MECO MACHINES

eurecat

ISF MACHINES
Incremental Sheet Forming

Numerically controlled dieless production of 3D sheet forms

MEC-ISF-3000x2100 / MEC-ISF - 1500x1000 St
Advanced engineering at the service
of ISF technology

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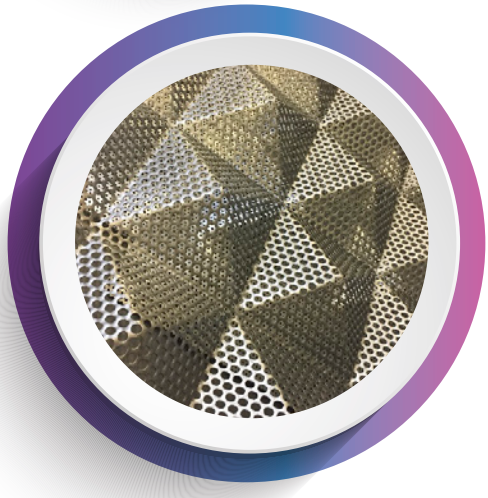
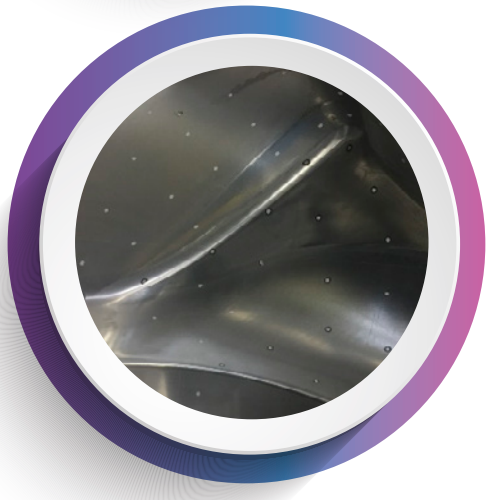
watch video

It is now possible to produce complex 3D sheet metal parts without a die

Thanks to the 3D ISF technology it is now possible to manufacture sheet metal parts with complex shapes for prototypes or limited production runs, breaking the paradigm of the need for high investment in expensive moulds or dies for the forming of sheet metal through stamping or deep drawing processes.



This technology, although it has been around for a long time, is now gaining in popularity and potential since it is perfectly in line with current and future market trends which demand the manufacture of products with limited production runs, products with a high degree of customization to adapt to the specific needs of each client, or the launch of pilot series to assess market acceptance.



It is also possible to use ISF to make moulds for limited production runs of parts that are made with composites or by rotational moulding, for example.

Who is ISF technology for?

ISF technology is an excellent solution for companies that manufacture products for the **automotive**, **aeronautics**, **rail**, **architecture**, **interior design**, **civil engineering**, **machinery**, **capital goods** and **domestic appliance sectors**, as it is applicable to any product that requires complex sheet metal parts and limited production, or that require constant design changes to adapt the product to the customer's needs.

ISF technology takes on special significance during the processes of design and development of products to be manufactured in sheet metal, since it allows the manufacturing of prototypes which are very similar to the final product manufactured by means of stamping or deep drawing. In this case, simply bear in mind that there are areas where the sheet will lose some of its thickness since it will be stretched rather than deep drawn.

The ISF manufacturing process

ISF technology is based on the numerically controlled 3D incremental forming of sheet metal. It is not necessary to manufacture costly moulds, just a simple counterform or mould for more complex designs. They can be manufactured in wood, master paste or metal, and some forms can even be manufactured without tooling.

1

CAD-CAM design

2

Loading the mould if necessary

3

Sheet loading

4

Start of the forming process

5

End of the forming process

6

Removing the piece

7

Cutting and finishing

Introducing the new generation of ISF machines

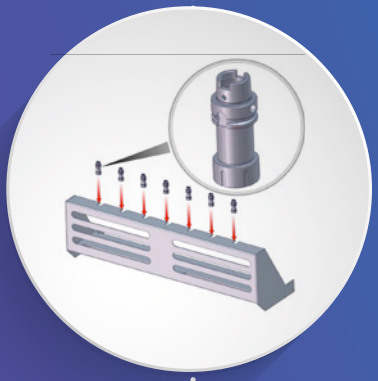
Eurecat and **Meco** have created a new generation of machines to boost the implementation of ISF technology in the industry, for which the Eurecat has contributed its experience in the application of ISF technology to different products and sectors and Meco has contributed all its know-how as a renowned machine manufacturer.

The first model resulting from this collaboration is the MEC-ISF-3000-2100, which provides the flexibility of being able to manufacture both small and large pieces, using sheet metal up to 3000 x 2100 mm in size, with a maximum mould size of 2800 x 1900 x 500 mm (length x width x height).

This model includes an automatic tool changer, which significantly increases the design possibilities of the parts being manufactured.

All our ISF machines are accompanied by a process of training and knowledge transfer of ISF technology, so that the company's team will be totally self-sufficient from day one.

Solutions tailored to the technology

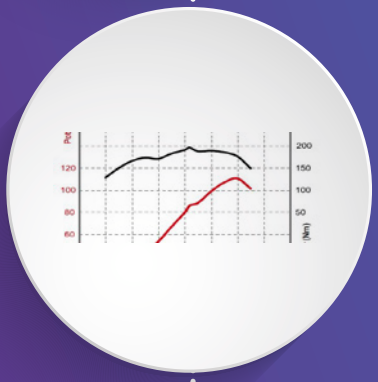


Automatic tool changer
Attached on one side of the table, it has 7 housings for BT-40 type tools with presence detector to be able to supply them to the workhead.

"Point 0" centring system
Attached to the work table, it has 8 anchoring points distributed symmetrically creating 2 rectangular work zones. These perform the function of anchoring and automatic centring of the moulds.

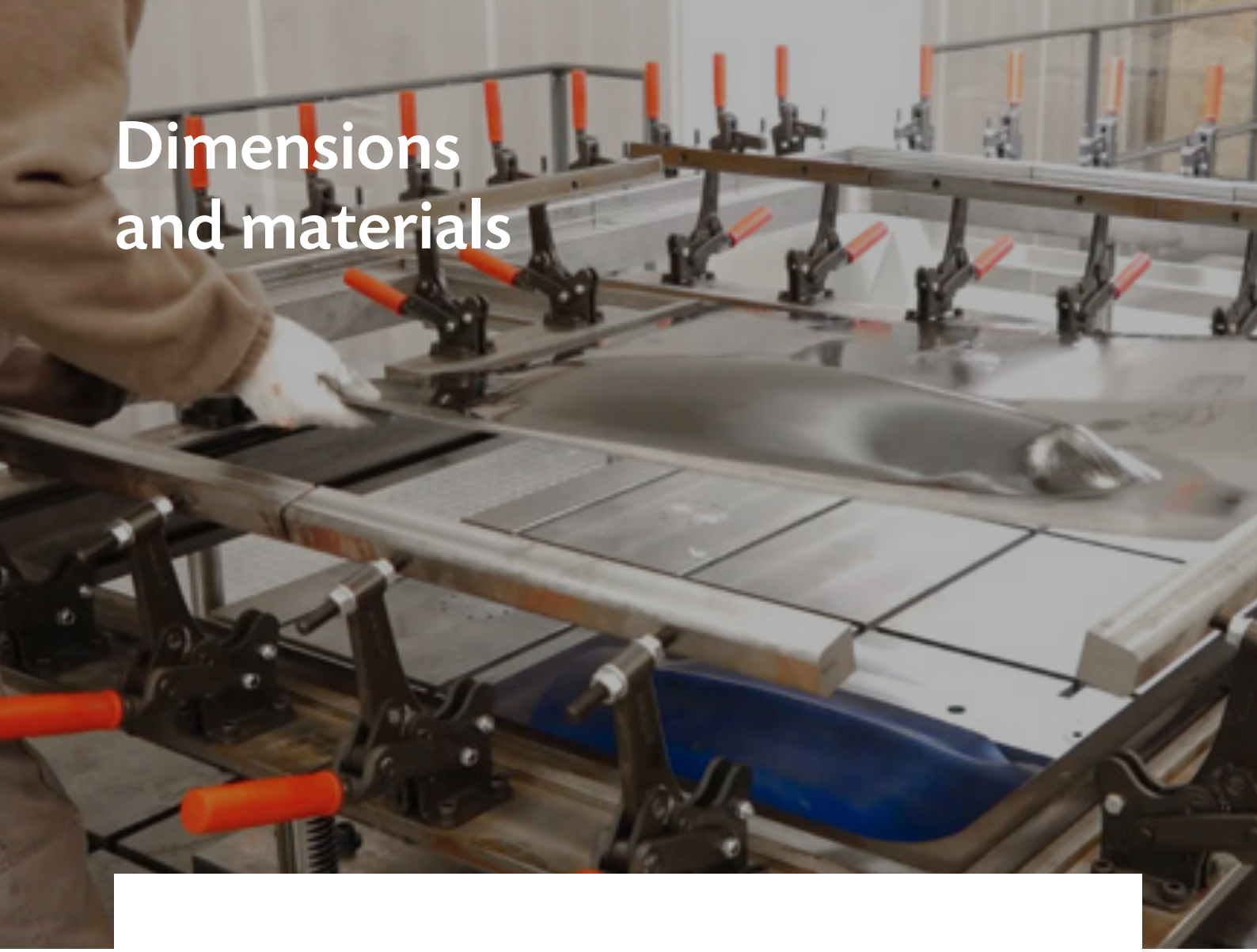
The optionally supplied elements ensure an alignment of 0.05 mm/m.

Latest generation CNC
The mechanical system designed by MECO is combined with MITSUBISHI M80 technology to create a high performance system.



TORQUE LIMIT system
This system consists of limiting the maximum torque in a simple way, so that the user can limit the maximum force that the machine will apply during the entire forming process.

TORQUE CONTROL system
This system consists in permanently controlling the pressure that is being exerted on the part, so that it regulates the position of the part in height through a fourth working axis.



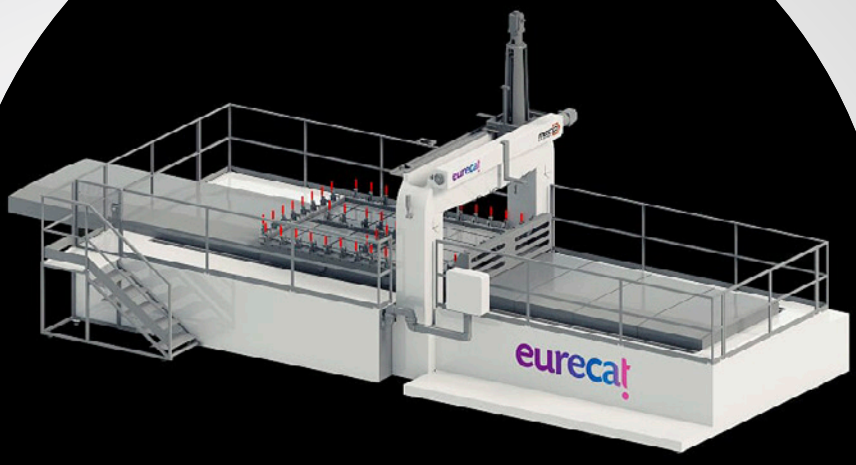
Dimensions and materials

ISF technology enables working with a wide range of standard materials on the market, such as::

	Material	Re [MPa]	Rm [MPa]	Thickness [mm]
Mild steel	St. 2 (1.0330)	300	400	0,5-2,5
	St. 4 (1.0338)	250	350	0,5-2,5
Galvanized steel	DX54D+Z100	300	400	0,5-2,5
High strength steel	DP450	450	600	1
	DP600	600	800	1,5
	DP750	750	1.000	1
Stainless steel	AISI 304	300	700	0,5-2
	AISI 316	350	650	0,5-2
Aluminium	1050	100	150	0,5-2
	5052	175	250	0,5-2
	5754	185	250	0,5-2
Aluminium	CP4	280	350	1

Our range of ISF machines
Technical specifications

Model ISF 1500 x 1000 St

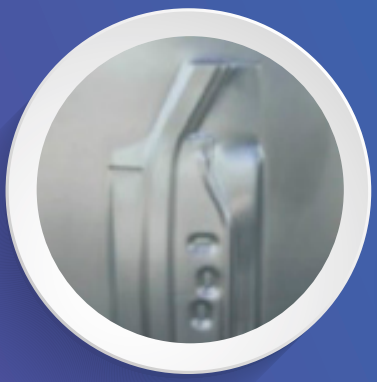


Model ISF 3000 x 2100

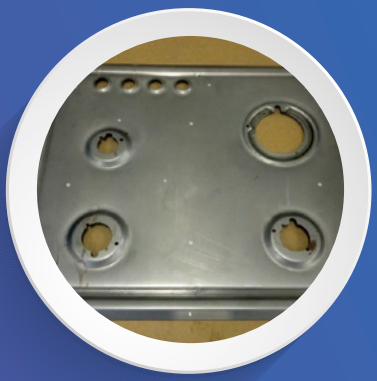
	Machine model	
	ISF - 3000 x 2100	ISF - 1500x1000 St
General Dimensions (length, height and width)	10.33 x 4.81 x 4.69 m	3.80 x 2.20 x3.30 m
Weight of the machine (Net weight)	28.500 kg	11.000 kg
Working table dimensions	3000 x 2100 mm	1400 x 900 mm
Maximum load over working table	5000kg	2500kg
Total dimensions of the conformer support (Axis W)	3000 x 2100 mm	1500 x 1000 mm
Tool loader	7 slots	4 slots
Tool cone type	HSK A-50	BT-40
Lubricant oil pump	15 l/min	15 l/min
Working distance in axis "X"	3300 mm	1400 mm
Maximum translation speed in axis "X" (G0)	15 m/min	10 m/min
Installed power (servo motor axis "X")	10 kW	2 kW
Final force over working surface axis "X"	40 kN	10.5 kN
Working distance in axis "Y"	2100 mm	900 mm
Maximum translation speed in axis "Y" (G0)	15 m/min	10 m/min
Installed power in the servo motor axis "Y"	4.5 kW	2 kW
Final force over working surface "Y"	18.24 kN	10.5 kN
	Machine model	
	ISF - 3000 x 2100	ISF - 1500x1000 St
Working distance in axis "Z"	1000 mm	550 mm
Maximum translation speed in axis "Z" (G0)	15 m/min	10 m/min
Installed power in the servo motor axis "Z"	4.5 kW	2 kW
Final force over working surface "Z"	18.24 kN	10.5 kN
Working distance in axis "W"	675 mm	600 mm
Maximum translation speed in axis "W" (G0)	2300 mm/min	1000mm/min
Final force over working surface "W"	20.6 kN (1 bridge)	15 kN per bridge (4 independent)
CNC Model	Mitsubishi M80	Mitsubishi M80
Interpolation tolerance at F4500mm/min	0.02mm	0.02mm
Interpolation tolerance at F10000mm/min	0.05mm	0.05mm
Maximum working speed (G1)	9000 mm/min	10000 mm/min
Machine Lighting	800 lumens	2 x 600 lumens
Web CAM	Yes	Yes
LAN connectivity	Yes	Yes
Program transfer from SD card and USB	Yes	Yes

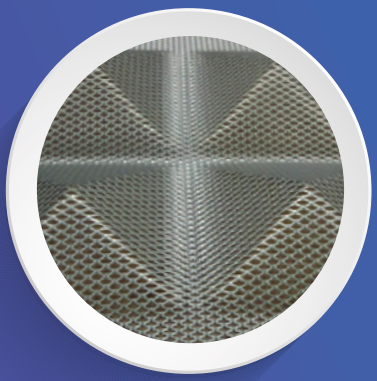
Examples of parts manufactured using ISF technology

Complex shapes





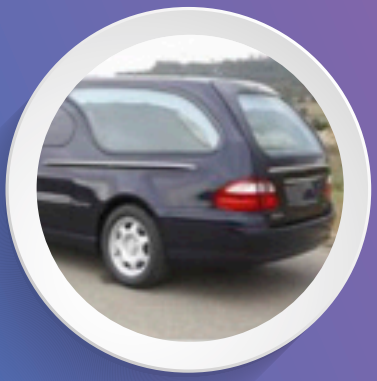



Functional prototypes



Limited production runs






ISF technology experts

MECÁNICA COMERCIAL MECO, with an accumulated experience of more than 30 years, is a company headed by the Peirón family that is dedicated to the development of advanced mechanical engineering projects with both designs based on customer needs or innovations and its own creations. In these more than three decades, MECO has also become the most reliable partner for the industrial maintenance of the most important factories in its area of influence.
In 2000, MECO developed an innovative keyseating or broaching machine, a revolution in the sector thanks to its high precision, speed and ease of use. It is a patented system developed entirely by the MECO team that has already been successfully introduced in more than 20 countries around the world. Currently, in addition to the sale of various types of machine tools and its industrial maintenance service, MECO is in the development phase of new set of revolutionary machines, such as the multi-drill for large matrices with 36 heads.

Eurecat, the Technological Centre of Catalonia (member of Tecnio), brings together the experience of more than 650 professionals generating a turnover of 51 million euros per year and serving more than 1,500 companies. Applied R&D, technological services, highly specialized training, technology consulting and professional events are some of the services that Eurecat offers for both large and small and medium-sized companies in all sectors. With facilities in Barcelona, Canet de Mar, Cerdanyola del Vallès, Girona, Lleida, Manresa, Mataró, Reus, Tarragona, Amposta and Vila-seca, it participates in 160 major national and international R&D&I consortium projects of high strategic value and it has 81 patents and 7 spin-offs. The added value provided by Eurecat boosts innovation, decreases spending on scientific and technological infrastructures, reduces risks and provides specialized knowledge tailored to each company.

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Do not hesitate to contact us. Our technical sales team will advise you on the suitability of applying ISF technology to the needs of your company.

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