



📍 OPERATIONS
 📍 BRANCH OFFICE
 📍 DEALER



**Crimping equipments
since 1976**



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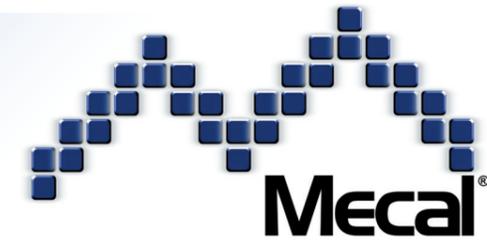


www.mecal.net



Mecal is an ISO14001 and ISO9001 registered company and firmly believes in an ethic approach to the business. Our focus is to support an eco-friendly growth and take care of the people and the environment.

CRIMPING EQUIPMENTS



TT



1.5 TONS

PI07C



2 TONS

P040



4 TONS

P080



8 TONS

PI20



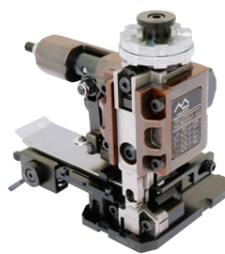
12 TONS

P200



25 TONS

EVOLUTION
EVS/EVF



ASIAN STYLE
RSJ/RFJ



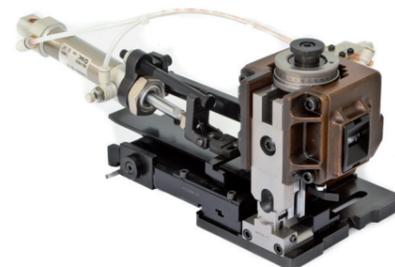
RETYLING
MRS/MRF



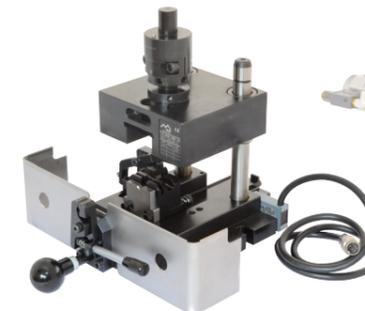
PNEUMATIC
MRSP/MRFP



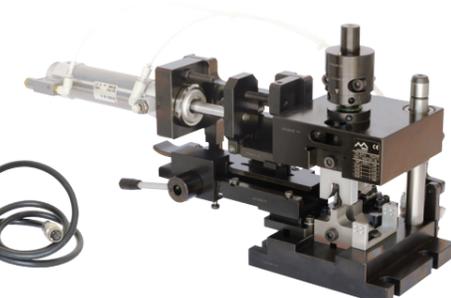
MAGNUM
LMP/FMP



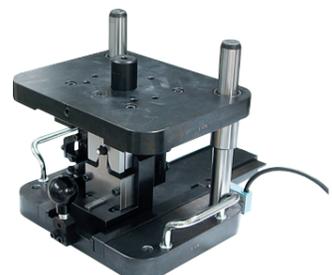
TWO POST
MSES



TWO POST
MSEP



TWO POST
MSC



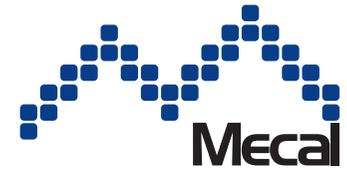
0 - 25 mm² or 32 - 3 AWG wire section

may be coupled with TT, PI07C, P40, P80, PI20

25 - 100 mm² or 3 - 4/0 AWG wire section

may be coupled with P80, PI20, P200

Mecal guide to quality crimping



The following information is referred to standard crimping

Mecal srl - Strada per Felizzano, 18 - I - 15043 FUBINE (AL) - Phone +39 081 792.792 - Fax +39 081 792.733 - www.mecal.net

General appearance

Unacceptable

Acceptable

Stripping length precisely set and cut
The wire stripped section must be clean and free of insulation scraps
Gripping marks on insulation are allowed

Insulation Wire

Both wire and insulation must be clearly visible

Checks and evaluations

Description	Rif.
Bent left or right (max)	3° A
Bent up or down (max)	3° B
Torsion (max)	3° C
Bellmouth	0.2-0.5 mm D
Cut-off (max)	0.5 mm E
Wire overlay (min)	0.5 mm F

The material extrusion is acceptable when $h \leq t$

The tips of the barrel can not touch the terminal bottom

Insulation crimping

Crimping height measurement

Crimping width measurement

H/L ratio and crimp compacting

Crimp compacting

The H/L ratio is acceptable when within a min of 55% and a max of 70%

The crimp compacting is the difference between the cross section of the wire + terminal before and after the crimping itself. It is acceptable when within a min of 17% and a max of 24%

Measurements

Wire crimping

The crimping is symmetrical. The strands are uniformly compacted, there are no empty spots. There's no material extrusion and/or terminal deformation. The flat spots are clearly visible and aligned

Flat spot Flat spot

The flat spots are an important mark of the anvil on the terminal bottom, they help with the strands compacting and keep the terminal aligned with the anvil itself

Terminal has been cutted according to Mecal internally approved procedure

Automotive

Wire sect. mm²	Min pulling force in Newton		
	Class 1	Class 2	Class 3
0.35	---	34	---
0.5	60	80	80
0.75	70	120	120
1	80	160	160
1.27	---	160	---
1.5	90	200	200
2	---	230	---
2.5	100	250	250
3	---	300	---
4	---	350	350
6	---	450	500
10	---	800	1500
16	---	1400	2400
25	---	1900	3000
35	---	2270	4200
50	---	2800	6000
70	---	3500	8400
95	---	4200	11400

Electronics/white goods

Wire section AWG	Wire section mm²	Min pulling force in Newton
32	0.03	3
30	0.05	5
28	0.08	10
26	0.12	20
24	0.2	30
22	0.33	34
20	0.5	60
18	0.75	90
16	1.25	130
14	2	150

Class 1: Terminals with $\theta \leq 2.9$ mm/Ampere $\leq 5A$
Class 2: Terminals with $\theta > 2.9$ mm/Ampere $> 5A$
Class 3: Cylindrical terminals (to be coined)

Ref: DIN EN 60352-2
Mecal Specifications

Pull test

Specifications subject to change. Consult Mecal s.r.l. for latest specification



Mecal Head Quarters, Fubine (Italy)

- **1976** **Company foundation**
- **1994** **ISO 9001 Certification**
- **1995** **Mecal Brazil incorporation**
- **2004** **Mecal de Mexico incorporation**
- **2005** **ISO 14000 Certification**
- **2007** **Mecal by Starn - USA, venture with Starn Tool (Meadville, PA)**
- **2007** **Yazaki supplier of the year award**
- **2011** **Opening the third building in the Headquarters factory**
- **Ownership** **Private Company, Aluffo Family**
- **Headquarter** **Fubine, Italy**
- **Business** **Manufacturing of Crimping Equipments for the electric wires**
- **Employees** **146**



- ✓ **SUPPLYING THE WIRE HARNESS INDUSTRY WITH THE BEST CRIMPING EQUIPMENT AVAILABLE**
- ✓ **BEING RECOGNIZED AS THE LEADING COMPANY IN CRIMP APPLICATION TOOLING**
- ✓ **THE USAGE OF MECAL EQUIPMENT AND CRIMPING TECHNOLOGY BEING A COMPETITIVE ADVANTAGE FOR THE CUSTOMER**
- ✓ **INNOVATING THE CRIMPING PROCESS**

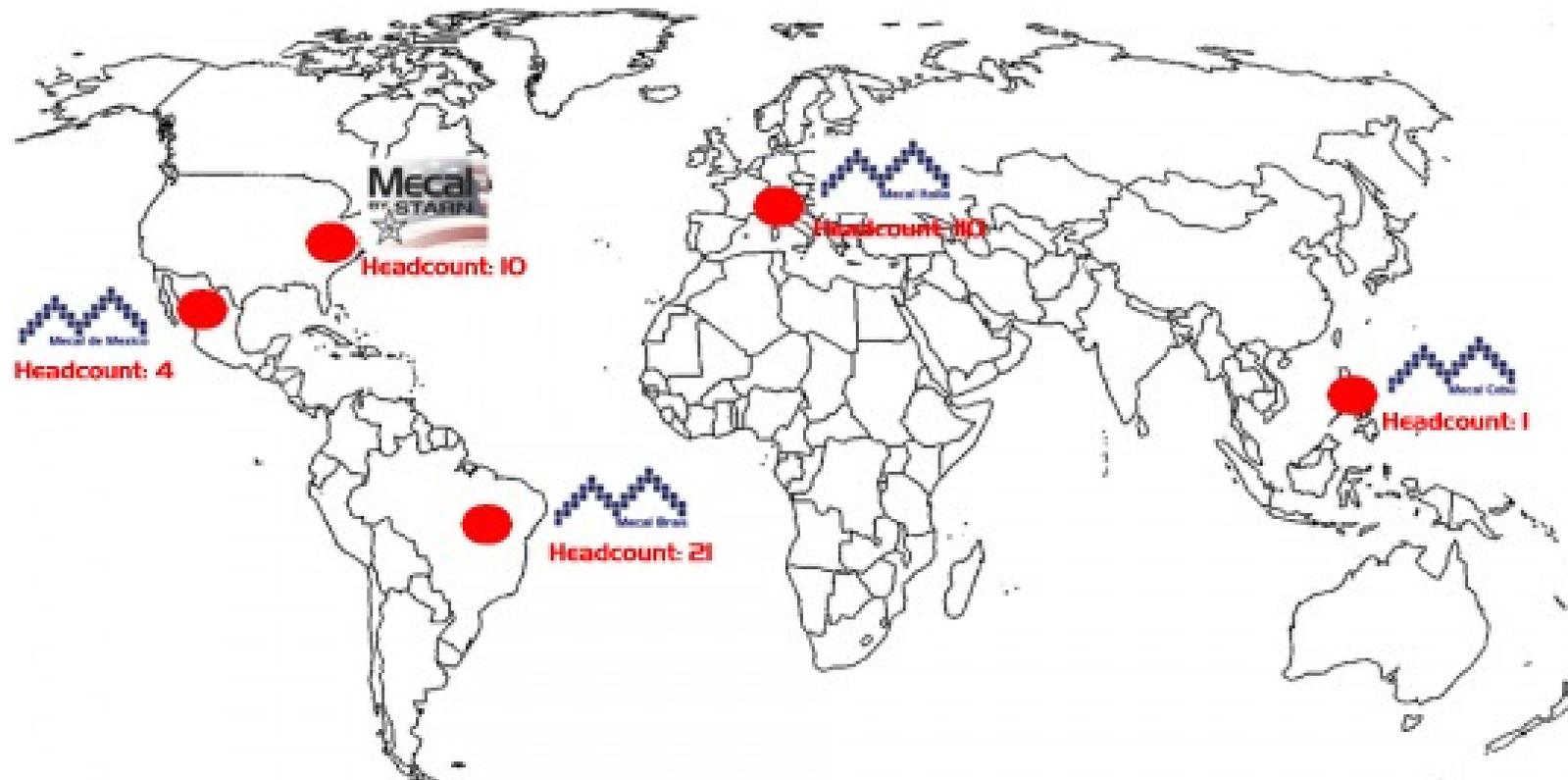


- ✓ ELECTRO MECHANIC CRIMPING PRESS
 - ✓ CRIMPING APPLICATORS
 - ✓ STRIPPING-CRIMPING UNITS
- ✓ QUALITY MONITORING DEVICES FOR THE CRIMPING PROCESS
- ✓ SEMI AUTOMATIC EQUIPMENTS FOR SPECIAL APPLICATIONS



Electrical Components International

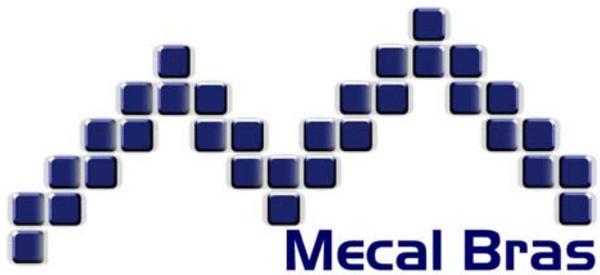


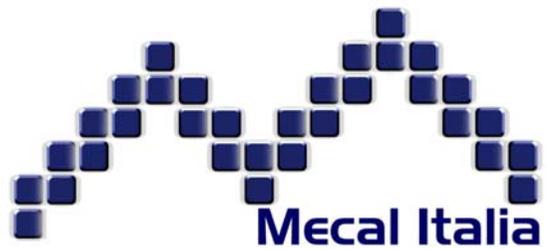


TO SUPPORT ITS CUSTOMERS WORLDWIDE, MECAL IS PRESENT - BESIDE ITALY - IN BRAZIL, MEXICO, PHILIPPINES AND USA

FURTHERMORE MECAL MAKES USE OF A VERY TIGHTLY KNITTED NETWORK OF 43 SALE REPRESENTATIVES AND DISTRIBUTORS, WHICH ALSO GRANTS AN EFFICIENT AFTER SALE AND SPARE PARTS SERVICE

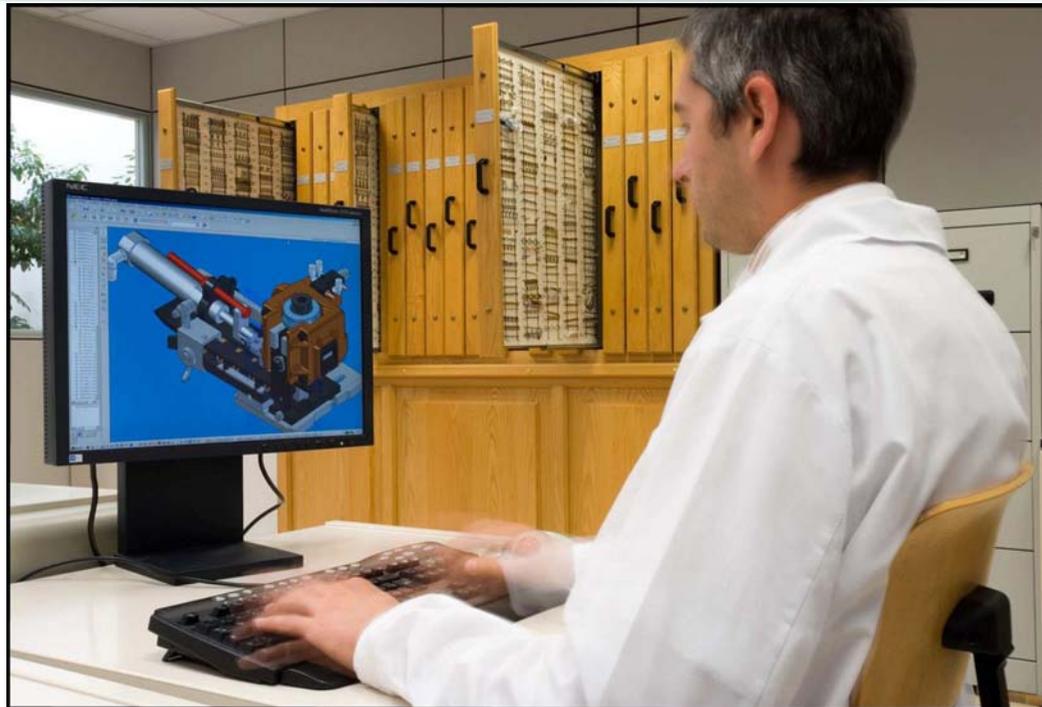






CRIMPING AT ITS BEST!

0 - 140mm ² equipment range
75000 Applicators on field
45000 Press on field
6000 terminals data base
Up to date application knowledge
Global Presence
High demanding customer base
R&D investments, HR training
State of Art testing equipment
State of art productive equipments
Full design in house capacity
ISO 9001 and I40001 certifications



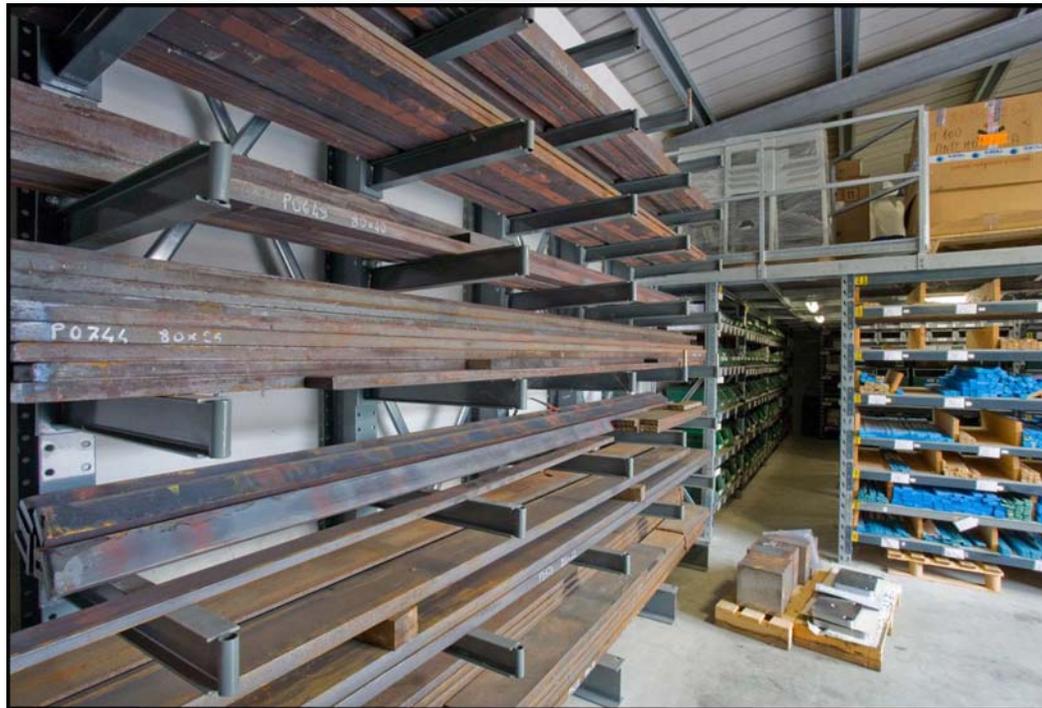
MECAL OPERATES UNDER A QUALITY MANAGEMENT SYSTEM CERTIFIED TO ISO9001 AND I4001

THE ENGINEERING AND DESIGNING OF A NEW PRODUCT IS DONE USING 3D SOLID EDGE SOFTWARE. THE ENGINEERING WORK FORCE CONSISTS OF 10 CAD STATIONS AS WELL AS 10 ENGINEERS, 5 OF THOSE ARE FULLY DEDICATED TO APPLICATORS

THE OVERALL PROJECT OF AN APPLICATOR IS BASED ON *MECALL*, A CUSTOMIZED SOFTWARE WHICH TAKES INTO CONSIDERATION THE HUGE ARCHIVE OF DATA COLLECTED THROUGH THE YEARS. CRIMPING SPECIFICATION ARE ALWAYS VERIFIED THROUGH *CHCALC*. POOR CRIMPING SPECS ARE STOPPED AT THIS STAGE, AVOIDING EXTRA COST FOR BOTH THE CUSTOMER AND MECAL

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DURING THE YEARS, MECAL HAS DONE HUGE INVESTMENTS CONCERNING THE MATERIALS FOR COMPONENTS, PARTICULAR FOR CRIMPERS AND ANVILS

MATERIAL PLANNING IS MADE MANY MONTHS IN ADVANCE TO AVOID ANY KIND OF MARKET SHORTAGE AS WELL AS PRICE INSTABILITY. THE STEEL USED FOR WIRE AND ISO CRIMPERS IS PRODUCED EXCLUSIVE FOR MECAL BY ONE OF THE MAJOR WW PRODUCERS

TO KEEP THE SAME FIRST CLASS QUALITY OF ITS CRIMPERS AND ANVILS, MECAL DELIVER SUBSIDIARIES AND LICENSED COMPANIES WITH W.I.P. PARTS MADE WITH THE APPROVED RAW MATERIAL. SUBSIDIARIES ARE NOT ALLOWED TO USE ANY ALTERNATIVE MATERIAL

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ALMOST 80% OF THE APPLICATOR COMPONENTS ARE MADE BY CASTING PARTS, AS WELL AS MANY PARTS USED ON CRIMPING PRESS AND ACCESSORIES.

INVESTMENTS COST ARE AMORTIZED THANKS TO THE HIGH VOLUMES OF EQUIPMENTS PRODUCED

JIGS AND FIXTURE HAVE BEEN DEVELOPED DURING THE YEARS, ALLOWING A CRITICAL REWORKING MADE EASY

AN EFFECTIVE REWORKING OF CASTING PARTS IS ONE OF THE MAIN FACTORS IN BEING VERY COMPETITIVE IN TERMS OF PRICE, MEANWHILE QUALITY AND SERVICE ARE A GIVEN

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MILLING DEPT.

SINCE THE BEGINNING, MECAL HAS IDENTIFIED THE EQUIPMENTS WHICH SUIT AT ITS BEST TO THE MANUFACTURING PROCESS

WITH THE BEST YOU CAN PRODUCE THE BEST! AS A ALL CNC MILLING COME FROM THE SAME MANUFACTURER AND THE SAME APPLIES FOR GRINDING, EDM, LATHES AND SO ON, WITH A FEW EXCEPTIONS. THIS GIVES GREAT FLEXIBILITY BEING EASY FOR THE OPERATORS TO RUN SEVERAL MACHINES. BESIDES, THERE IS NO RISK TO STOP ANY KIND OF PRODUCTION, HAVING THE POSSIBILITY TO REPLACE IMMEDIATELY THE BROKEN EQUIPMENT WITH A SIMILAR ONE.

MAINTENANCE COST ARE VERY MUCH CONTAINED

CRIMPING AT ITS BEST!

- 0 - 140mm² equipment range
- 75000 Applicators on field
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GRINDING DEPT.

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LATHE DEPT.

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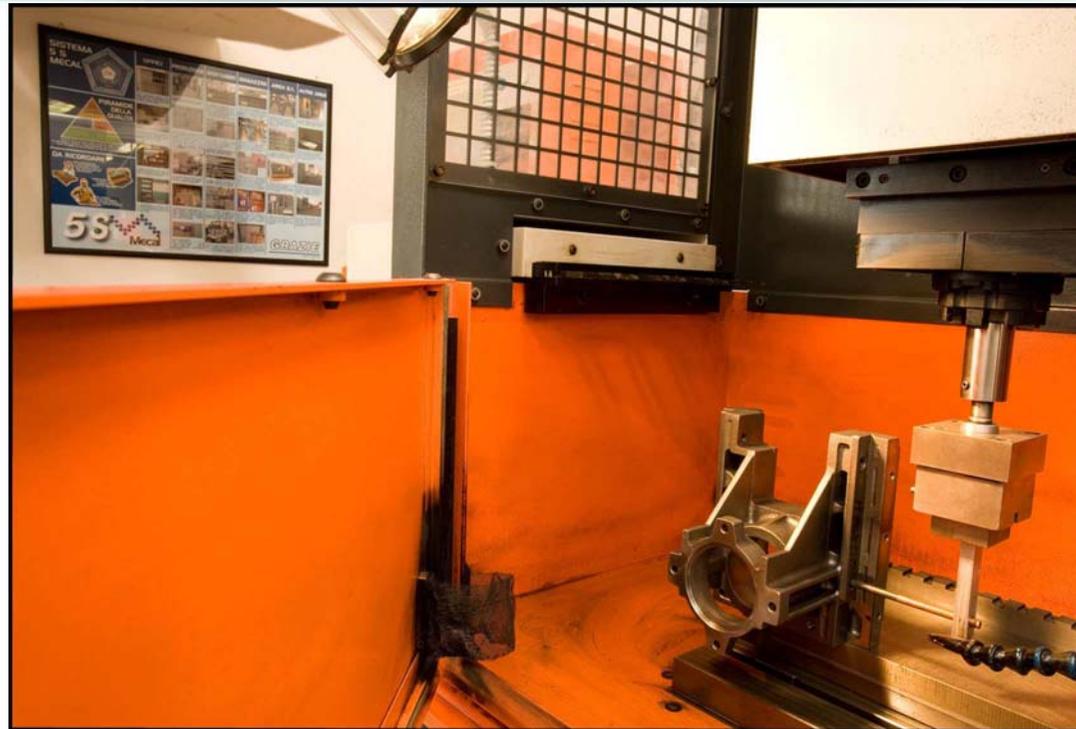


WIRE EDM DEPT.

CRIMPING AT ITS BEST!

EDM DEPT.

- 0 - 140mm² equipment range
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Prepared by
Professional EDM Specialists

CRIMPING AT ITS BEST!

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DURING EACH STEP OF THE MANUFACTURING PROCESS, THE OPERATOR HAS THE DUTY TO DO CHECKS AND MEASUREMENTS TO ASSURE THE QUALITY OF THE PARTS. OPERATIONS ARE CLEARLY STATED IN THE WORK ORDER AND MUST BE ACCOMPLISHED AND SIGNED BY THE OPERATOR

QUALITY INSTRUMENTS ARE LOCATED ALONG THE PRODUCTION DEPARTMENTS AS WELL AS IN THE LABORATORY

BESIDE OTHERS, A 3D MEASURING EQUIPMENT BY HEXAGON METROLOGY IS AVAILABLE IN THE QUALITY DEPARTMENT

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W.I.P. SHOPFLOOR

CRIMPING AT ITS BEST!

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W.I.P. SHOPFLOOR

Preferred by
Professional ECG Specialists

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LASER MARKING DEPT.

ALL PARTS ARE LASER ENGRAVED WITH PART NUMBER, MANUFACTURING DATE AND MECAL LOGO

TRACEABILITY IS ASSURED BY THE DATE AND THE CORRESPONDING WORK ORDER NUMBER

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**AUTOMATED
WAREHOUSING
OF FINISHED GOODS**

CRIMPING AT ITS BEST!

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APPLICATOR
ASSEMBLING
& TESTING AREA

THE APPLICATOR ASSEMBLING AND TESTING IS DONE ACCORDING TO THE WORK ORDER, THE MECAL TESTING SPECS AND THE TECHNICAL DATA SHEET

TESTING DATA AS WELL AS THE CMK STUDY ARE PASSED ON TO THE PRODUCT ENGINEERING WHERE THE APPLICATOR DOCUMENTATION IS DONE ACCORDINGLY . APPLICATOR IS RELEASED ACCORDINGLY

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TERMINAL SAMPLE
WAREHOUSING

ORGANIZED WAREHOUSING FOR TERMINAL SAMPLES ALLOWS QUICK DELIVERY AND COST OPTIMIZATION

CABLES FROM CUSTOMERS AND MANUFACTURER ARE PROPERLY STOCKED AS WELL

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**PRESS ASSEMBLING
& TESTING AREA**

CRIMPING AT ITS BEST!

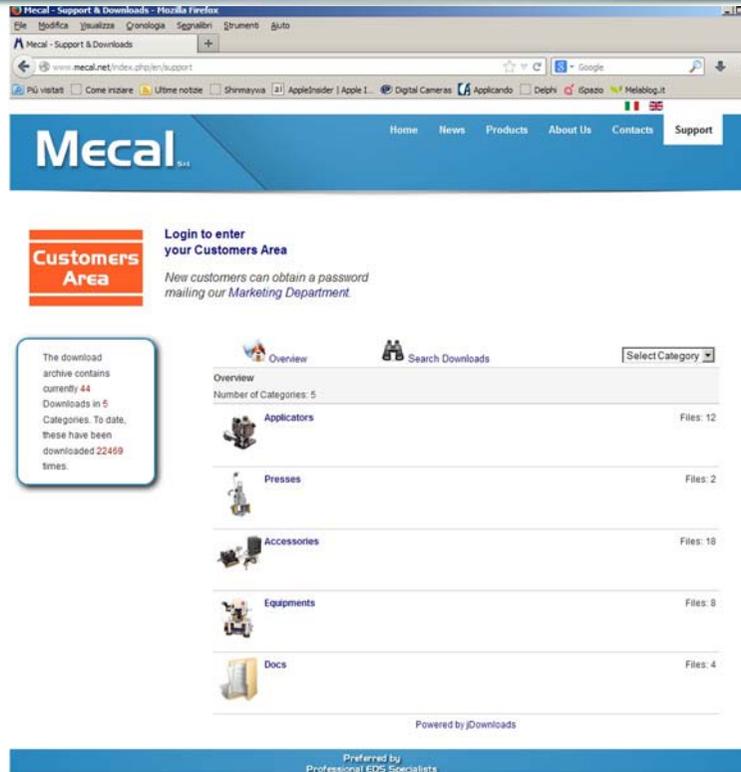
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TECHNICAL DOCUMENTATION IS INCLUDED IN EACH SHIPMENT OTHERWISE THE CUSTOMER CAN GET COPY THROUGH THE MECAL WEB SITE

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- ✓ 6000 TERMINAL DATA BASE
- ✓ MECAL HAS BEEN ABLE TO PUT TOGETHER A MASSIVE DATA BASE DURING 30 YEARS COOPERATION WITH THE MAIN HARNESS MAKERS AND TERMINAL MANUFACTURERS WORLD WIDE
- ✓ MECAL SUPPORTS TERMINAL MANUFACTURER IN DESIGNING AND TESTING NEW TERMINALS
- ✓ BEING A CRIMP TECHNOLOGY EXPERT, MECAL IS OFTEN REQUESTED BY AUTOMOTIVE OEM'S TO ATTEND WORKSHOPS OR SUPPORT TECHNICAL DECISIONS

CRIMPING AT ITS BEST!

0 - 300mm² equipment range

90'000 Applicators on field

54'000 Press on field

6000 terminals data base

Up to date application knowledge

Global Presence

High demanding customer base

R&D investments, HR training

State of Art testing equipment

State of Art productive equipments

Full design in house capacity

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CRIMPING AT ITS BEST!

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CRIMPING EQUIPMENTS



THE NEED TO CRIMP ANY KIND OF TERMINAL AND CONDUCTOR (I.E. FLC, IDC, CIVIL APPLIANCE AND SO ON) HAS DRIVEN MECAL TO DEVELOP THE BROADEST RANGE OF CRIMPING EQUIPMENTS AVAILABLE ON THE MARKET

Preferred by Professional EDG Specialists