



EUROPA STAMPI



Organisation and operative modalities

Edition July 2020

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The Company Policy of C.M. Europa Stampi

“To Believe for Growing: A necessary Choice”

C.M. Europa Stampi S.r.l. operates in an organized system where professionalism, experience, determination and efficiency are the everyday ingredients that allow us to achieve the satisfaction of our customers.

The world challenge of globalization today must push us to constantly improve to achieve the following objectives:

- reduced production time
- compliance with contractual terms
- improved services
- continuous improvement to the quality/price ratio;
- increase in our shares of penetration in the major world markets

For this purpose we especially intend to take advantage of the following operating strategies:

- increase the motivation, involvement and growth in the skills and professionalism of personnel;
- more agreements with business partners
- improve the internal distribution of data and information, stimulating people to use it in managing their tasks and achieving their objectives;
- stimulate a systematic internal dynamic of improvement;
- identify, quantify and monitor quality objectives using appropriate indicators;
- adapt and constantly innovate infrastructures, and take precautions with the work environment to improve personnel safety and product quality.
- constantly search for the methods of production to reduce processing times.
- encourage by every possible means the standardization of our products, aimed at reducing product implementation times and costs.

For the above, managers of the corporate functions that report directly to the Management are required, within the boundaries of their area of responsibility, to identify their objectives, in line with corporate aims, and monitor them to ensure they are achieved.

The Management, supported by the Quality Assurance function, undertakes to intervene so that the quality management criteria, principles, methods and strategies adopted, are constantly implemented and upheld by personnel.

General Information

C.M. Europa Stampi s.r.l.

Via Torretta, 50

40012 **Calderara di Reno** (Bologna - Italy)

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Internet: www.cmeuropastampi.it

VAT-no. IT00506661206

Registered at the C.C.I.A.A.¹⁾ with no. 177571

Registered at the Court of Bologna with no. 27359

No. of employees: 33 in date May 2015

Covered area: 2800 m²

¹⁾ Chamber of Commerce, Industry, Agriculture and Small Industry

Our History

C.M. Europa Stampi was founded in March 1966 as a result of the experience gained in the mechanical sector by Mrs Cremonini. The first works of 500 m² was situated in Trebbo di Reno (BO).

The business of C.M. Europa Stampi focuses on the design and manufacture of dies and injection moulds.

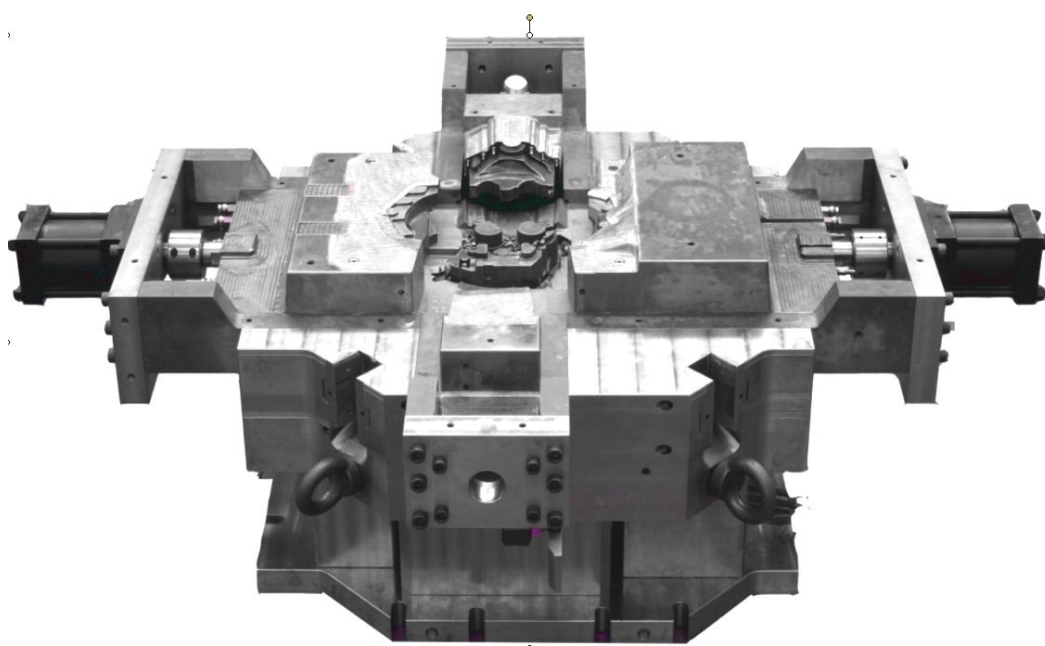
The Policy of C.M. Europa Stampi is that of offering our Customers a product boasting the very latest die-casting and injection technology, as well as providing an optimum ratio as regards technology employed/investment required and a high standard of Customer service.

The market has appreciated such policy, allowing C.M. Europa Stampi to make its mark and increase sales.

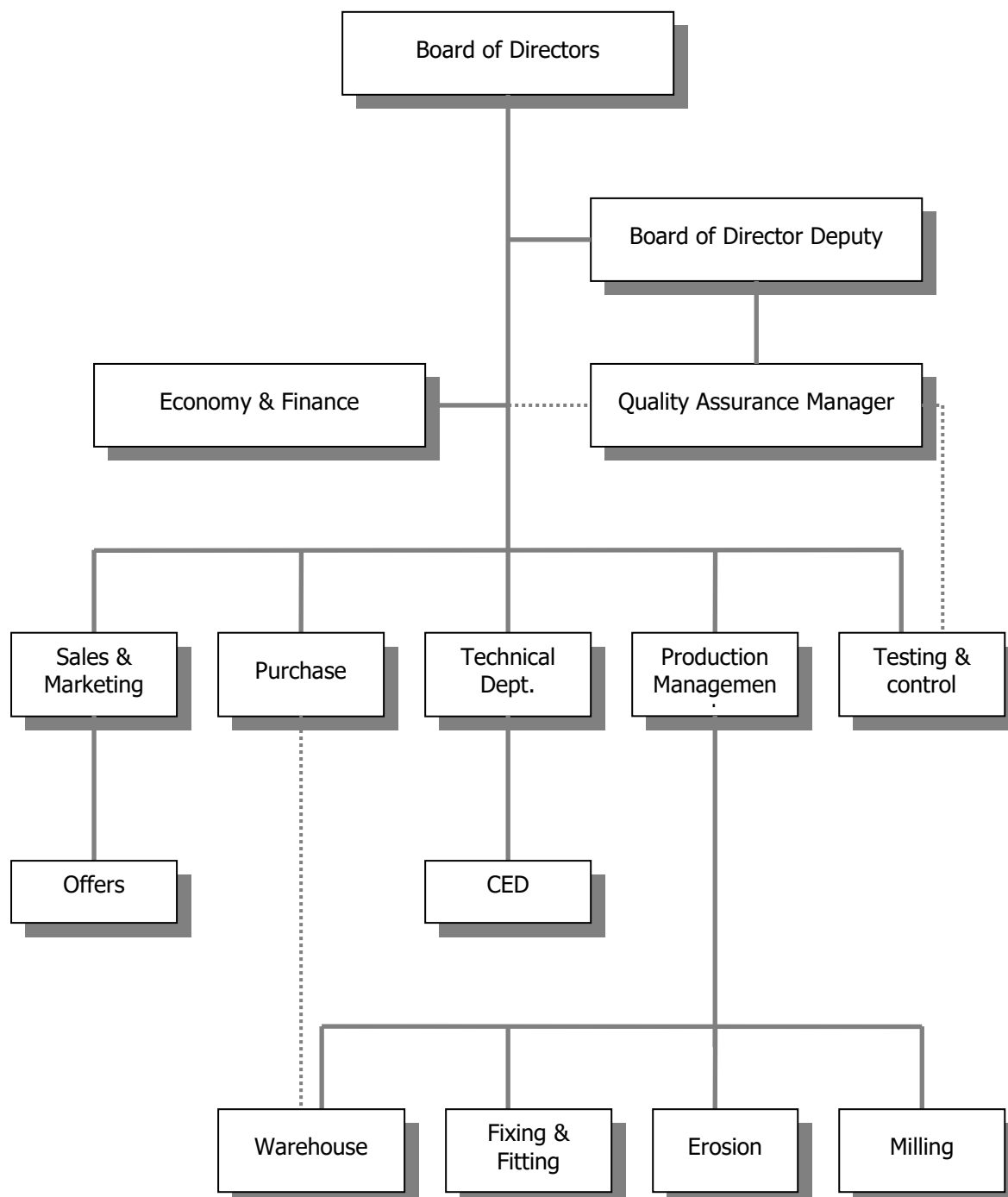
In July 1991, C.M. Europa Stampi moved to Calderara di Reno, in a works of 2800 m² where it was able to install extremely modern design and manufacturing technology such as: CAD software offering precision and detail and CNC machines, enabling dies and moulds of great complexity and quality to be produced, for presses of up to 3500 tons and overall weight of up to 35 tons.

The leading-edge technology employed by C.M. Europa Stampi has allowed the company to further increase its turnover and supply businesses in the automotive and electronics sector.

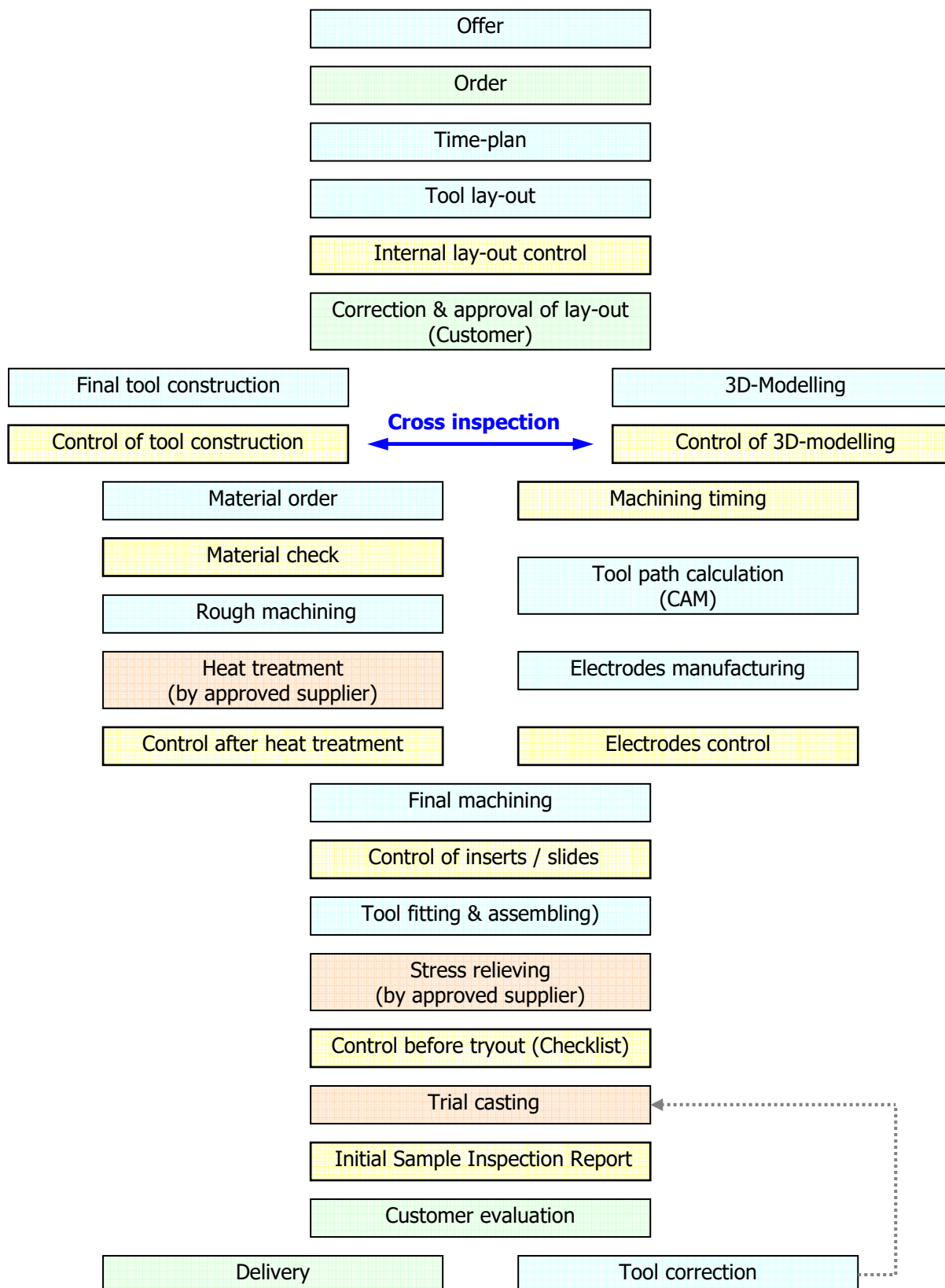
The picture shows a typical HPDC-tool manufactured by C.M. Europa Stampi:



Organisation Chart



Flow chart



Yielding Capacity

C.M. Europa Stampi is equipped with advanced technologies and qualified personnel enabling the Company for the production of dies of remarkable complexity in order to serve presses up to 3.500 tons, with complete weights up to 35 tons.

The following table provides a summary of the C.M. Europa Stampi personnel set-up and production capacity divided between Departments or Offices with current number of figures; a list of machinery and equipment from the various Departments and/or Offices is given further on.

| Department | Personnel | No. of machines | Developed hours per year | Notes |
|----------------------------|-----------|-----------------|--------------------------|---|
| Technical Department | 5 | * | 9.000 | Headman: (1) Tool-Design: 2 +1 Modelling: 2 |
| Milling | 6 | 8 | 34.000 | CAM department: 1 |
| Erosion | 2 | 6 | 22.000 | Sink erosion (EDM): 2 Wire cutting: 3 Sink drilling:1 |
| Fitting & Maintenance | 10 | 8** | 20.000 | |
| Warehouse | 1 | none | 2.000 | |
| Test and Metrology | 1 | 2 | 2.000 | |
| Production Management | 1 | none | 2.000 | |
| Sales and Marketing | 2 | none | 4.000 | |
| Estimate Department | 1 | none | 2.000 | |
| Purchasing | 1 | none | 2.000 | |
| Quality Assurance | 1 | none | 2.000 | |
| Administration and Finance | 2 | none | 4.000 | |
| Total *** | 33 | | 102.000 | |

* for the technical dept. equipment please see the proper list.

** includes just machines for deep-drilling, grinding, radial drilling and lathes; the detailed list of all machinery and equipment from the Fitting Department appears in a separate list.

*** all outsourcing for specialized manufacturing (i.e. tool frames, core-pins, tool guidance, etc..) has to be considered in addition

Technical Department

The detailed equipment regarding Workstations & Software for 3D-Design and detail drawing is shown in the following table:

| Producer | Software | Module | No. of Workstations | OS | Data Interface |
|----------------------|----------------------------|------------|---------------------|---------|----------------------------|
| PTC | Pro / ENGINEER | 3D Solid | 5 | Windows | NEUTRAL IGES STEP |
| PTC | CREO | 3D Solid | 5 | Windows | NEUTRAL IGES STEP |
| CAD-CAM STRÄSSLE | Euklid | 3D Surface | 2 | Windows | VDA IGES |
| SIEMENS | NX | 3D Solid | 1 | Windows | IGES STEP PARASOLID |
| AUTODESK | AutoCad | 2D | 5 | Windows | DXF |
| DASSAULT Systemes | Catia V5 | - | 1 | Windows | only for Data interface |
| ADOBE | TETRA4 Reviewer | 3D Viewer | 1 | Windows | ALL Format |

Work Shop - CAM

The detailed equipment regarding Workstations & Software is shown in the following table:

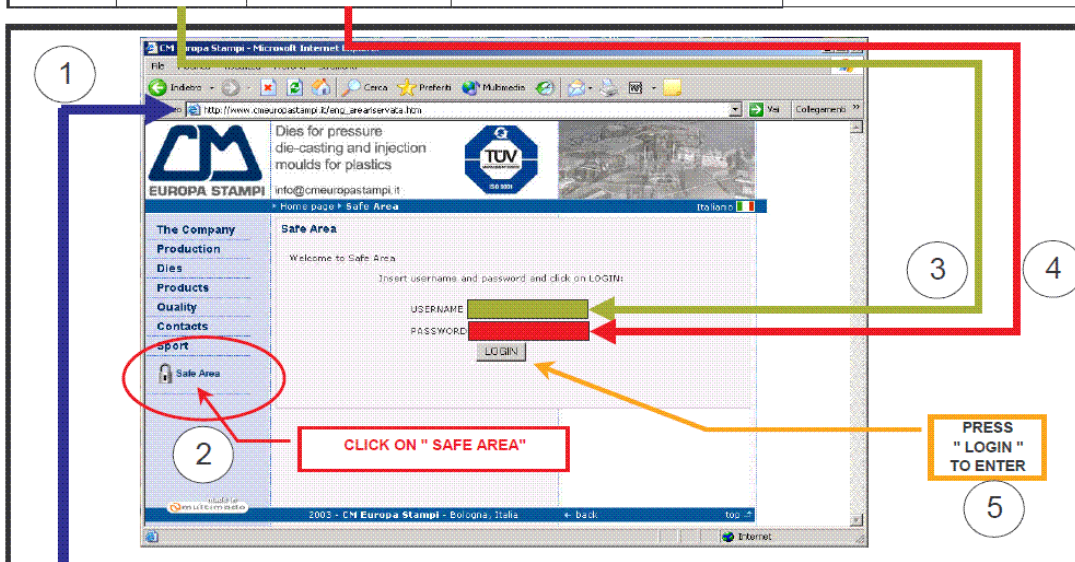
| Producer | Software | Module | No. of Workstations | OS | Data Interface |
|---------------|-------------------------------|------------|---------------------|---------|----------------|
| SESCOI Taglio | WORKNC | CAM 5 axis | 2 | Windows | IGS, VDA |
| Mastercam | Master cam Design 2019 | CAM 5 axis | 1 | Windows | IGS, VDA |
| LEMOINE | RTM | CAM 9 axis | 1 | Windows | IGS, VDA |

All workstations are finally connected by Ethernet Network

Data Exchange - FTP

Data without size-limits can be exchanged through our FTP site using a common Internet explorer. Of course an own login is provided for each costumer or supplier.

| DATA TRANSFER THROUGH OUR FTP SITE USING INTERNET EXPLORER | | | | |
|--|---------|----------|--------------------|-------|
| | USER-ID | PASSWORD | CLIENT | NOTES |
| | | | ONLY FOR QUOTATION | |



internet site : WWW.CMEUROPASTAMPI.IT

Milling Department

The Milling Machine Department is fitted with CNC machines connected to CAM software; as regards computer equipment in particular, the Milling Machine Department) is equipped with:

- 1 - Three-dimensional CAM for the execution of the tool paths
- 4 - Computer for the management between CAD-CAM and CNC machines

The detailed equipment is shown in the following table:

| Producer | Model | Machine Type | Working area | Automatic Tool change | Electrodes Manufacturing | Rough Milling | Finishing | High speed milling |
|------------|--|-----------------------|--------------------|-----------------------|--------------------------|---------------|-----------|--------------------|
| Parpas | DIAMOND (20000 g/l') CNC: Heidenhain TNC 530 | Gantry 5-axis | 2400 x 1700 x 1000 | ■ | | | ■ | ■ |
| Soraluce | FP-600 Iso 50 (5000 g/l') | Moving support 5-axis | 6000 x 2000 x 1200 | ■ | | ■ | ■ | |
| CB Ferrari | D23-E550 Iso 45 (24000 g/l') Elexa E540 | Portal 5-axis | 1700 x 1300 x 800 | ■ | | | ■ | ■ |
| FPT | STINGER HSK A63 (15000g/l') CNC: Heidenhain TNC 640 | Portal 5-axis | 1750 x 1400 x 800 | ■ | | | ■ | ■ |
| HURCO | DCXi 32 Iso 50 (6000 g/l') CNC: WINMAX 9 | Portal | 3200 x 2100 x 920 | ■ | | | ■ | ■ |
| Hermle | C 800 V HSK A63 (15000g/l') CNC: Heidenhain TNC 430 | Fixed bed | 800 x 600 x 500 | ■ | ■ | | ■ | ■ |
| Rambaudi | Ramcenter 800 iso 40 (10000 g/l') CNC: Selca 3045 | Portal | 1000 x 800 x 400 | ■ | | | ■ | ■ |
| CB Ferrari | A 17 CNC Elexa E 500 | Shelf | 1000 x 470 x 400 | ■ | ■ | | | |

Electron Discharge Machining Department (EDM)

The following table provides details of the machines used in the Electron Discharge Machining Department:

| Producer | Model | Machine type | Working area | Notes |
|------------|------------------------------------|---------------|--|---------------------------|
| ONA | HS 700 | Sink erosion | 2300 x 1300 x 700 Tank dimensions | C-axis 120 Amp. |
| Charmilles | Roboform 810 CNC 120 A. | Sink erosion | 2200 x 895 x 400 Tank dimensions | C-axis |
| Charmilles | Robofil 690 | Wire cutting | 800 x 600 x 400 Cutting field | automatic wire thread. |
| Charmilles | Robofil 510 | Wire cutting | 700 x 400 x 400 Cutting field | automatic wire thread. |
| EXCETEK | V1280 | Wire cutting | 1200X800X600 Cutting field | automatic wire thread. |
| SIELT | Drilling Syntesis 2F CNC | Sink drilling | Table: 1600 x 1000 1000 x 750 x 540 Drilling field | Ø drilling 0,3÷3mm |

EDM Department includes no.1 CAM computing workstation for wire cutting path.

Drilling and Grinding Department

The detailed list of machinery and equipment in this Department is as follows:

| Producer | Model | Machine type | Q.ty | Working area | Notes |
|----------|------------|-------------------------------|------|------------------|---------------------|
| IMSA | MF 1000 B2 | CNC Deep hole drilling | 1 | 800 x 1000 | with rotating table |
| IMSA | MF 1000 BB | CNC Deep hole drilling | 1 | 800 X 1000 | 5 Axis |
| SAS | TL 1600 | Radial Drilling | 1 | | |
| SAS | TL 2000 | Radial Drilling | 1 | | |
| Favretto | TC 1000 | Tangent Grinding | 1 | 500 x 1000 x 500 | |
| Favretto | MD 160 | Tangent Grinding | 1 | 850 x 1800 x 750 | |

Turning and Fitting Department

The detailed list of machinery and equipment in the Fitting Department is as follows:

| Producer | Model | Machine type | Q.ty | Working area | Notes |
|----------|-------------------------|-----------------------------|------|-------------------------------------|---|
| Wagner | 200 CNC SIEMENS | Parallel turning machine | 1 | | CNC SIEMENS |
| Monofap | 175 | Parallel turning machine | 1 | | with Heidenhain quote display |
| Monofap | 350 | Parallel turning machine | 1 | | with Heidenhain quote display |
| FAMU | | Drilling with movable table | 3 | | with milling quotes display |
| | Special working benches | Polishing | 4 | with rotating and inclinable tables | Polishing devices (ultrasound, sparked paste) |

Test and control department

Amongst the instruments available to the Inspection and Metrology Department, it is worth noting two 3D control machines:

| Producer | Model | Machine type | Q.ty | Working area | Notes |
|----------|----------------------------|---------------------------------------|------|------------------|--------------------------------|
| Hexagon | Romer Absolute Arm 7520 SI | Laser Scanner cnc control system | 1 | 2000 mm | (*) |
| Hexagon | Romer Absolute Arm 7525 SI | Laser Scanner cnc control system | 1 | 2500 mm | (*) |
| D.E.A. | Range 1102 | Three-dimensional CNC control machine | 1 | 1010 x 660 x 660 | (*) |
| Nikon | | Enlarged profile display | 1 | | |
| Mitutoyo | | Microscope | 1 | | with micrometric movable plate |
| | | Checking plane | 1 | | In granite |

(*) Our D.E.A. measuring machines are equipped with software **“Surfer NT”** to allow dimensional control using directly a 3D model supplied by the Customer.

In addition the Inspection and Metrology Department has the equipment for effecting control and calibration of workshop control instruments such as gauges, micrometers, comparators.

Internal movement

| Producer | Model | Machine type | Q.ty | Working area | Notes |
|----------|-------|--------------|------|--------------|---------------|
| - | - | Roof Crane | 1 | 25 tons | Fitting Dept |
| - | - | Roof Crane | 1 | 12 tons | Fitting Dept. |
| - | - | Roof Crane | 1 | 7 tons | Milling Dept |
| - | - | Roof Crane | 1 | 5 tons | Milling Dept |
| - | - | Fork lift | 1 | 2.5 tons | |














Management of Production Flow

Planning

The necessary activities to execute each individual job are planned in a document called Job Schedule. This is a GANNT chart that displays the allocation of the necessary resources over time matching them to work load capacities to hit the delivery dates required by the Customer. Copy of this document is supplied to the Customer

Example taken from a time schedule:

| ID | Nome attività | Italiano | Cod.Com. | Jira | Inizio | % | Fine | april | maggio | giugno | luglio | agosto | set |
|----|---|----------|----------|------|--------------|------|--------------|-------|--------|--------|--------|--------|-----|
| 1 | VW-DECKEL-LI | | S135E00 | ## | mer 13/04/11 | 2% | lun 08/08/11 | | | | | | |
| 2 | LAY-OUT | | S135E00 | ## | mer 13/04/11 | 50% | mar 03/05/11 | | | | | | |
| 3 | Internal control of technical documentation | azione | S135E00 | ## | gio 14/04/11 | 100% | gio 14/04/11 | | | | | | |
| 4 | order tool | | S135E00 | ## | mer 13/04/11 | 0% | mer 13/04/11 | | | | | | |
| 5 | 3D-model arrivals from customer | finitivo | S135E00 | ## | mer 13/04/11 | 0% | mer 13/04/11 | | | | | | |
| 6 | lay-out PRO-E | Layout | S135E00 | ## | ven 15/04/11 | 100% | ven 15/04/11 | | | | | | |
| 7 | STOP | lavori | S135E00 | ## | ven 15/04/11 | 100% | ven 15/04/11 | | | | | | |
| 8 | START | lavori | S135E00 | ## | mer 20/04/11 | 100% | mer 20/04/11 | | | | | | |
| 9 | lay-out PRO-E | Layout | S135E00 | ## | gio 21/04/11 | 100% | mar 26/04/11 | | | | | | |
| 10 | costumer lay-out approval / meeting CM-KF | Cliente | S135E00 | ## | gio 28/04/11 | 0% | ven 29/04/11 | | | | | | |
| 11 | control of correction/changes on lay-out | oni LR | S135E00 | ## | lun 02/05/11 | 0% | lun 02/05/11 | | | | | | |
| 12 | order steels insert | grezzo | S135E00 | ## | lun 02/05/11 | 0% | lun 02/05/11 | | | | | | |
| 13 | Design and development review (internal CM) | Q-DP) | S135E00 | ## | mar 03/05/11 | 0% | mar 03/05/11 | | | | | | |
| 14 | CONSTRUCTION & CAD 2D | NE 2D | S135E00 | ## | mar 03/05/11 | 0% | ven 03/06/11 | | | | | | |
| 15 | lay-out finishing | Pro-E | S135E00 | ## | mar 03/05/11 | 0% | mar 10/05/11 | | | | | | |
| 16 | fixed side 3D-solid | e fissa | S135E00 | ## | mer 11/05/11 | 0% | ven 13/05/11 | | | | | | |
| 17 | fixed side insert 2D drawing | ssa 2D | S135E00 | ## | lun 16/05/11 | 0% | mar 17/05/11 | | | | | | |
| 18 | fixed side bolster 2D drawings | ssa 2D | S135E00 | ## | mer 18/05/11 | 0% | gio 19/05/11 | | | | | | |
| 19 | fixed side 2D drawings accessories | ssa 2D | S135E00 | ## | mar 31/05/11 | 0% | mar 31/05/11 | | | | | | |
| 20 | moving side 3D-solid | mobile | S135E00 | ## | lun 16/05/11 | 0% | mer 18/05/11 | | | | | | |
| 21 | slide block 3D-solid | carrelli | S135E00 | ## | gio 19/05/11 | 0% | gio 19/05/11 | | | | | | |
| 22 | moving side insert 2D drawing | xile 2D | S135E00 | ## | gio 19/05/11 | 0% | ven 20/05/11 | | | | | | |
| 23 | slide block 2D drawing | elli 2D | S135E00 | ## | lun 23/05/11 | 0% | mar 24/05/11 | | | | | | |
| 24 | moving side bolster 2D drawings | xile 2D | S135E00 | ## | mer 25/05/11 | 0% | gio 26/05/11 | | | | | | |
| 25 | moving side 2D drawing accessories | xile 2D | S135E00 | ## | ven 27/05/11 | 0% | lun 30/05/11 | | | | | | |

| | | | | | | |
|--|-------------|---|-----------------------|---|--------------------|---|
| Progetto: S135E00.mpp Data: mer 27/04/11 Revisione : Rev1 (2011-04-21) | Attività |  | Attività riportata |  | Riepilogo progetto |  |
| | Divisione |  | Divisione riportata |  | Cardine esterno |  |
| | Avanzamento |  | Cardine riportata |  | Scadenza |  |
| | Cardine |  | Avanzamento riportata |  | | |
| | Riepilogo |  | Attività esterne |  | | |

Particolare: VW-DECKEL LI

2-FACH

Pagina 1

Job status

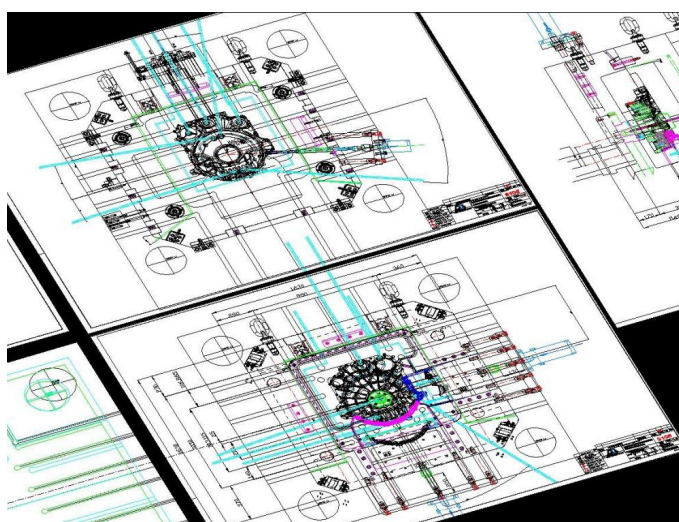
The Job Schedule is steadily updated to reflect current job status and is made available to Customer at request. Affected departments use the Job Schedule to create their planning documents for internal use.

Engineering

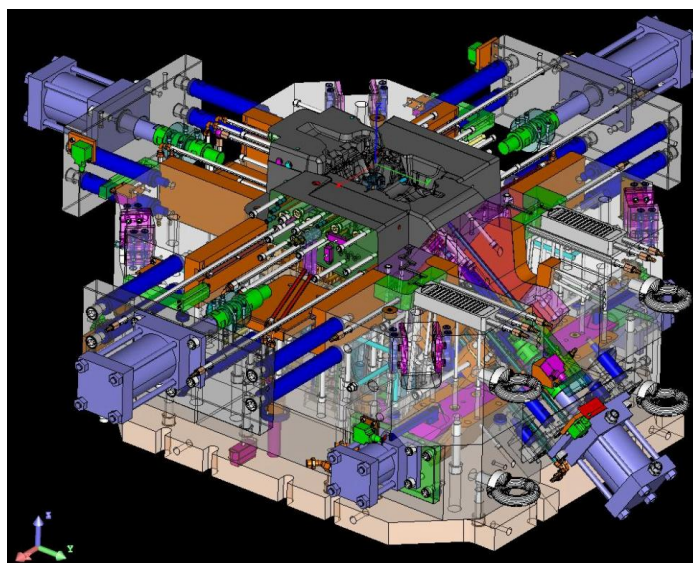
The basic information for engineering work is supplied by the Customer who provides casting drawing and die-casting machine specifications as well as any in-house standards relating to components and materials.

The engineering process consists of several stages:

The first stage is a preliminary study (die layout) aimed at defining the main elements of the die and its design concept. Engineering then submits the preliminary study to Customer for their approval.



The second stage begins after Customer approves die layout. This is the die development phase, when both mechanical detail design and die impression design (modelling) are generated.

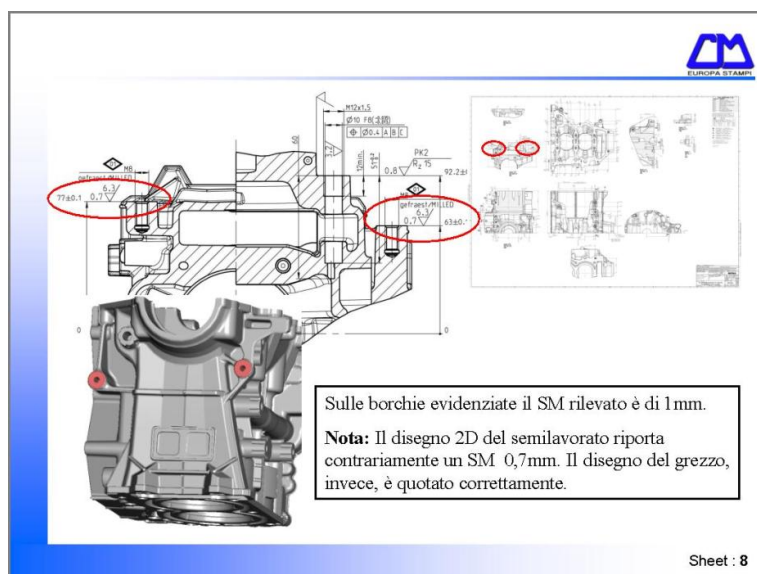


The third stage consists in partial design validation for die mechanical parts (CAD 2D) and impression area (CAD 3D).

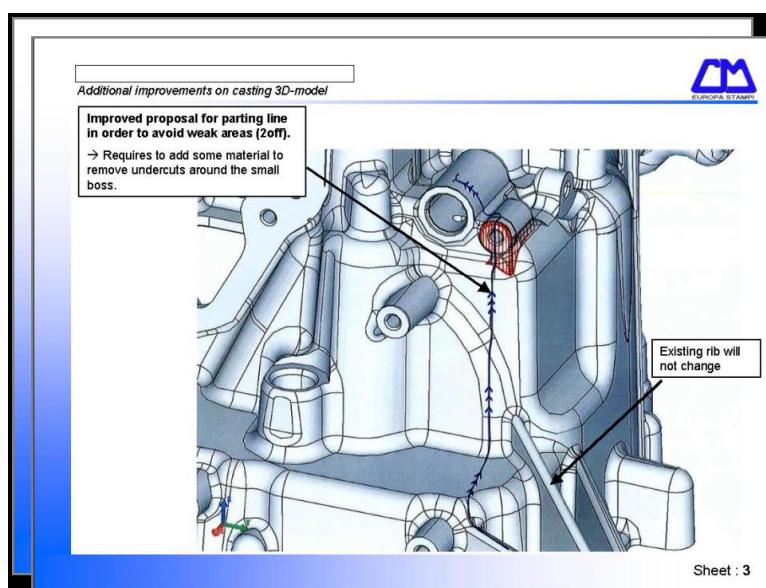
The fourth stage consists in initial sample approval and geometrical measurements, which are submitted to Customer for final project sign-off.



Die development is performed in close cooperation between C.M. Europa Stampi and Customer and is a flexible process that allows modifications to be evaluated and incorporated into die design at any time. Effective revision management is ensured by change indexes that are updated as required to keep track of engineering changes.



C.M. Europa Stampi will also use 3D design (mathematical model or modelling) provided by Customer as a starting point for the engineering process.



Upon job completion, C.M. Europa Stampi maintains all related documents during 10 years after project sign-off date (Customer's approval of initial sample).

Design and production control

C.M. Europa Stampi has implemented self-checking procedures and partial validation procedures for the die; more specifically, it checks electrodes and castings of the sample tests on DEA measuring benches.

All controls are carried out by C.M. Europa Stampi according to procedure as it follows :

| Checkpoint | provided acc. to procedure | Notes |
|--|----------------------------|---|
| Incoming data | ■ | dimensional comparison between 2D and 3D data; feedback regarding cast-part engineering |
| Tool design | ■ | multiple checkpoints before starting with manufacturing |
| Incoming materials and tool parts | ■ | dimensional and material conformity, documentation and certificates |
| Electrodes manufacturing | ■ | checked features: sparking gap, reference points, 3D-comparison, consumption, ... |
| Production | ■ | self-check (various) during manufacturing |
| Tool functionalities | ■ | Check and optimisation; see also costumer's check-list |
| Final design and product | ■ | possible updates after manufacturing; costumer's check-list, supplied documentation |

■ → included

Materials and Heat Treating

Materials of main tool parts

Die components are manufactured from adequate materials as indicated in the table below, such to ensure the best reliability/cost ratio:

| Component | Material | | | Heat treatment |
|----------------------------|--------------------------------|----------------------------|------------|--|
| | Number | DIN | AISI | |
| Bolster | 1.2312 1.2738 | 40CrNnMoS86 | P20 | Pre-hardened ~300 HB |
| Inserts & slide-blocks (*) | 1.2343 1.2344 | X38CrMoV5-1 X40CrMoV5-1 | H11 H13 | Hardening 44÷47 HRC, Stress Relieving before tryout; |
| Guides for slide-block | 1.2312 | 40CrNnMoS86 | P20 | Nitriding NT4 |
| | 1.2343 | X38CrMoV5-1 | H11 | Hardening 44÷47 HRC – Tennifer treatment |
| Ingate bushing and Sprue | 1.2343 1.2344 | X38CrMoV5-1 X40CrMoV5-1 | H11 H13 | Hardening 44÷47 HRC + Nitriding NT4 |
| Tool support | 1.1730 | | C45 | - |
| Ejector plates | 1.1730 | | C45 | - |

(*) The steel supplier and in detail the steel type is generally defined by the customer. If this information is missing, C.M. Europa Stampi comes back with a own proposal. The costumer will always find the chosen steel type clearly specified in our offers.

Inserts & slide-blocks (front parts) are manufactured solely from materials accompanied with certificate and related documents. C.M. Europa Stampi maintains all submitted certificates which are available for review at request.

Heat Treat Processes

Heat treating is performed by Sub-suppliers specialising in each specific heat treating process who certify process compliance with material manufacturers' specifications. Hardened and stress-relieved materials designated for the manufacture of shaping elements undergo strict incoming inspection both upon receipt of annealed materials and after the hardening process at C.M. Europa Stampi.

Upon receipt, materials undergo micro-structural analyses and are inspected for conformity to SEP1614 standards.

Sub-suppliers to C.M. Europa Stampi are required to submit hardness certificates and to document their heat treating processes. Micro-structural analyses before and after hardening are performed by C.M. Europa Stampi at a certified supplier.

Material Certificates

C.M. Europa Stampi maintains all submitted certificates regarding incoming material, heat treatments and material testing, which are available for review at request, according to following table:

| Tool part | Available certificates & standard material testing | | | | | Optional material testing | | |
|------------------------|--|------------------------------|---------------------------------|--------------------------------|------------------|---------------------------|-------------------|-------------|
| | Material certificate | Hardening cycle with diagram | Microstructure before Hardening | Microstructure after Hardening | Stress relieving | Ultrasonic test | Chemical Analyses | Charpy test |
| Inserts & slide-blocks | ■ | ■ | ■ | ■ | ■ | ○ | ○ | ○ |
| Bolster | ■ | | | | | | | |

■ → included

○ → at Customer's request, C.M. Europa Stampi can provide additional material testing

Some examples for submitted certificates

Steel certification:

C29/97 MIT HÖHN. FANTA BASSA PUS 2

1 **UDDEHOLM TOOLING**
SUPREME CONCEPT
for Optimum Performance

Test Certificate
ORVAR® SUPREME
Premium Quality Hot Work Die Steel

Customer
LJUNGHALL AB
590 80 SÖDERA VI

Uddeholm Order No.
2271218 02

Date
15.01.2003

Customer Order No.
161-0520N

Customer Specification No.

Condition
457 X 331 MM / 1 / 1158 KG

Size delivered
457 X 331 MM / 1 / 1158 KG

No. of pieces / Total weight
1 / 1158 KG

Conforms to following national standards

| USA | W. Germany | France | Gr. Britain | Italy |
|-----------|------------|-----------------|-------------|----------------------|
| ASTM A521 | DIN 1.2343 | AFNOR Z40 CDV 5 | B.S. BH 13 | UNI X40 CrMoV 5.1 KU |

Japan
JIS SKD 61

Spain
UNE F-5318

Sweden
SS X40 CrMoV 5 2242

Delivery certified by:
[Signature]
Representative for
UDDEHOLM

* Customer responsibility to N.B. 800 13

ABNAHMEPRÜFZEUGNIS B
INSPECTION CERTIFICATE B
CERTIFICAT DE RECEPTION B
nach/according to/ selon EN 10204-3.18

FM 00777
ISO 9001 Ref. Cert. No. / No. 030 084 20.12.2000

BÖHLER

Bestell-Nr. / Purchase's Order No. / No. de commande
Conno. 2215

Unsere Auftrags-Nr. / Order No. / No. de commande d'usine
390115554/IT vom 29.04.2003

Lieferschein / Dispatch note / Avis d'expédition
3915032252 vom 07.05.2003

Anforderungen / Requirements / Exigences
LAUT AUFTRAG

Prüfgegenstand / Object of test / Objet d'examen
BÖHLER WOOD VMB WAIR, 1.2343
MUTTERBLOCK/BZW. DAVON GESAEGT, GEGLEUHT MAX. 205 HB, ALLEPLAN
RANDOM LENGTHS 2500 - 4000 MM

Umfang der Lieferung / Volume of delivery / Liste descriptive
10 F 510.00 x 410.00 mm

Stück
1

Gewicht kg
34.50

Schmelze
F87319

Prüf-Nr.
F87319

Chemische Zusammensetzung / Chemical Composition / Composition chimique (%)

| Element | C | Si | Mn | P | S | Cr | Mo | V |
|---------|------|------|------|-------|-------|------|------|------|
| F87319 | 0,37 | 0,20 | 0,22 | 0,003 | 0,015 | 4,89 | 1,26 | 0,43 |

Mechanische Eigenschaften / Mechanical properties / Caractéristiques mécaniques


TEST: HARDNESS / NO. / RESULT
01 0147-0147 = BILD C F87319
02 0149-0149 = BILD E F83898


Erstschmelzungsart / Smelting Process / Procédé d'acieration
V.LBO

Kennzeichnung / Marking / Marquage
Markierungsschriftung / Grade of Material / Marquage du matériel:
Werkstoff-Nr. / Material No. / Matériau No.: X
Schmelz-Nr. / No. de coulée: X

Bezeichnung und Nachzeichnung: Kein Anstand
Inspection and Checking of Dimensions: satisfactory
Inspection of Control of dimensions: satisfactory

Ergebnis der Prüfungen / Test results / Résultat des essais
Die gestellten Anforderungen sind erfüllt.
The material has been furnished in accordance with the requirements.
Le matériel a été livré conformément aux exigences.

Zeichen des Lieferanten:
Logo of Supplier: 

Zeichen des Prüfers:
Logo of Inspector: 

E. d. i. s. h. i. G. m. b. H. & Co. KG
(DER VERKEHRSPRÄSIDENT)
(WORKS INSPECTOR/EXPORT DE L'USINE)

K
cert. 1000

KIND & CO
EDLSTAHLWERK

Dominal
WERKZEUGSTAHL

Werkzeugzeugnis
EN 10204-2.2 Seite 1/1

Bestellung / Order
2337 / 23.05.2003

Kundenanfrage / Customer Inquiry
1092167 / 20.09.06.2003

Lieferzustand / Delivery Condition
80094960 7 20

Werkmark: DOMINIAL USN-ISOTROP

Werkstoff: 1.2343

Lieferzustand: geglättet

Belstein, den 13.06.2003

Produktbeschreibung:
Abmessung: 390 mm x 215 mm x 430 mm RM Fx
Commissa 2317

Stückzahl: 1

Gewicht (KG): 250,000

Schmelzen-Nr. / Los-Nr.: 6022173

Chemische Zusammensetzung in %:

| C | Si | Mn | P | S | Cr | Mo | V |
|------|------|------|-------|-------|------|------|------|
| 0,38 | 0,93 | 0,41 | 0,020 | 0,001 | 5,11 | 1,30 | 0,37 |

Mechanische Werte

| Probe-Nr. / Prüfmerkmal | Einheit | Soft-Vorgabe | Meßwert |
|-------------------------|---------|--------------|---------|
| Härte | N/mm² | < 775 | 640 |

Es wird bestätigt, daß die Lieferung geprüft wurde und den Vereinbarungen bei der Bestellung entspricht.

Dieses Zeugnis wurde maschinell erstellt und ist gemäß DIN EN 10204 mit einer Unterschrift gültig.

Werkstoff: 1.2343

Abmessung: 390 mm x 215 mm x 430 mm RM Fx

Commissa: 2317

Stückzahl: 1

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Dieses Zeugnis wurde maschinell erstellt und ist gemäß DIN EN 10204 mit einer Unterschrift gültig.

AUBERT & DUVAL
CERTIFICAT DE RECEPTION TYPE 3.1.B
conformément à NF EN 10204 et NF EN 10204-2
according to EN 10204 and NF EN 10204-2

N°: A/D01/1617-0/AD
PAGE: 1 / 1

Livraison: 16981 02 01

Quantité: 1 barre 715 x 250 - 5266 kg

Marque: S.M.V.3 W

Etat de livraison: Recuit

Commande et Spécifications:
Recuit
Liatage: NM 160203

Commande stock 09/02 du 18/09/02

ANALYSE/ANALYSIS Unité/Unit: % (m/m) sauf mention spécifique/except specific mention.

| Unité | C | Si | Mn | S | P | Cr | Mo | V | Fe |
|---------|-------|------|------|--------|-------|------|------|------|--------|
| N° 1602 | 0,398 | 0,91 | 0,35 | <0,020 | 0,013 | 5,10 | 1,23 | 0,44 | Compl. |

Essais de réception de coulée
Essai de réception de coulée

| Essai | Norme | Unité | Resultat | Acceptation |
|---------------------------|---------------------------|-------|----------|-------------|
| 1018°/30m/A + 550°/1800/A | 1018°/30m/A + 550°/1800/A | °C | 1018 | OK |

Reception sur Produit Livré
Reception sur Produit Livré

| Essai | Norme | Unité | Resultat | Acceptation |
|-----------------------------|-----------------------------|-------|----------|-------------|
| Reception sur Produit Livré | Reception sur Produit Livré | | OK | OK |

Resultats complémentaires
Complémentary Results

DIMENSIONS: conformes

REMARQUES: conforme

Signature et visum:
[Signature]
AUBERT & DUVAL
Mr. P. FOSCHER

Microstructure test (before and after hardening):

proterm S.p.A.
TRATTAMENTI TERMICI

40012 CALDERARA DI RENO (BO)
Via F.lli. 4
Tel. 051/448811 - Fax 051/720801
P.E.A. N. 2/12723503 - P. Roma 104 N. 00259601303
Reg. Imp. 01/187400 - Cod. Fiscale 03096460371
Capitale Sociale € 206.000.000 IRI 50%

CERTIFICATO DI LABORATORIO N. 3520 DATA: 16-05-2003

SPETT. CM EUROPA STAMPI SRL
40012 VIA TORRETTA 50 (BO)

DESCRIZIONE MATERIALE CAROTE

PARTE N. 307386 BOLL. CLIENTE N. 470 DATA: 12-05-2003

TRATTAMENTI TERMICI ESEGUITI:
LABO

MOTIVO ANALISI: caratteristiche metallografiche

ANALISI CHIMICA N. ANALISTI:

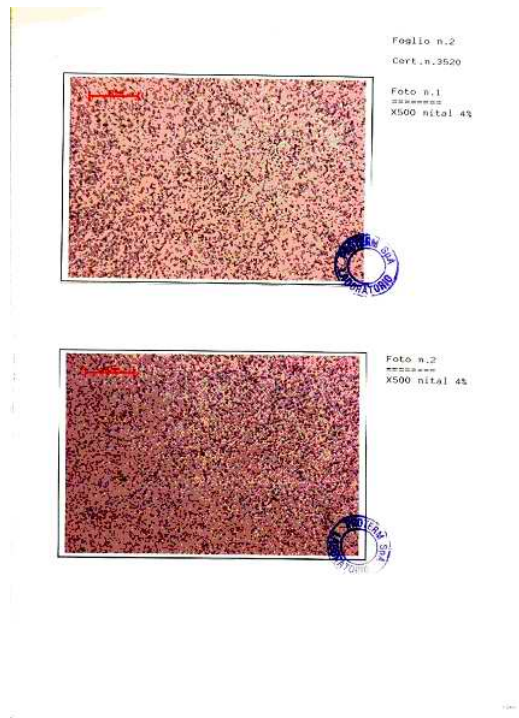
ESAME METALLOGRAFICO E PROVE CHIMICHE ARCH. PROVETTE N. ANALISTI:

114 S.M. *S.M.*

PREMESSA
Ci sono pervenute n.2 carote, prelevate dalle matrici C 23/10
NM Pos 10 - MF Pos 11 ed allestite con acciaio del tipo ORVAR con la
richiesta di verificarne le caratteristiche metallografiche riferite
allo stato di fornitura (ricottura di globulizzazione), esprimendo
un grado di accettabilità mediante confronto con immagini tipo da
tabella VDEH, come da richiesta del cliente.

ESAME METALLOGRAFICO
Osservazione dopo attacco nital 4%. (X100 - X1.000)
Pos 10 - Ferrite + perlite globulare con carburi fini
uniformemente distribuiti. Grado: G81 (V. foto n.1).
Pos 11 - Ferrite + perlite globulare con carburi fini
uniformemente distribuiti. Grado: G81 (V. foto n.2).

COF
PROTERM S.p.A.



proterm S.p.A.
TRATTAMENTI TERMICI

40012 CALDERARA DI RENO (BO)
Via F.lli. 4
Tel. 051/448811 - Fax 051/720801
P.E.A. N. 2/12723503 - P. Roma 104 N. 00259601303
Reg. Imp. 01/187400 - Cod. Fiscale 03096460371
Capitale Sociale € 206.000.000 IRI 50%

CERTIFICATO DI LABORATORIO N. 3902 DATA: 16-12-2003

SPETT. CM EUROPA STAMPI SRL
40012 VIA TORRETTA 50 (BO)

DESCRIZIONE MATERIALE CAROTA

PARTE N. 317796 BOLL. CLIENTE N. 1074 DATA: 10-12-2003

TRATTAMENTI TERMICI ESEGUITI:
LABO

MOTIVO ANALISI: esame metallografico

ANALISI CHIMICA N. ANALISTI:

ESAME METALLOGRAFICO E PROVE CHIMICHE ARCH. PROVETTE N. ANALISTI:

233 S.M. *S.M.*

**Controllo delle caratteristiche metallografiche della seminatrice
mobile bassa C 23/27 Pos 2 allestite con acciaio del tipo
W. 1.2344 ORVAR S.
L'esame viene eseguito su una provetta a forma di "carota",
(diam. = 7,1 ± 0,2 mm) ricavata dal cliente, con asportata fresa
sulla matrice dopo T.T.**

ESAME METALLOGRAFICO
Osservazione dopo attacco nital 4%. (X100 - X1.000)
Martensite rinvenuta con carburi fini uniformemente distribuiti.
Struttura fine ed uniforme. (V. foto).

PROTERM S.p.A.



Hardening cycle certification (Nipre® + Salt tempering):

GRUPPO T.T.N. Sede di Nerviano
Via F. Maggi, 26 - 20154 NERVIANO (MI)
Telefono +39 0331 483711 - Fax +39 0331 584349
CAP 20154 - P. 4.000.000
Registra Imprese Milano N° 309345
R.E.A. Milano N° 120525
Cod. Fisc. e Part. IVA IT 010441910151

T.T.N. S.p.A.
AZIENDA CERTIFICATA ISO 9001

Tempra bagni di sale, sottovuoto e indurimento con
Via F. Maggi, 26 - 20154 NERVIANO (MI)
Telefono +39 0331 483711 - Fax +39 0331 584349
CAP 20154 - P. 4.000.000
Registra Imprese Milano N° 309345
R.E.A. Milano N° 120525
Cod. Fisc. e Part. IVA IT 010441910151

Certificato di Qualità
Certificato conforme alla norma UNI EN 10204 2.2
N° Certificato: 4098
Giro BOLOGNA
Questo codice consente di risalire al diagramma tempo-temperatura dei seguenti particolari:
Descrizione particolari Vs D.d.I. n. 501 del 13/05/2005
Descrizione di materiale:
N° 1 MATRICE MOBILE COMM C2505 - Ns. Comm. 318574
Tipo di materiale: ORVAR
Steel Grade
Trattamento richiesto: Ricottura+Tempra
Heat treatment

| Ricottura/Distensione | | | | |
|-----------------------|-------|--------------|--------------|----------------|
| N. Car. | Forno | Preiscaldato | Ricottura °C | Raffreddamento |
| 151 | S25 | 0 | 750 | Lento in Forno |

| Tempra in Sale | | | | | |
|----------------|-------|-----------------|-----------------|-----------------|--------------------|
| N. Car. | Forno | 1° Preiscaldato | 2° Preiscaldato | 3° Preiscaldato | Temp. Austenitizz. |
| 152 | S25 | 650 | 870 | 0 | 1020 |

| Rinvenimento | | |
|--------------|-------|-----------------|
| N. Car. | Forno | Rinvenimento °C |
| 254 | S27 | 580 |
| 255 | | 620 |
| 256 | S28 | 600 |
| 207 | V3 | 550 |

LABORATORIO METALLOGRAFICO T.T.N.
Microdurezza, Analisi non distruttive, Omologazione acciai UNI-SAE-ASTM-DIN, Analisi chimiche-quantometriche
Tempra Sottovuoto Ø 1500x1500 - Tempra bagni di sale Ø 1500x1500
Nitrazione gassosa-ionica Ø 3000x10000 in verticale - Cementazioni Ø 4000x4000 in verticale
Tempra ad induzione
Ricotture - Saldobrasature

GRUPPO T.T.N. Sede di Nerviano
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Descrizione particolari Vs D.d.I. n. 501 del 13/05/2005
Descrizione di materiale:
N° 1 MATRICE MOBILE COMM C2505 - Ns. Comm. 318574
Tipo di materiale: ORVAR
Steel Grade
Trattamento richiesto: Ricottura+Tempra
Heat treatment

| VALORI RICHIESTI | | VALORI OTTENUTI | |
|-------------------------------|--------------------------|--------------------------|-------------------|
| Durezza / Hardness | 4446 HRC | 4446 HRC | min 44 max 45 HRC |
| Profondità / Depth | | | |
| Sabbatura / Sand blasting | <input type="checkbox"/> | <input type="checkbox"/> | |
| Raddrizzatura / Straightening | <input type="checkbox"/> | <input type="checkbox"/> | |
| Micrografia / Micrographies | <input type="checkbox"/> | <input type="checkbox"/> | |

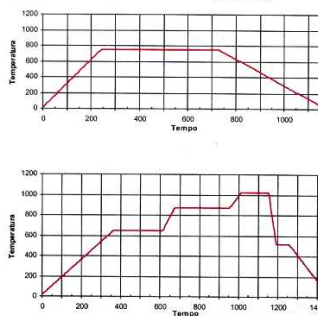
Nerviano, 19/05/2005
T.T.N. S.p.A.
Controllo Qualità

LABORATORIO METALLOGRAFICO T.T.N.
Microdurezza, Analisi non distruttive, Omologazione acciai UNI-SAE-ASTM-DIN, Analisi chimiche-quantometriche
Tempra Sottovuoto Ø 1500x1500 - Tempra bagni di sale Ø 1500x1500
Nitrazione gassosa-ionica Ø 3000x10000 in verticale - Cementazioni Ø 4000x4000 in verticale
Tempra ad induzione
Ricotture - Saldobrasature

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T.T.N. S.p.A.
AZIENDA CERTIFICATA ISO 9001

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Certificato conforme alla norma UNI EN 10204 2.2
N° Certificato: 4098
Giro BOLOGNA
Questo codice consente di risalire al diagramma tempo-temperatura dei seguenti particolari:
Descrizione particolari Vs D.d.I. n. 501 del 13/05/2005
Descrizione di materiale:
N° 1 MATRICE MOBILE COMM C2505 - Ns. Comm. 318574
Tipo di materiale: ORVAR
Steel Grade
Durezza richiesta: 4446 HRC
Hardness requested



| Ricottura/Distensione | | |
|-----------------------|------|-----|
| Andamento | Ore | °C |
| Salita | 6.00 | 750 |
| Permanenza | 6.00 | 750 |

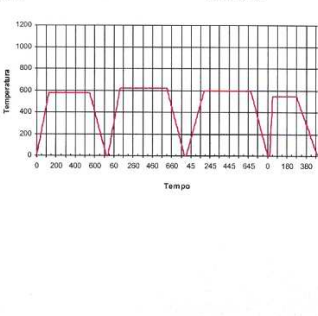
| Tempra in Sale | | |
|------------------------------|------|-------|
| Andamento | Ore | °C |
| Salita | 6.00 | 1020 |
| Permanenza | 4.00 | 650 |
| Salita | 1.00 | 870 |
| Permanenza | 4.30 | 870 |
| Salita | 1.00 | 1.020 |
| Permanenza | 2.15 | 1.020 |
| Spegnimento in bagno di sale | | |
| Andamento | Ore | °C |
| Permanenza | 1.00 | 620 |

LABORATORIO METALLOGRAFICO T.T.N.
Microdurezza, Analisi non distruttive, Omologazione acciai UNI-SAE-ASTM-DIN, Analisi chimiche-quantometriche
Tempra Sottovuoto Ø 1500x1500 - Tempra bagni di sale Ø 1500x1500
Nitrazione gassosa-ionica Ø 3000x10000 in verticale - Cementazioni Ø 4000x4000 in verticale
Tempra ad induzione
Ricotture - Saldobrasature

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T.T.N. S.p.A.
AZIENDA CERTIFICATA ISO 9001

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Descrizione di materiale:
N° 1 MATRICE MOBILE COMM C2505 - Ns. Comm. 318574
Tipo di materiale: ORVAR
Steel Grade
Durezza richiesta: 4446 HRC
Hardness requested



| 1° Rinvenimento | | |
|-----------------|------|-----|
| Andamento | Ore | °C |
| Salita | 2.00 | 580 |
| Permanenza | 7.00 | 580 |

| 2° Rinvenimento | | |
|-----------------|------|-----|
| Andamento | Ore | °C |
| Salita | 2.00 | 620 |
| Permanenza | 8.00 | 620 |

| 3° Rinvenimento | | |
|-----------------|------|-----|
| Andamento | Ore | °C |
| Salita | 3.00 | 600 |
| Permanenza | 8.00 | 600 |

| 4° Rinvenimento | | |
|-----------------|------|-----|
| Andamento | Ore | °C |
| Salita | 0.30 | 550 |
| Permanenza | 4.00 | 550 |

LABORATORIO METALLOGRAFICO T.T.N.
Microdurezza, Analisi non distruttive, Omologazione acciai UNI-SAE-ASTM-DIN, Analisi chimiche-quantometriche
Tempra Sottovuoto Ø 1500x1500 - Tempra bagni di sale Ø 1500x1500
Nitrazione gassosa-ionica Ø 3000x10000 in verticale - Cementazioni Ø 4000x4000 in verticale
Tempra ad induzione
Ricotture - Saldobrasature

Sub-suppliers

C.M. Europa Stampi cooperates with qualified Sub-suppliers included in the List of Approved Vendors and continuously monitors their quality performance in terms of product/service supplied.

At Customer's request, C.M. Europa Stampi will utilize Sub-suppliers other than those included in the Approved Vendor List.

C.M. Europa Stampi's Approved Vendor List is available to all Departments/Activities who deal with Sub-suppliers for technical or commercial matters.

Control of machines and instruments

C.M. Europa Stampi has implemented procedures relating to the preventive maintenance of machine tools; these make reference to manufacturers' directions; such procedures provide for an annual check that when executed feed and operating movements fall within the tolerance limits set by the manufacturer.

C.M. Europa Stampi has implemented procedures relating to the calibration of measuring instruments that are all identified and recorded in a special register. With particular regard to the three-dimensional measuring benches, it has taken out maintenance and calibration contracts with the respective manufacturers.

Business Conditions

Offer validity

Estimate validity for the supply of complete equipment is 1 month starting from the date of the offer.

Changes

Each modification required by Customer is evaluated by "C.M. Europa Stampi" and a modification offer is provided. The development of die works will go on if the modification does not affect works in progress; on the contrary, works will be temporarily suspended until confirmation of modification estimate.

Warranty

"C.M. Europa Stampi" guarantees the equipment with Customer approved drawing and using approved materials and certified treatments. Moreover we guarantee perfect die functioning until die coming out from the factory and assure maintenance operations to Customer as long as die life.

Delivery Terms

Delivery terms are to be agreed at the order and start from that moment.

In case of modification with works already in progress, a new delivery date is to be agreed. If the new delivery date is not established, we will decide about new terms.

In the case that a new delivery date might not be set, new terms are to be considered dependent on company workload, but in any event will be subject as little delay as possible.

