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# 10 INTEGRATED PROCESSES

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We produce customized metal parts

With a work force composed by more than 150 employees, ETMA works to uphold quality standards and to improve efficiency.

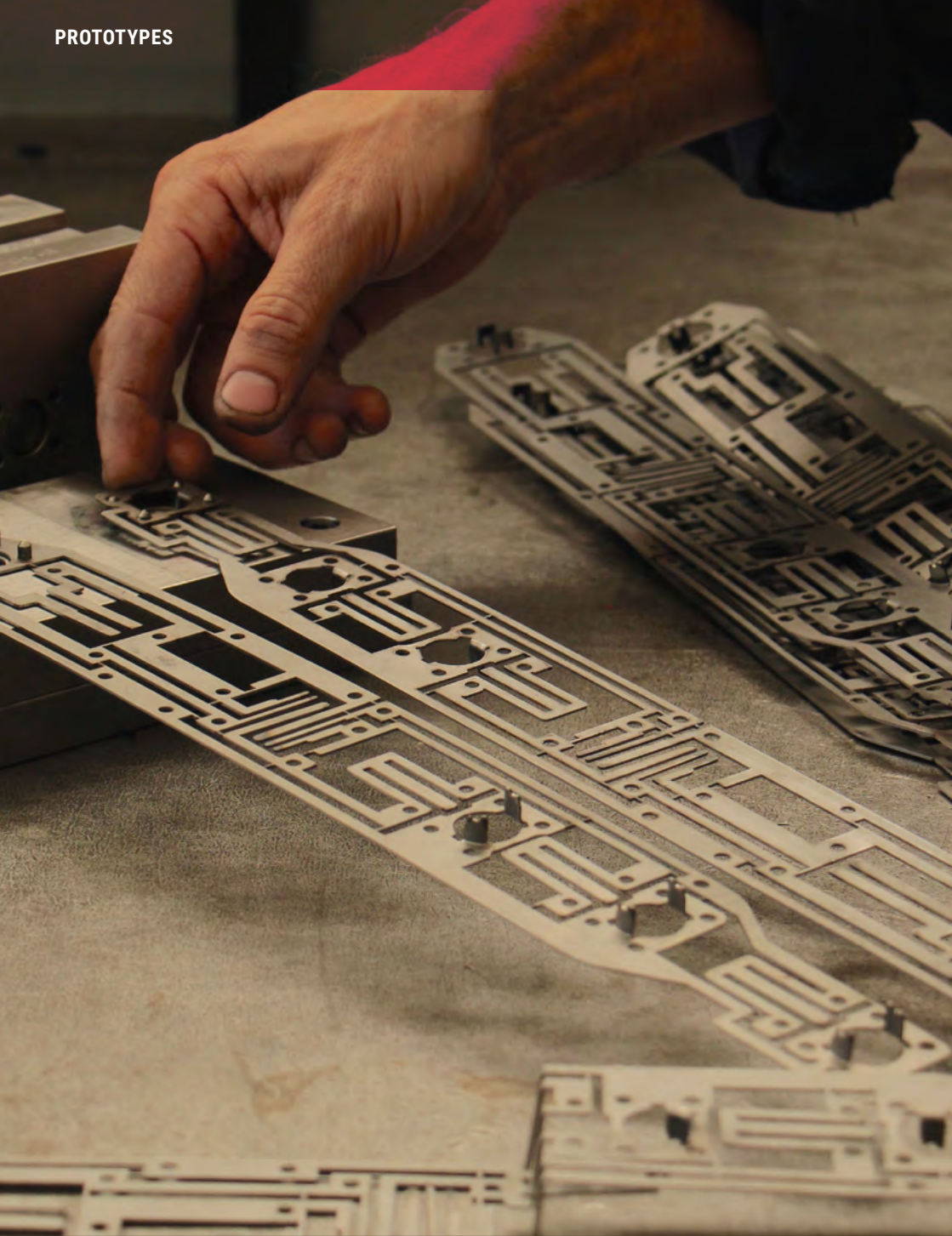
In order to respond with effectiveness to the challenges posed by its customers, ETMA has developed an exclusive system which customizes its range of services: **the 10 integrated productive processes.**

10 INTEGRATED PROCESSES

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# PROTOTYPES

We start from your needs and your goals. We have hardware and software for project and development support prior to mass production in the manufacture of prototypes and pre-production series.



## TECHNICAL TEAM

- When starting a prototyping project, you will have direct contact with a technical manager that:
- Monitors the project
- Responds directly to any technical questions that you may have and answers for the prototypes manufacturing deadlines
- Supports and helps you with technical requirements, both for new parts, or for changes in existing ones

## RAW MATERIALS

- Bars, wires and strips in: steel, stainless steel, brass, aluminium and copper

## EQUIPMENTS AND SOFTWARE

- Siemens NX , bNX from Bihler, Pro/Engineer, AutoCad, TB Deco, GCAM, PCAM, FeatureCAM , Placke Baby, Hydraulic Press, Bihler35, Photocentric 3D Printer

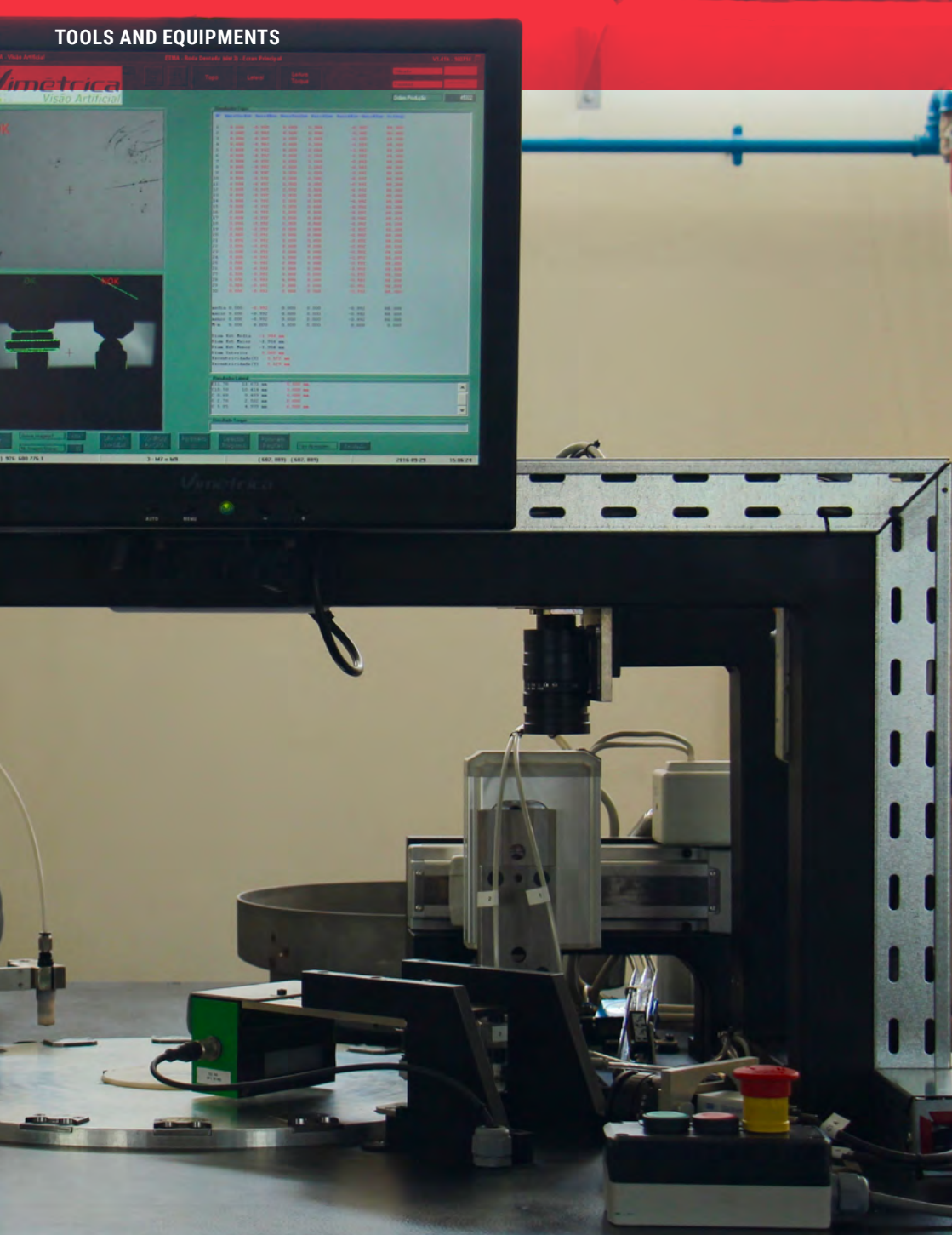
## EXAMPLES AND PROTOTYPES

- Circuits, bushes, springs, clips, terminals, contacts, parts for injectors, shafts, couplings, knurled and threaded parts
- Rivets: semi punched, blind, centring devices, shafts
- Compression limiters, spacers, eyelets
- Hooks, rings, rods, among others

## TOOLS AND EQUIPMENTS

To respond effectively to your needs, ETMA has at your disposal a section for the manufacture of tools and equipments. We develop the tools that will be used in the manufacture of your parts, as well as assembly, inspection and sorting equipments, among others.

- Progressive tools for stamping for eccentric presses and high speed press (*Bruderer*)
- Forming tools (*Bihler*)
- Conforming tools
- Cold forging tools (double tap and multi slide)
- Transfer assembly machines
- Robotic assembly machine
- Optical sorting machines
- Torque controlled sorting machines



## TECHNICAL TEAM

- We have an engineering and design team to help you find the most cost-effective solutions for the production of tools and equipment, assuring a minimum level of production of parts

## EQUIPMENTS

In the manufacture of tools and equipment, ETMA has a complete range of machines (wire erosion and drilling, low and high rotation machining centres, parallel and cylindrical grinding, manual lathes and CNC, precision drills, welding, heat treatments, etc.)

- **Wire erosion machines:** Agiecharmilles AC Classic v2, AgieCut 1000, AgieCut Classic2S, Erosion Drill, Agietron 50
- **Parallel and cylindrical grinding machines:** Tachella 612UN, I4am, Stefor RTA 500, Stefor RTB 8/5, Deckel
- **Milling machine:** DMG DMC 635 Ecoline, Mikron VCE 800Pro, Bridgeport BR2J
- **Lathes:** Graziano SAG22, Cazeneuve HB500, Emco concept turn 55-2

## EXAMPLES

- Circuits, springs, clips, terminals, contacts
- Bushes, shafts, couplings, knurled and threaded parts
- Rivets: Semi punched, blind, centring devices, shafts
- Compression limiters, spacers, eyelets, among others

GMC 35 ISM  
GILDEMEISTER

# TURNING

We manufacture precision turning parts to suit your needs, with diameters between **3mm** and **42 mm**. We also have machining centres that allow the execution of auxiliary processes.



## TECHNICAL TEAM

- A team of specialists is at your disposal for the manufacture of precision turning parts

## RAW MATERIALS

- Bars / tubes: steel, stainless steel, brass, aluminium and copper

## EQUIPMENTS

- Mono-spindle automatic lathes and fixed and mobile headstock CNC (Swiss-type turning): CNC DECO 26a, DECO 20, DELTA20 lathes, Index ABC42, Ergomat Traub TBA 42 CNC, TD16, TD26, ITD36, TNM42
- Multi-spindle automatic lathes and 6 spindle CNC: Gildmeister GMC35 ISM, GM-16, AS-16, AS-20, AS-25, Shütte
- Transfer with 9 stations: Variomatic T3
- Pallet changing machining centres: Fanuc Robotdrill T14ia

## EXAMPLES

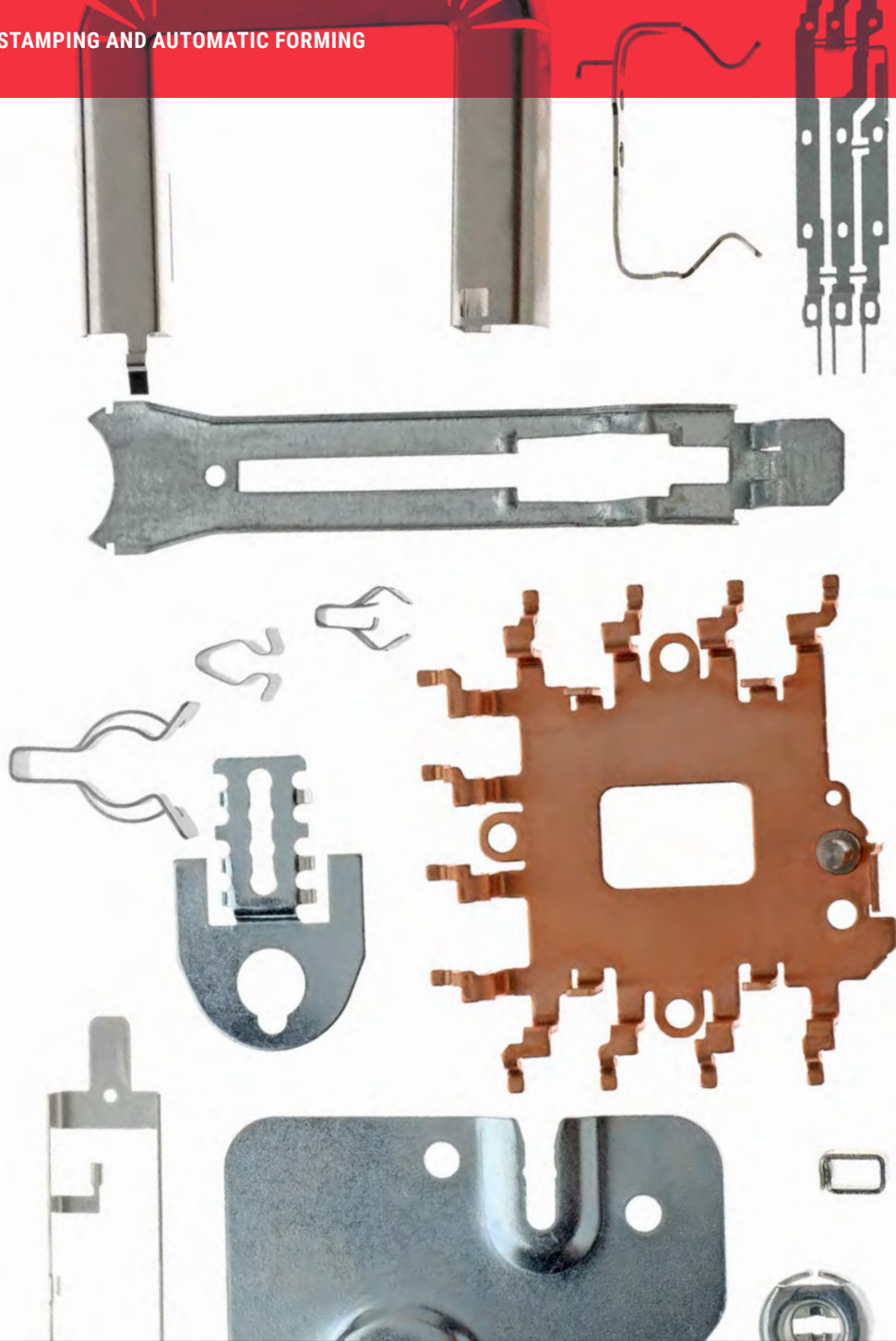
- Parts for injectors, bushes, compression limiters, shafts, couplings, knurled and threaded parts, spacers, eyelets, among others





# STAMPING AND AUTOMATIC FORMING

We manufacture from metal strip stamped parts up to **3mm** thick and **400mm** wide. The production capacity of ETMA is ensured by the diversity and experience of over 75 years in stamping processes. We work with progressive tools, deep drawing, *Bihler* forming machines, precision quick presses.



## TECHNICAL TEAM

- We have at your disposal a specialised team to develop adequate studies and projects for the production of different parts

## RAW MATERIALS

- Steel strip, stainless steel, brass, aluminium, copper and bronze

## EQUIPMENTS

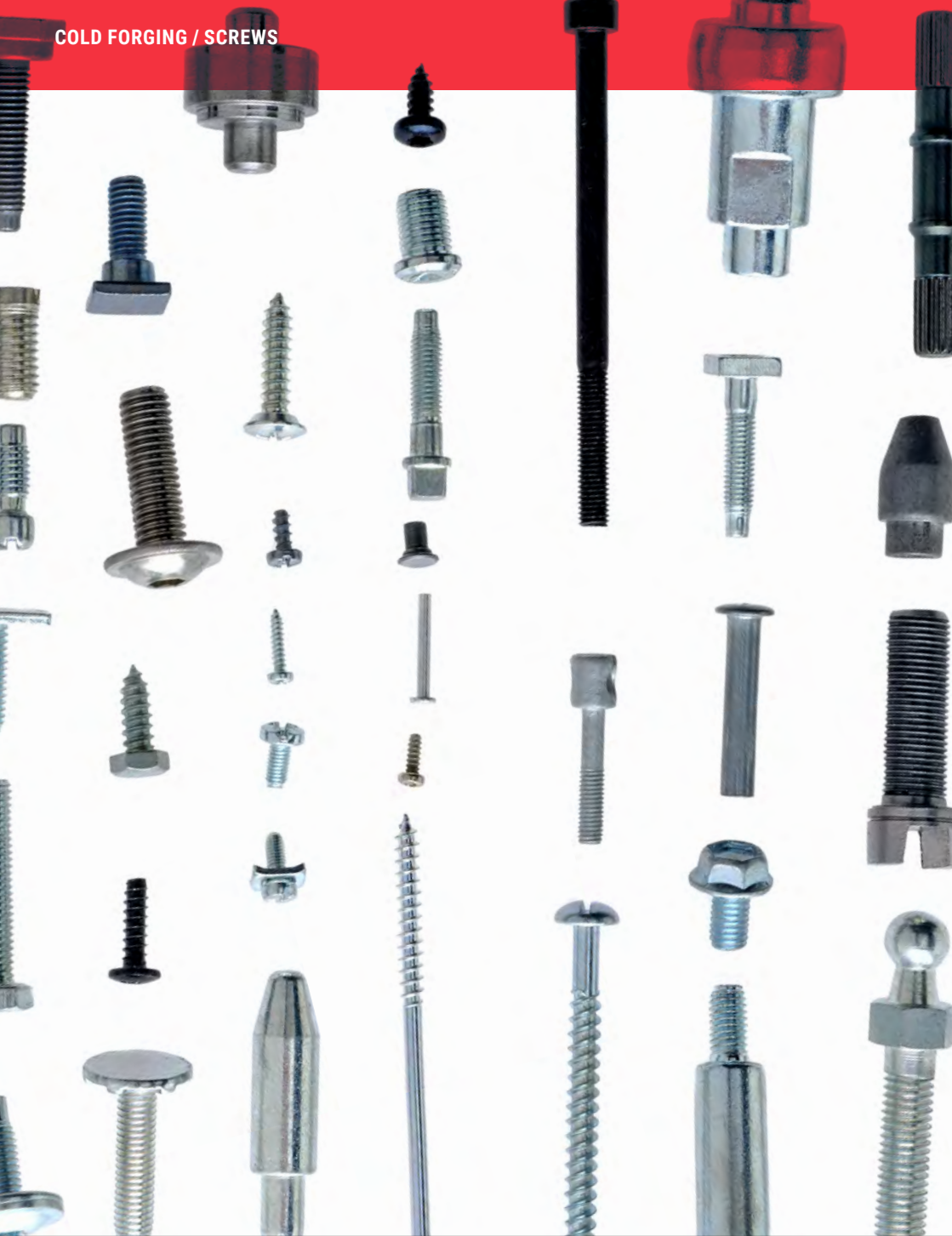
- Eccentric presses from 12 to 250 T and Bruderer quick presses: Helmerding TPH12, Ross 40T, Ross 80T , Press Ross 50T, Press Ross 63T, Press Ross 105T, Yangli JMD31-250, Bruderer BSTA 50 e Legnani DMC T80, Yangli
- Automatic forming machines: Bihler GRM NC, GRM-80 E, RM 40K, RM-25, RM-30, RM-35, GRM-50 e Franconi B20

## EXAMPLES

- Circuits, connectors, bushes, springs, clips, terminals, contacts, compression limiters, spacers, eyelets, sinks, among others

# COLD FORGING / SCREWS

For the manufacture of metal parts, screws and rivets, Etma has the capacity to work wires with a diameter between **1.5mm** and **12mm** in double blow and multi slide horizontal presses and in a variety of materials. We can finish the forged parts in secondary operations by turning, transfer turning and milling in pallet changing centres.



## TECHNICAL TEAM

- We have a technical team capable of designing and manufacturing parts in order to respond competitively to the customer

## RAW MATERIALS

- Wire: Steel, stainless steel, brass, aluminium, copper

## EQUIPMENTS

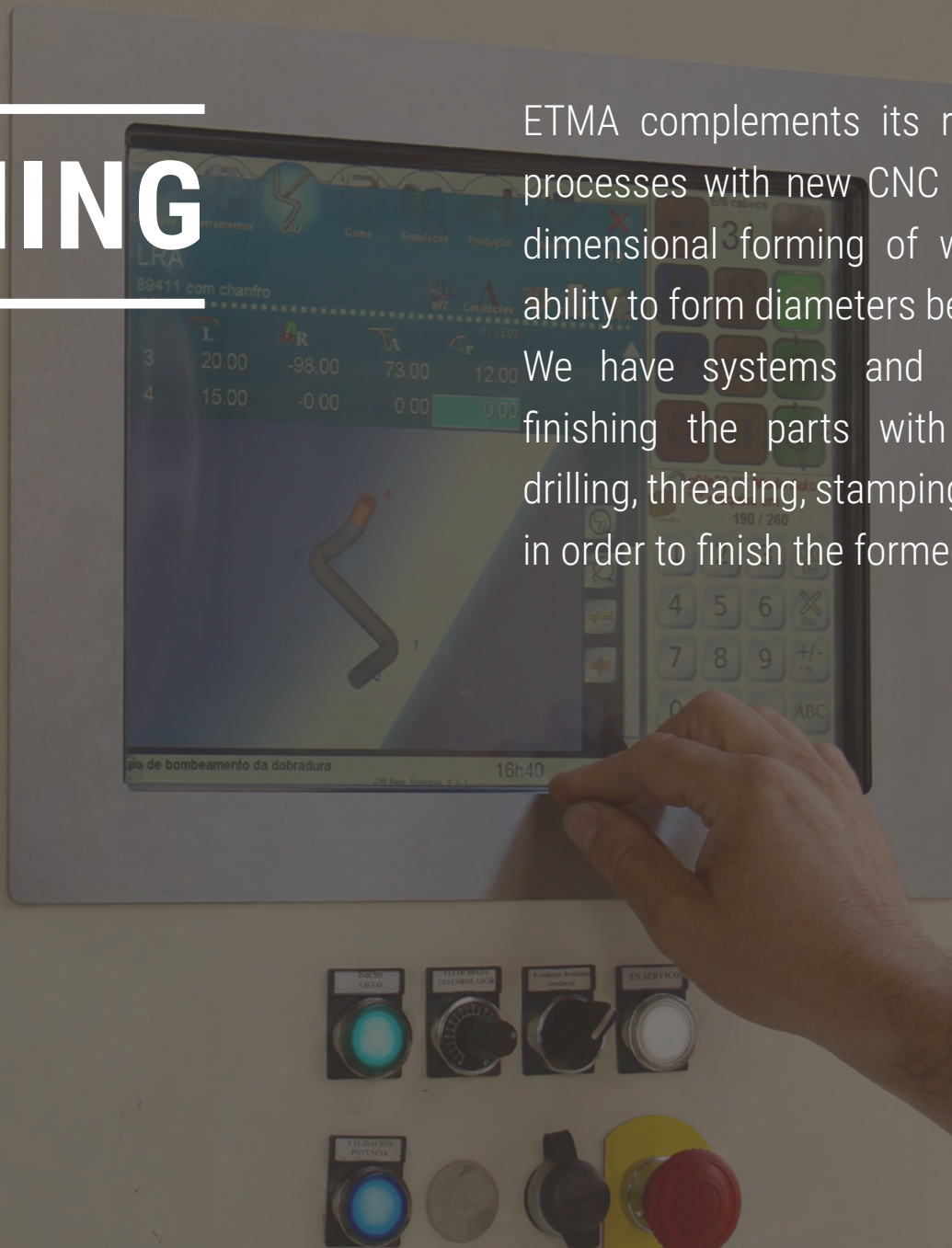
- We have double blow horizontal presses, multi slide presses and threading and slotting units
- Moroni MB765, Multipress MP 510, MP 410
- Carlo Salvi RF/SV, RF 500, RF 560 SV, RF-DL 330 SV, SU-8
- Mauro Pasquali
- Ingramatic RP-1, RP-3, GR-1, Pressvit B5 IB 120
- Chun Zu
- Pffnner NFA3

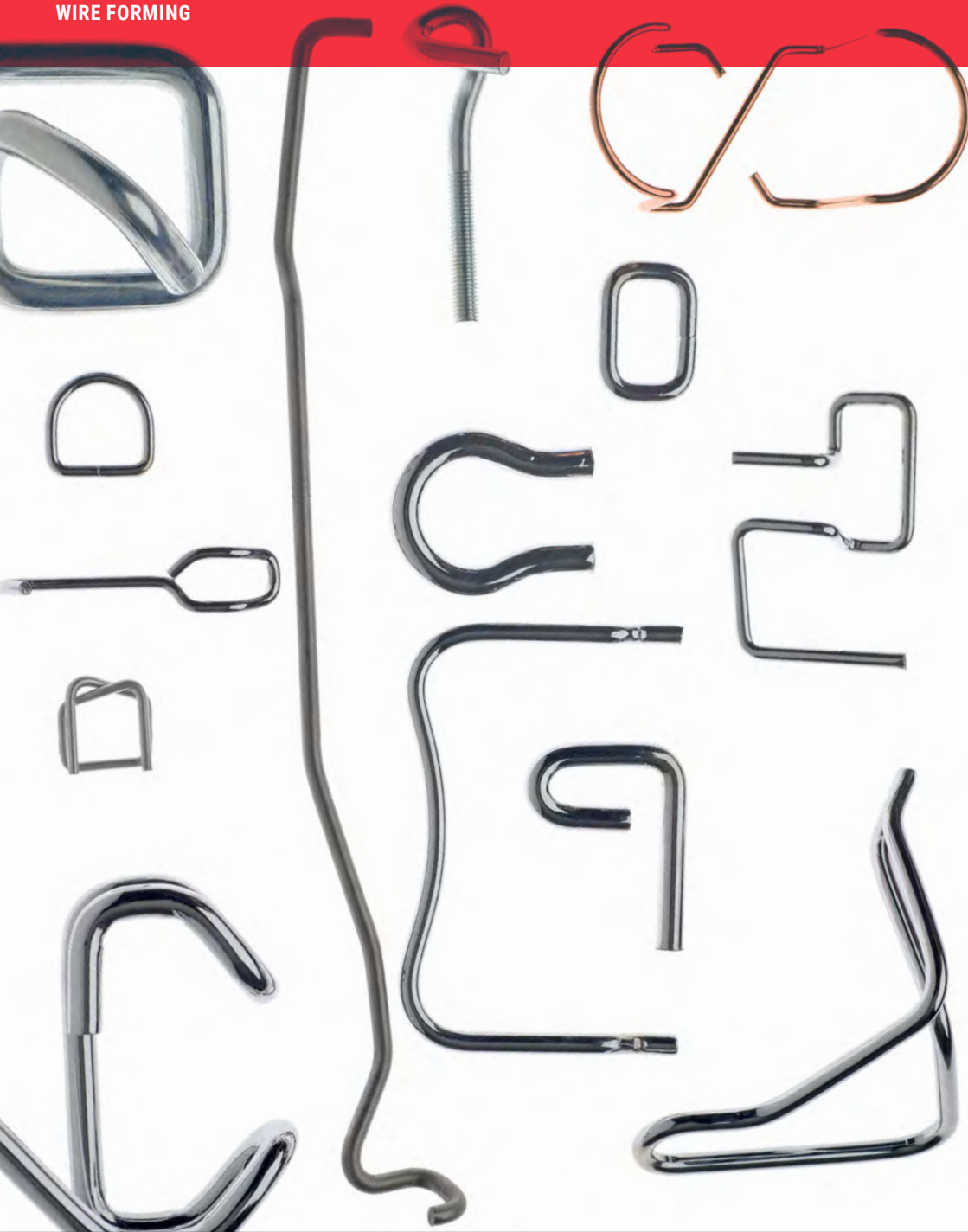
## EXAMPLES

- Screws with different threads: plastics (ejot-pt type), self-tapping plate (Parker-Kalon), wood and particle boards (AGL), metric screws (M2 até M12) resistance class up to 12.9 and self-tapping 3-lobe (DIN 7500 standard)
- Rivets: Semi punched, blind, centring devices, shafts
- Compression limiters, bushes, spacers, eyelets, among others

# WIRE FORMING

ETMA complements its range of transformation processes with new CNC machines for the three-dimensional forming of wire and tube, with the ability to form diameters between **2mm** and **16mm**. We have systems and accessories that allow finishing the parts with bevelling, re-rounding, drilling, threading, stamping and welding operations in order to finish the formed parts.





## TECHNICAL TEAM

• Our technicians have specialised knowledge combined with experience. In the part implementation and development methods, they have a crucial role in the counselling and improvement of the part to be developed

## RAW MATERIALS

• Wire / tube: stainless steel, bronze, copper, steel, aluminium, brass

The quality of the steel used is mostly C9D, and it's also possible to work with other qualities

## EQUIPMENTS

• Latour Robomac 216 CNC, Maquisis NC 3-13, Maquisis NC 1-6, Robot ABB, Prensa Hans Schoen MTE

## EXAMPLES

• Hooks, rings, rods, shafts, among others

# HEAT TREATMENTS

In order to improve the mechanical properties of the parts, ETMA performs the following heat treatments:

Heat treatments with core and superficial hardening:

- Tempering
- Carburizing
- Carbonitriding

Heat treatments with release of tension and hardness correction:

- Tempering
- Annealing

All treatments are carried out in a controlled atmosphere, thereby ensuring a class of resistance up to **12.9** and high superficial hardness.



## TECHNICAL TEAM

- Our team has expertise and proper technical training adapted to this special process, making: measurements for the control of hardness, microhardness, resistance to torque and tensile test

## RAW MATERIALS

- In this process, ETMA proceeds to the heat treatment of metal parts in mild and low-carbon steel

## EQUIPMENTS

- Belt Furnaces (MJamaral), Shaker furnace (SIB), Rotating Furnace (multiplex III SIB), Continuous tempering furnace (Termometalicas), Static tempering furnace (Pote / Termometalicas)

## EXAMPLES

- Springs, clips, terminals, washers, electrical connectors, tubes, protection boxes, shafts, spindles, screws, among others.
- Screws and similar parts with resistance classes up to 12.9

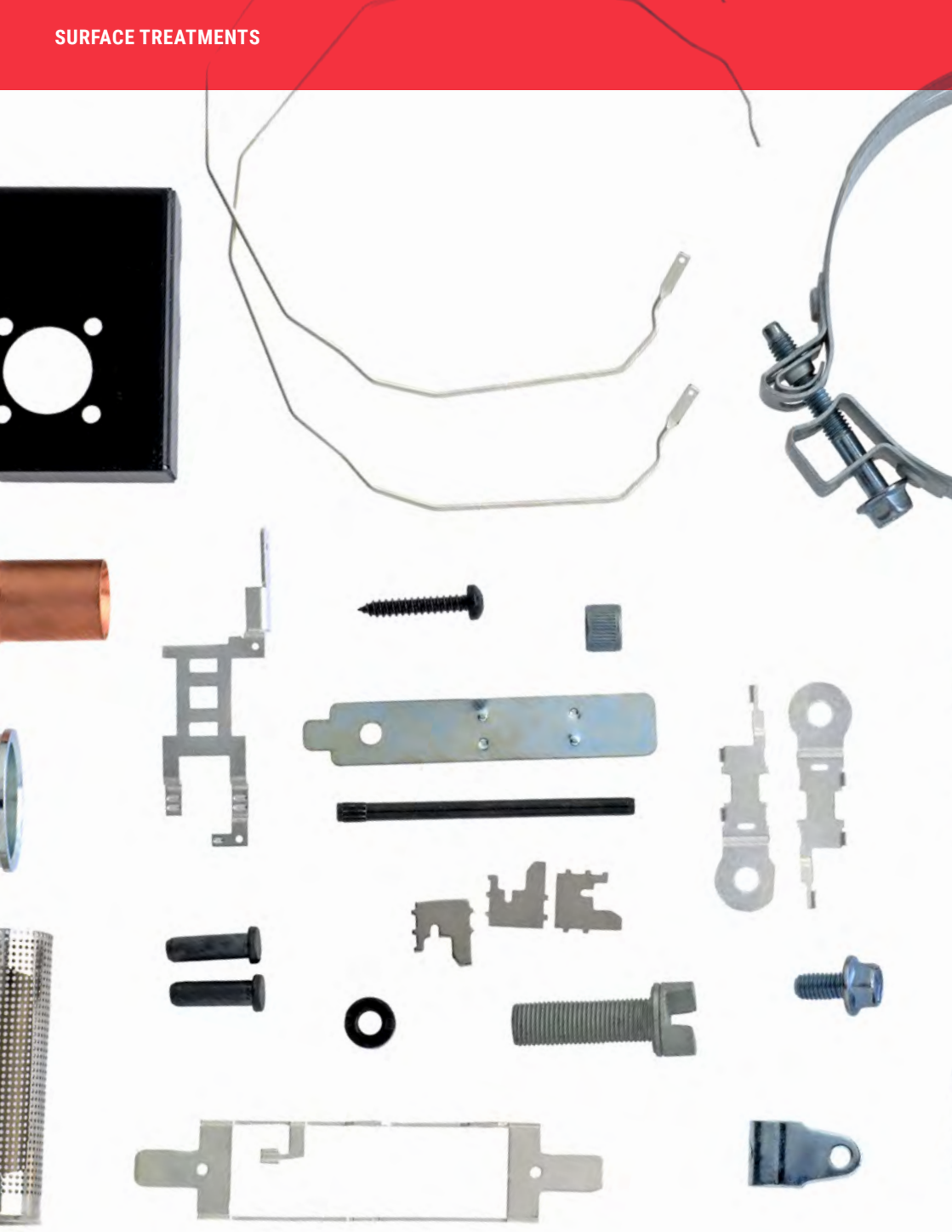
All products referred to can be quenched and tempered with hardness from 250 to 450Hv. We can also perform carbonitriding or cementation surface hardening up to 0.3mm of depth and over 450Hv of hardness.



# SURFACE TREATMENTS

In order to increase the corrosion resistance of the parts, the conductivity or to improve the appearance, ETMA is capable of performing the following surface treatments:

- Electrolytics with deposition of: Zinc, Zinc-Nickel, Nickel, Copper, Silver, Tin
- Chemicals for: phosphatising and oxidation
- Dipping / Spin: Zinc flake coating, top coats and sealants
- Dehydrogenation: performed in all parts of medium and high carbon
- Degreasing / Wash: in closed chamber with perchloroethylene fulfilling European standards
- Deburring / Polishing with abrasives: ceramic and porcelain



## TECHNICAL TEAM

• Our team has expertise and proper technical training adapted to the needs of this special process, making measurement of thickness, corrosion resistance and adhesion

## RAW MATERIALS

• In this domain, ETMA proceeds to the surface treatment of metal parts in a variety of materials: steel, stainless steel, brass and copper

## EQUIPMENTS

- Automatic line: Zinc and Zinc-nickel - Delta AT2
- Automatic line: Copper, Nickel, Tin and Silver - Delta SO
- Dip/Spin: Lamellar zinc, top coats and sealants – BValverde
- Degreasing - MacDry V2 e EMO Vaiocs Mini II
- Deburring – Rosler and Rollwasch
- Dehydrogenation unit – Termometalicas
- Thickness measurements: Phascope pmp10 , Fischer X-Ray Xu
- Salt fog chamber - Himel-Plastoquímica

## EXAMPLES

- Finishes: Zinc plated, nickel plated, Zinc-Nickel, Copper, Tin, Silver, phosphate, oxidised
- Springs, clips, terminals, washers and electrical connectors, tubes, protection boxes, shafts, spindles, screws, among others

# ASSEMBLY / WELDING

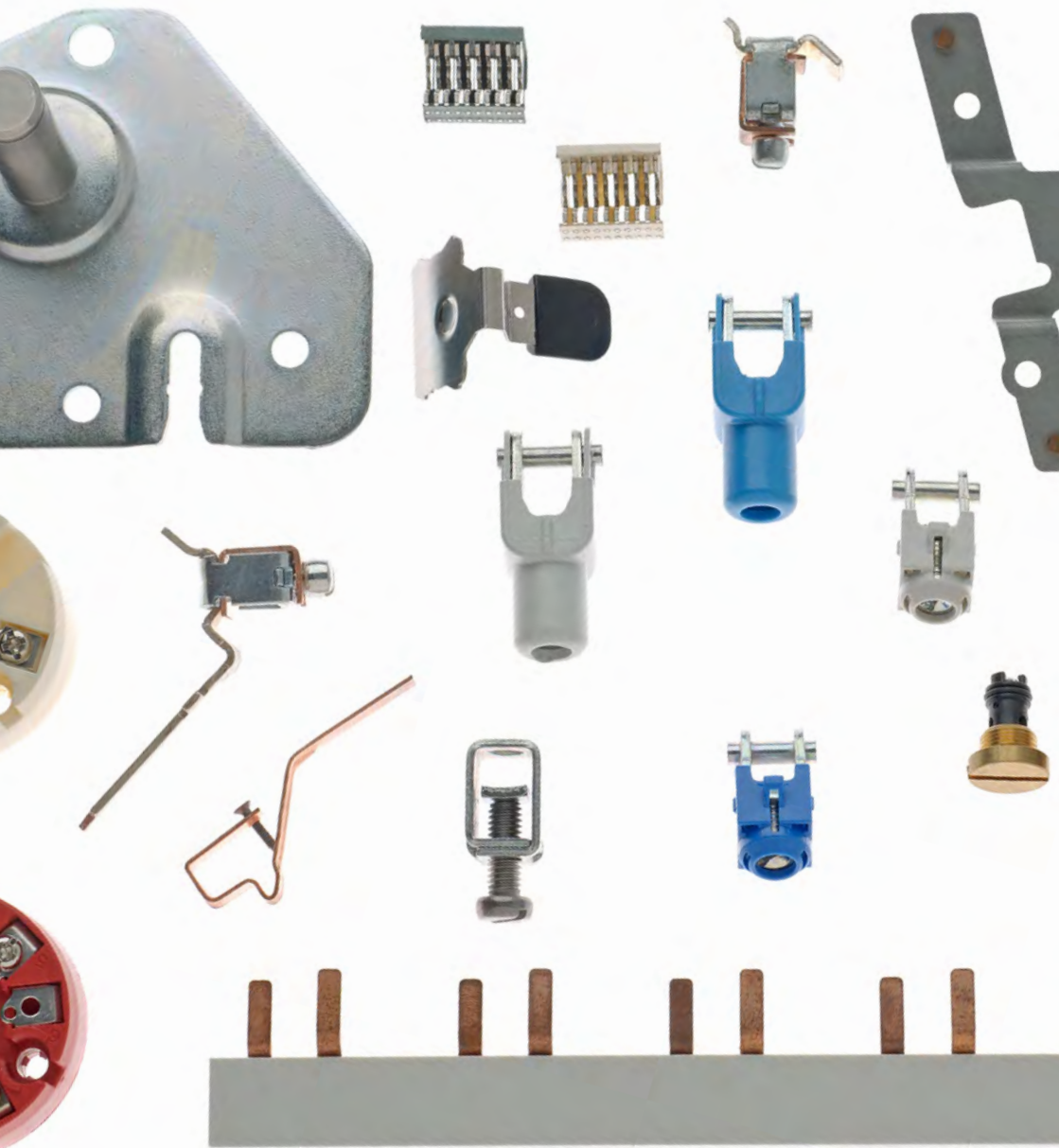
We offer a wide range of solutions for assembly / riveting / crimping and welding of components.

## **WELDING**

Resistance welding, spot welding, brazing and mechanical fastening systems (riveting)

## **ASSEMBLY**

Manual assembly, assembly on transfer machines, robotic assemblies



## TECHNICAL TEAM

- Our technical team is capable of assembling components, as well as performing test to the assembled parts, such as: torque, life cycles, dimensional, tensile/ compression, etc., that result in mounting solutions to suit our clients needs

## RAW MATERIALS

- Steel, stainless steel, brass, aluminium, copper and plastic components

## ASSEMBLY EQUIPMENTS

- Robot Fanuc vision M-11A/0.5S
- Transfer GDY1, Tranfer TB1
- Equipment developed to fit the needs of the client

## WELDING EQUIPMENTS

- Motofil butt welding

## EXAMPLES

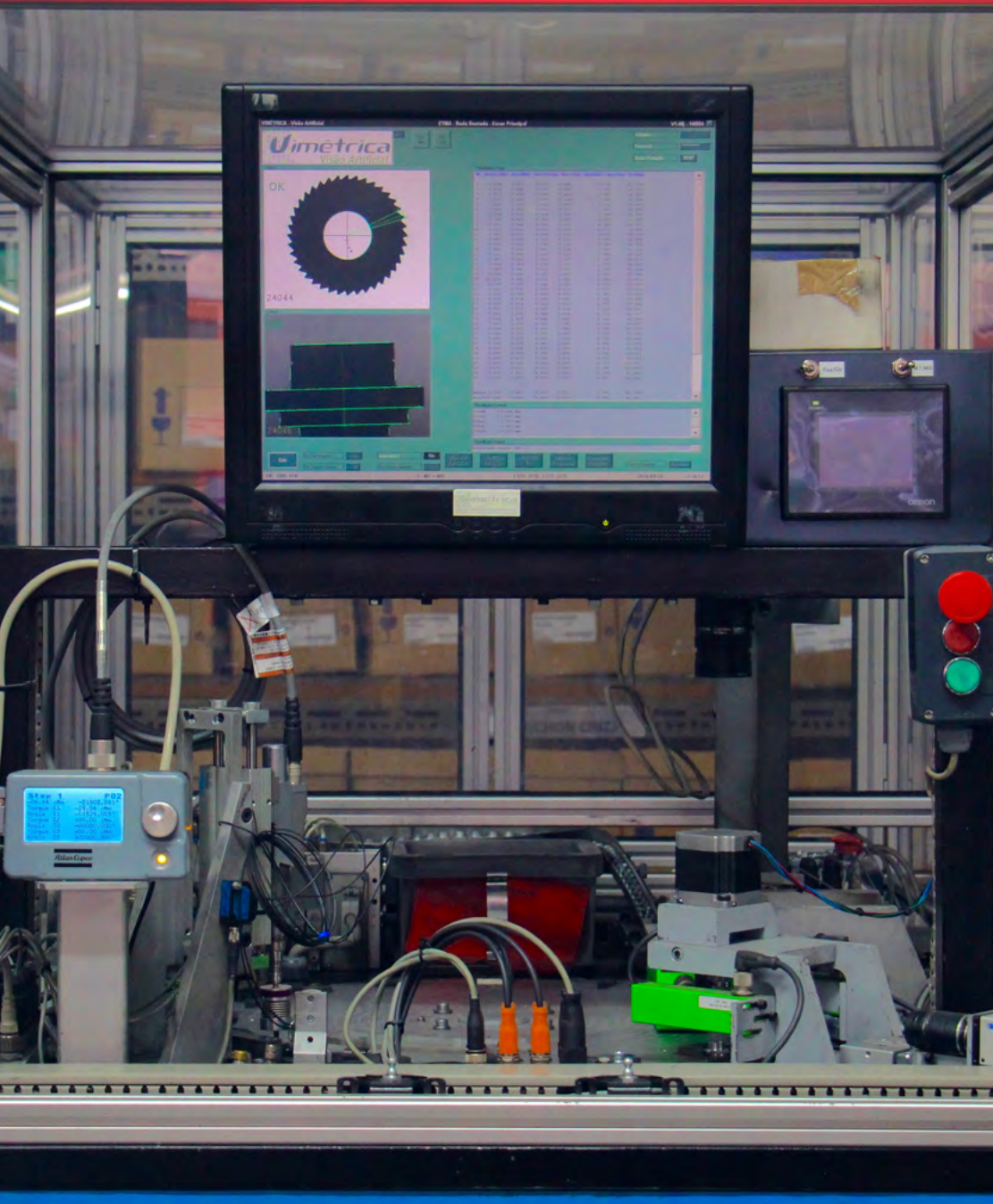
- Mobile terminals, arc chamber, screw assembly, electrical connectors, ball joints, rotary shafts, among others

# INSPECTION / SORTING

In order to keep up with the needs of the market, ETMA has a department with equipment for universal and/or custom made automatic inspection, for full control, according to the client's control and inspection plan.

The sorting operation is made according to the client's requirements, but we highlight some of the processes used:

- Visual, appearance and form
- Visual or dimensional, with artificial vision cameras
- Dimensional with latest generation lasers
- Eddy currents for the detection of hardness and superficial defects
- Torque control, etc



## TECHNICAL TEAM

• Our technical team is capable of performing dimensional and visual sorting, with the appropriate measurement instruments and the rigour that this process requires. We are also able to develop and/or adapt equipment according to the customer's needs

## RAW MATERIALS

• Steel, stainless steel, brass, aluminium, copper

## EQUIPMENTS

- Mectron LT350
- General Inspecion 300
- Omron Vision
- Vimetrica
- Equipment developed to fit the needs of the client

## EXAMPLES

• Brake nuts, springs, hinges, clips, terminals, washers, electrical connectors, tubes, protection boxes, shafts, spindles, screws, circuits, parts for injectors, bushes, compression limiters, knurled parts, rivets, assembled sets, among others

# QUALITY

To ensure the quality of the parts produced, ETMA features a quality department with a specialised team.

The entire organisation is certified by the **ISO 9001:2015** and **IATF 16949:2016** quality management standards, and the **ISO 14001:2015** environmental standard.

All the inspection data is centralised on a server with SPC (Statistical Process Control) – EGITRON analysis.



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# BUSINESS SECTORS

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- \_ AUTOMOTIVE
- \_ ELECTRICAL
- \_ ELECTRICAL APPLIANCES
- \_ PLASTIC INJECTION / OVERMOLDING
- \_ FASTENING



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# CONTACTS

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