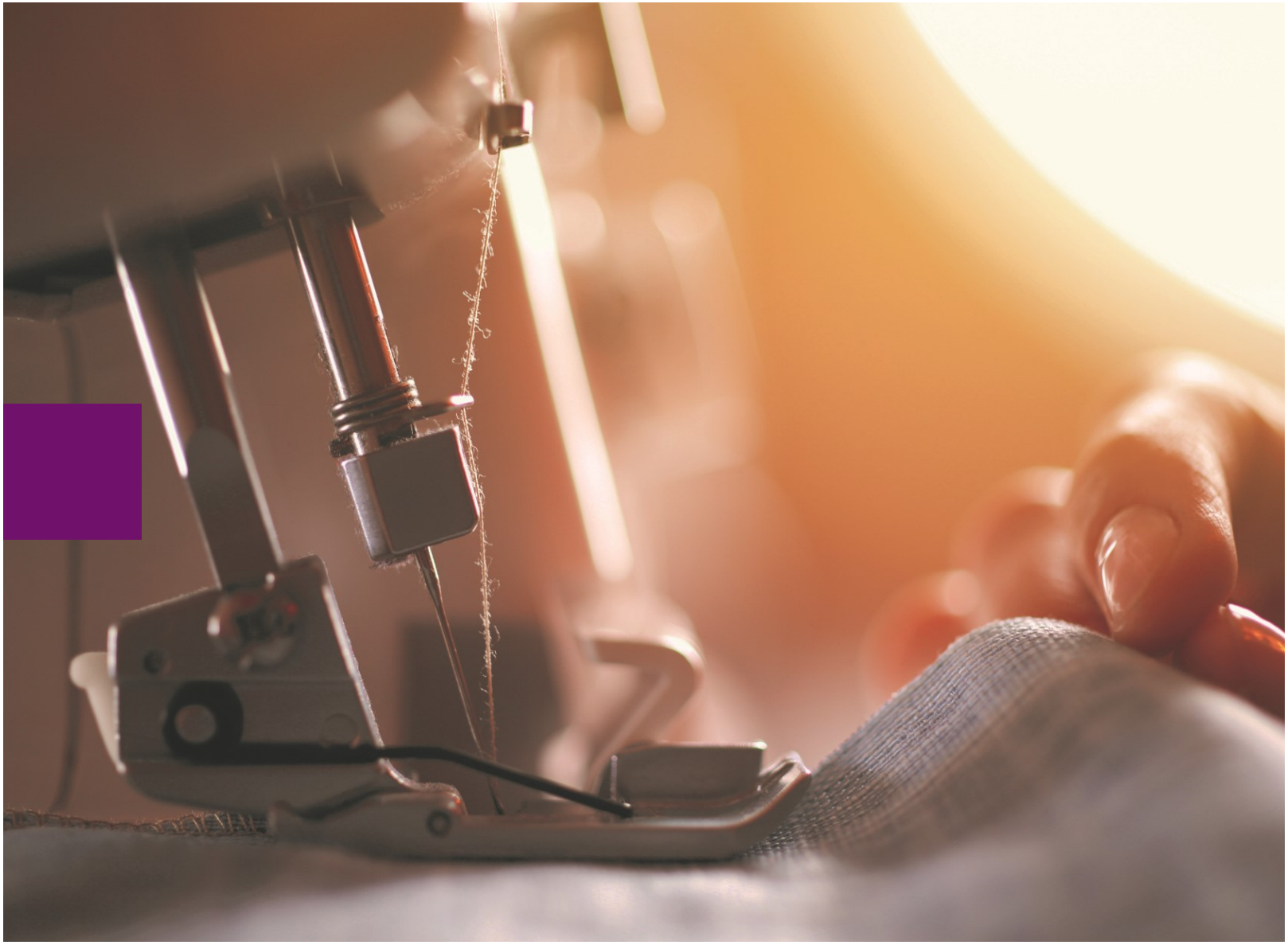

Textile

We provide high-quality parts production services to textile machine manufacturers. We shorten the manufacturing process of machines and extend their lifespan with our latest technology manufacturing systems, and special products that we produce.

We do not classify the parts with the systems we use in the production process; we carry out our production in any form, weight, or size.

The production of complex and small parts can be achieved efficiently with our MIM process, which offers lower cost, higher production capacity and speed than traditional manufacturing methods.

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