



**MARCEGAGLIA
CARBON STEEL**

COLD-DRAWN WELDED TUBES

INDEX

- MARCEGAGLIA GROUP
- MARCEGAGLIA COLD-DRAWN WELDED TUBE PRODUCTION
- MANUFACTURING PROCESS
- MARKET DEVELOPMENT AND KEY FACTORS
- PRODUCT RANGE AND TYPICAL APPLICATIONS

MARCEGAGLIA GROUP

WINNING DNA

MARCEGAGLIA IS ITALY'S LEADING INDUSTRIAL GROUP IN THE NATIONAL AND INTERNATIONAL STEEL SECTOR, WHICH HAS BEEN PROCESSING STEEL FOR OVER SIXTY YEARS.

THE COMPANY'S UNIQUE PRODUCTION AND BUSINESS MODEL IS A TRUE EXPRESSION OF ITALIAN FAMILY ENTREPRENEURSHIP, BY SUCCESSFULLY COMBINING ITS OWN OPERATIONAL FLEXIBILITY WITH STRONG MARKET PRESENCE TYPICAL OF MULTINATIONALS.

ESTABLISHED IN 1959 BY STENO MARCEGAGLIA IN THE TOWN OF GAZOLDO DEGLI IPPOLITI (MANTUA) IS TODAY A GROUP FULL RUN BY HIS CHILDREN ANTONIO AND EMMA MARCEGAGLIA.



OUR NUMBERS

MARCEGAGLIA IS A MAJOR PLAYER ON THE INTERNATIONAL STEEL SCENE THAT OFFERS CONSTANT GROWTH AND HIGH-QUALITY PRODUCTS AND PROCESSES, CONTRIBUTING SIGNIFICANT ADDED VALUE TO THE MARKET WHILE MAINTAINING A STRONG FOCUS ON SUSTAINABILITY.

1st ■ PLAYER IN STEEL PROCESSING SECTOR IN THE WORLD

■ PRODUCER OF STAINLESS STEEL WELDED TUBES IN THE WORLD

■ PRODUCER OF CARBON STEEL WELDED TUBES IN EUROPE

■ SERVICE CENTER IN ITALY

6.5

MILLION TONNES OF FINISHED PRODUCT

9.0

BILLION EUROS IN TURNOVER

7,500

EMPLOYEES

36

PLANTS ACROSS 4 CONTINENTS

15,000

CUSTOMERS



FLEXIBLE SOUL

INDEPENDENCE, DYNAMISM, AGILITY, RESPONSIVENESS, RESILIENCE AND SUSTAINABILITY ARE THE KEY ELEMENTS OF MARCEGAGLIA CORPORATE CULTURE:

FACTORS THAT HAVE HELPED MAKE THE COMPANY THE MAIN POINT OF REFERENCE FOR STEEL PROCESSING BOTH IN ITALY AND ABROAD.

MARCEGAGLIA IS ABLE TO SUCCESSFULLY OPERATE, EVEN GIVEN THE MOST DIFFICULT MARKETS AND GEOPOLITICAL CONDITIONS, THANKS TO INDUSTRIAL SYNERGIES, ECONOMIES OF SCALE AND THE DIVERSIFICATION OF PRODUCTION AND SUPPLY.

GROUP CULTURE FOCUSES ON THE ROLE OF PEOPLE AND ON SHARING SPECIFIC VALUES, WHICH HAVE BECOME THE CORNERSTONES OF ITS BUSINESS MODEL.



STRATEGIC RESOURCES AND DISTINCTIVE SKILLS

- SOLID GLOBAL PROCUREMENT NETWORK
- DIVERSIFIED RANGE OF PRODUCTS AND SERVICES
- WORLDWIDE DISTRIBUTION
(CUSTOMER BASE, GEOGRAPHIC MARKETS, AREAS OF USE)
- OPERATIONAL EXCELLENCE AND LOGISTICS
- FLEXIBILITY / REACTIVITY / SPEEDY DECISION MAKING
- SERVICE ORIENTATION
- COMPETENCE / MOTIVATION / STABILITY OF MANAGEMENT

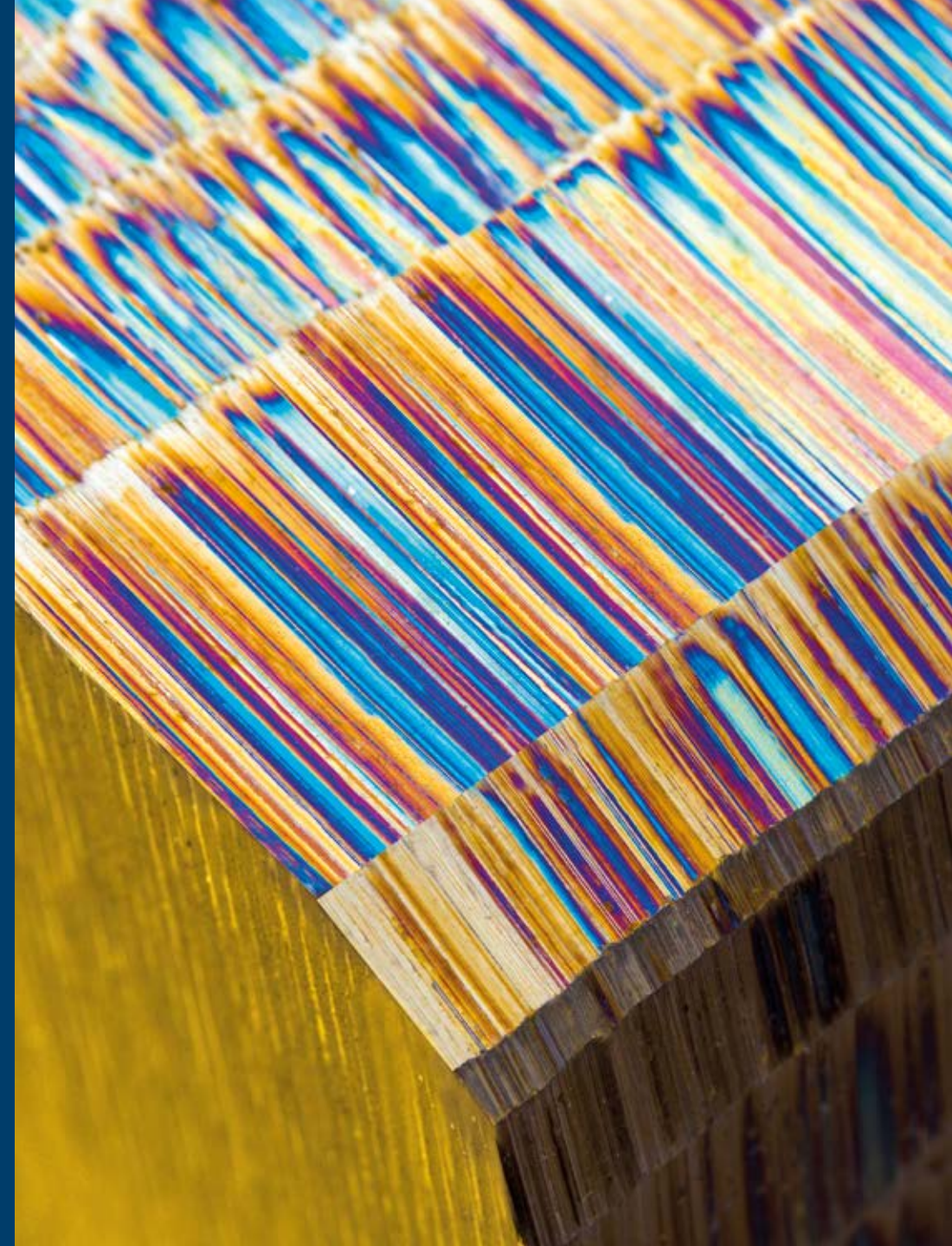


UNIQUE POSITIONING

MARCEGAGLIA IS PRESENT THROUGHOUT THE STEEL VALUE CHAIN, BOTH HORIZONTALLY AND VERTICALLY, THANKS TO ITS UNIQUE STRATEGIC POSITIONING.

THE GROUP IS THE WORLD'S LEADING INDEPENDENT STEEL PROCESSOR WITH A PRODUCT RANGE THAT COVERS EVERYTHING FROM CARBON TO STAINLESS STEEL, FROM LONG TO FLAT PRODUCTS, FROM COMMODITY TO SPECIALTY.

IN JANUARY 2023, THE COMPANY ACQUIRED AN ELECTRIC FURNACE FOR SPECIAL STEEL PRODUCTS IN SHEFFIELD, UK: THIS BEING THE FIRST PRIMARY PRODUCTION ASSET IN THE GROUP'S HISTORY. MARCEGAGLIA HAS INVESTED WITH A VIEW TO SHORTENING AND STABILISING SUPPLY CHAINS AND DEVELOPING AN OFFER OF INCREASINGLY SUSTAINABLE AND COMPETITIVE PRODUCTS.



STEEL, IN ALL SHAPES

CARBON STEEL



CARBON STEEL COILS
PICKLED, COLD ROLLED
AND HOT DIP GALVANIZED



CARBON STEEL STRIPS
BLACK, PICKLED,
COLD ROLLED AND
HOT DIP GALVANIZED



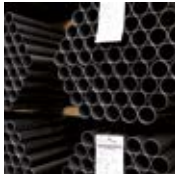
CARBON STEEL SHEETS
BLACK, PICKLED,
COLD ROLLED, HOT DIP
GALVANIZED, DIAMOND
AND TEARDROP PAT-
TERNERD



PRE-PAINTED COILS



PRE-PAINTED STRIPS AND SHEETS



CARBON STEEL WELDED TUBES



COLD-DRAWN WELDED TUBES



REFRIGERATION TUBES

BUILDING



INSULATED ROOFING AND WALL PANELS



INSULATED PANELS FOR SECTIONAL DOORS



SAFETY BARRIERS



SCAFFOLDING EQUIPMENT

SPECIALTY STEEL



STAINLESS STEEL COILS



STAINLESS STEEL STRIPS



STAINLESS STEEL SHEETS



STAINLESS STEEL WELDED TUBES



CARBON AND STAINLESS STEEL COLD-DRAWN BARS

STAINLESS STEEL FLAT BARS

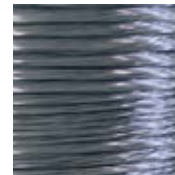
STAINLESS STEEL COLD FORMED SECTIONS



STAINLESS STEEL WIRE RODS

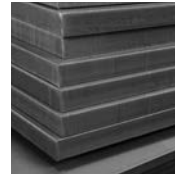


STAINLESS STEEL BARS



STAINLESS STEEL DRAWN WIRES

HEAVY PLATES

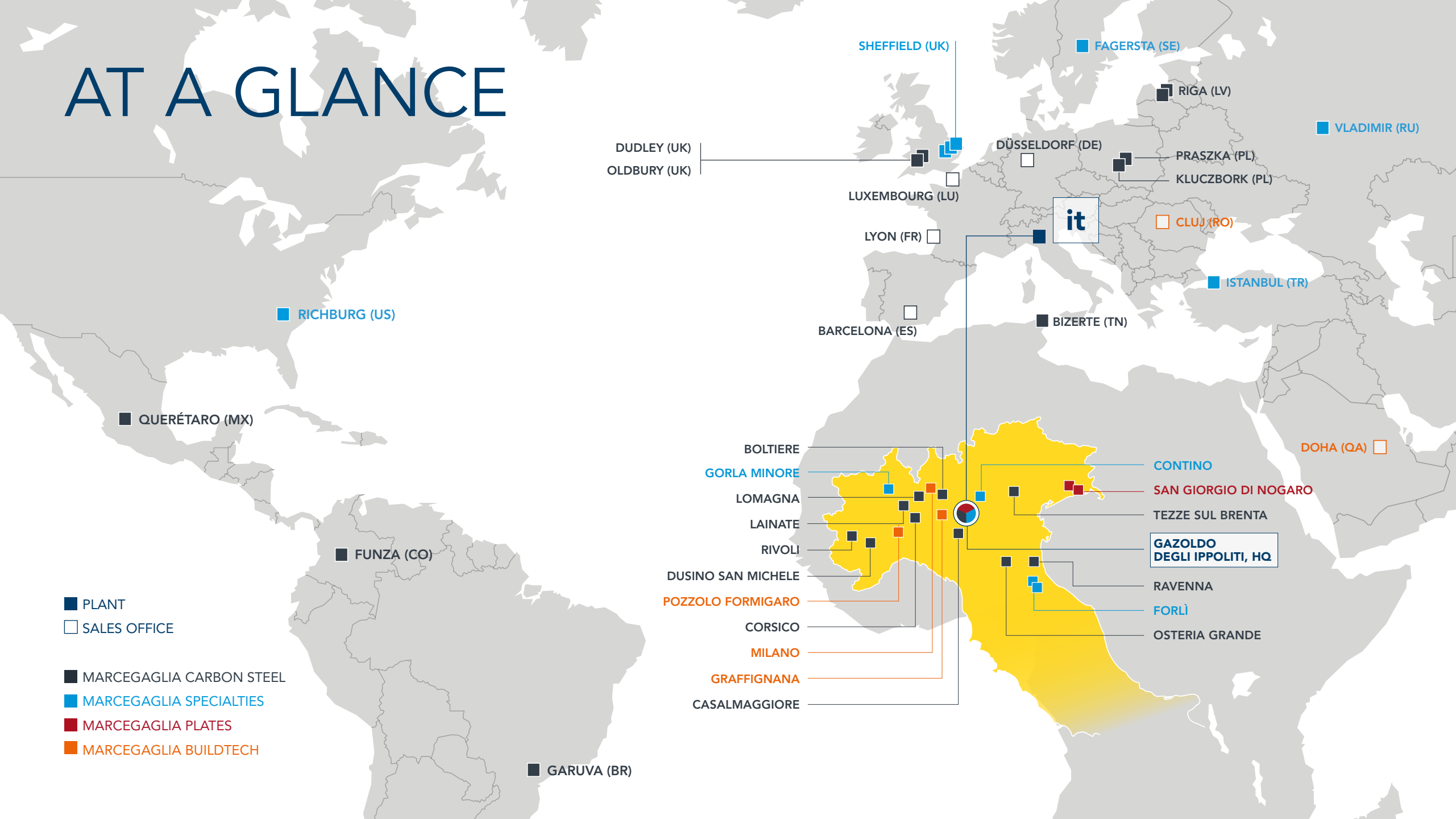


HEAVY PLATES

AT A GLANCE

■ PLANT
□ SALES OFFICE

■ MARCEGAGLIA CARBON STEEL
■ MARCEGAGLIA SPECIALTIES
■ MARCEGAGLIA PLATES
■ MARCEGAGLIA BUILDTECH



MARCEGAGLIA COLD-DRAWN WELDED TUBE PRODUCTION

PRODUCTION

BOLTIERE

RIVOLI

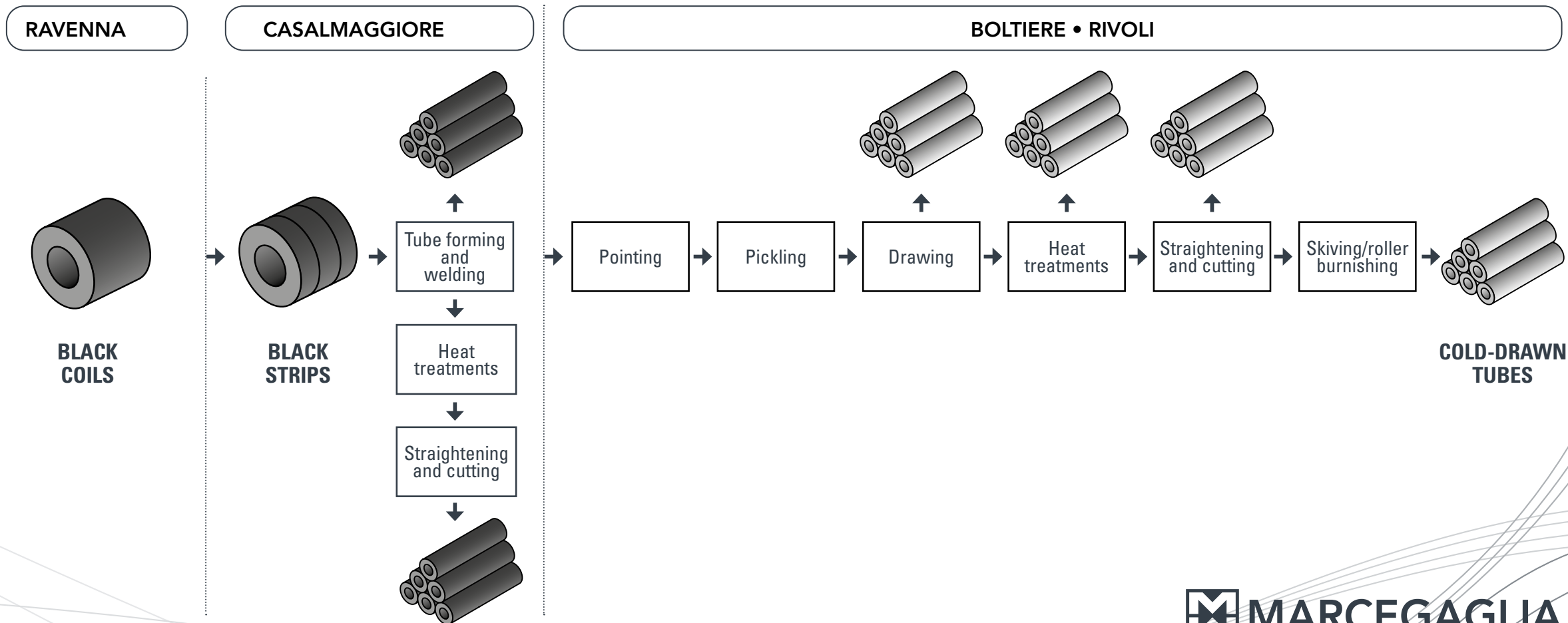
Gazoldo degli Ippoliti

Marcegaglia Carbon Steel cold-drawn welded tubes production takes place in the **Boltiere** and **Rivoli** plants, with a total production capacity of about 100,000 tons.



MARCEGAGLIA
CARBON STEEL

AN INTEGRATED PRODUCTION CHAIN



MARCEGAGLIA
CARBON STEEL

MARCEGAGLIA BOLTIERE

The Marcegaglia plant in Boltiere (Bergamo) is dedicated to the production of welded and seamless cold-drawn tubes for automotive, hydraulic and mechanical applications.

Marcegaglia Boltiere stands out as one of the largest cold-drawn tube production plants in Europe, in terms of production capacity and product range, with a global distribution.

65,000 MQ

TOTAL AREA

42,000 MQ

COVERED AREA

215 EMPLOYEES



MARCEGAGLIA
CARBON STEEL

MARCEGAGLIA RIVOLI

55,000 MQ
TOTAL AREA

27,000 MQ
COVERED AREA

75 EMPLOYEES

In June 2018, the Marcegaglia group completed the acquisition of Novero Spa, a company based in Rivoli (Turin) specialized in the production of welded and seamless precision cold-drawn tubes in all varieties of carbon and low- and medium-alloy steels.



MARCEGAGLIA
CARBON STEEL

QUALITY AND ENVIRONMENT

The production chain of Marcegaglia Carbon Steel cold-drawn tubes is **ISO 9001:2015** and **IATF 16949:2016** certified.

In 2019 RINA awarded the Boltiere plant **"Best4 ISO 26000:2010"** certification, reserved for companies certified in the Quality, Environment, Safety and Social Responsibility sectors (ISO 9001, ISO 14001, BS OHSAS 18001 and ISO 26000:2010).

The Boltiere plant, like other companies in the Marcegaglia group, is also **ISO 50001:2011** certified for energy.

Member of CISQ Federation



CERTIFIED MANAGEMENT SYSTEM
ISO 9001 - ISO 14001
BS OHSAS 18001
ISO 50001



MANUFACTURING PROCESS

PRODUCTION AREAS



The Marcegaglia plants are equipped with a total of:

- **18 drawing banches** (including 4 automated lines)
- **4 heat treatments** lines
- **5 non destructive test** lines
- different **finishing** lines
- **6 skiving and roller burnishing** machines

THE PRODUCTION PROCESS

TRANSFORMATION

Pointing



Pickling



Drawing



Heat treatments



FINISHING

Straightening



Cutting



ND Test



Packaging



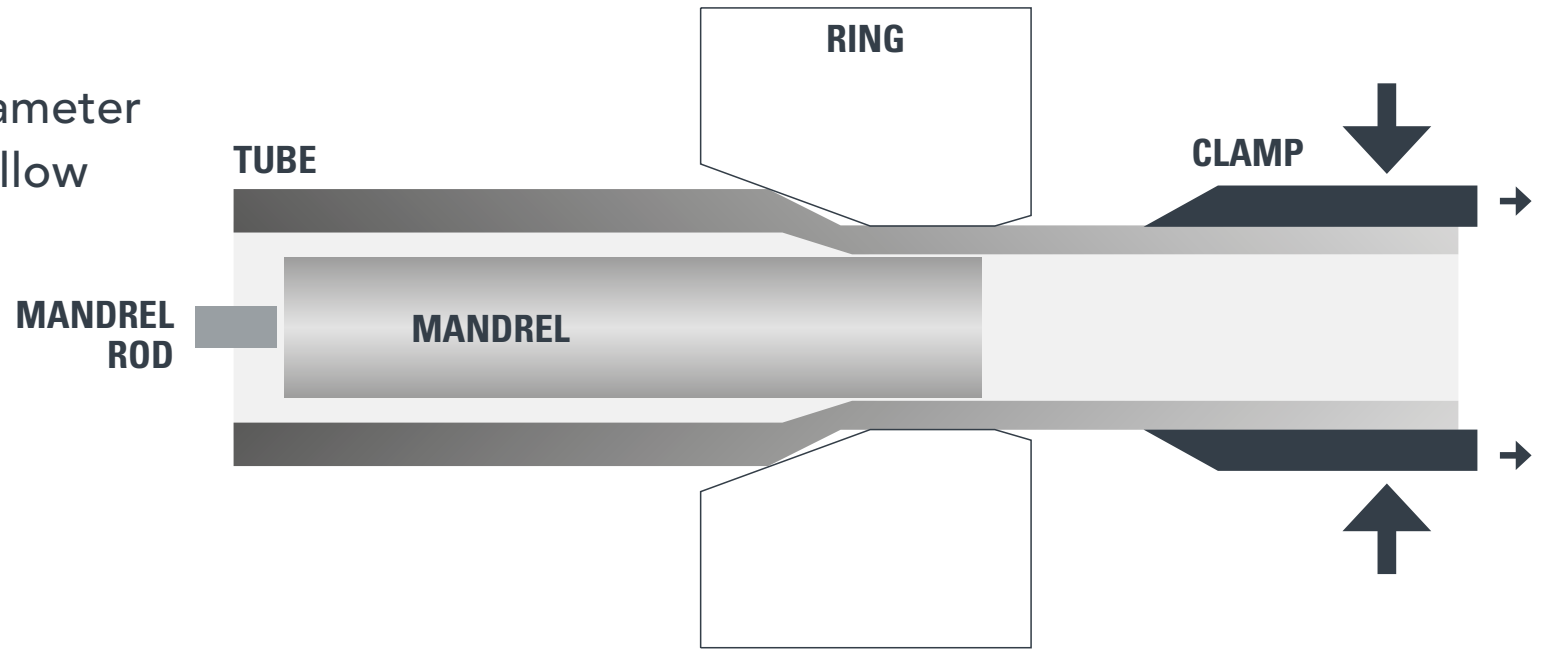
Skiving/roller burnishing



MARCEGAGLIA
CARBON STEEL

COLD-DRAWING PROCESS

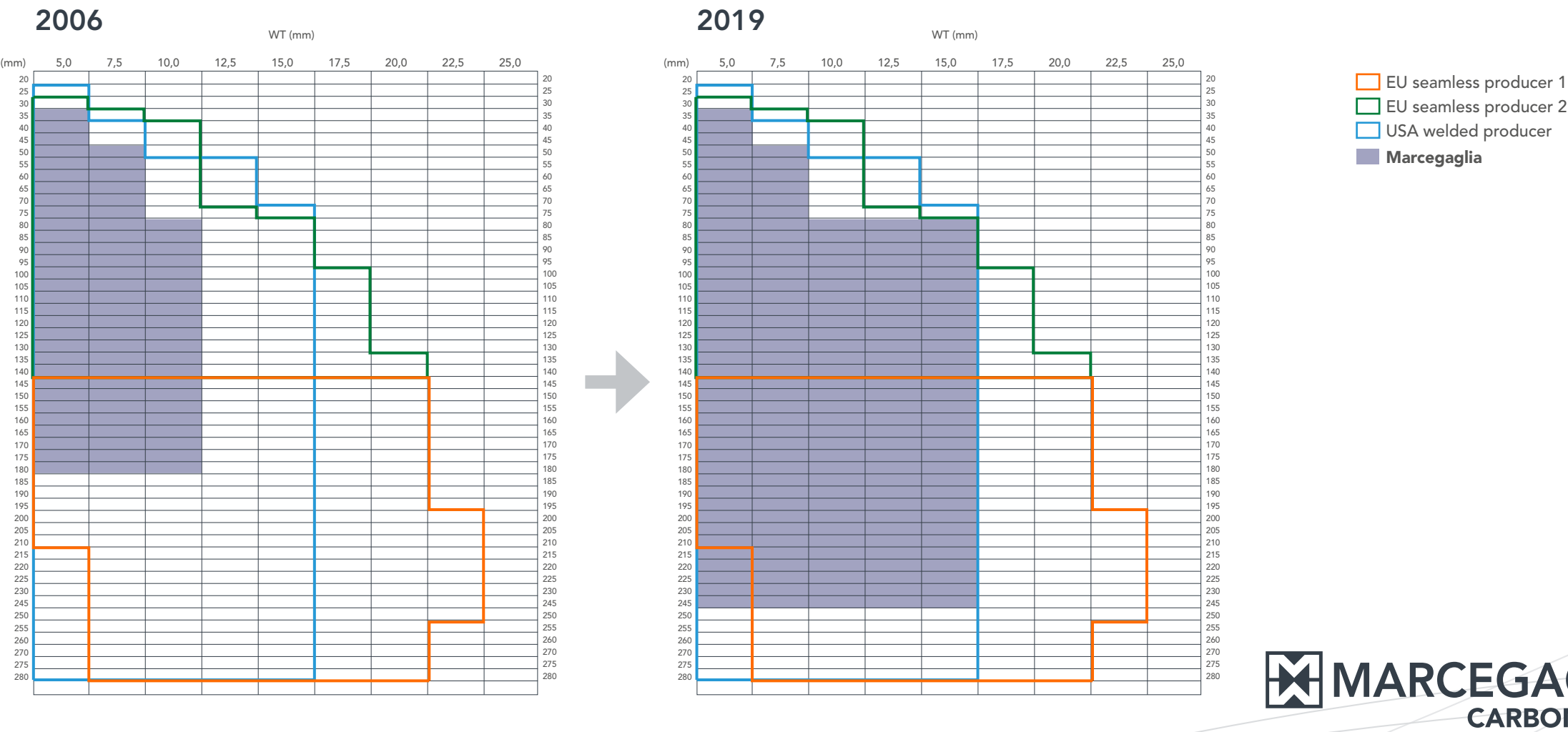
The cold drawing process is a cold reduction of the outside diameter and wall thickness of the starting hollow (Drawn Over the Mandrel).



MARKET DEVELOPMENT AND KEY FACTORS

MARKET DEVELOPMENT

COLD-DRAWN WELDED TUBE

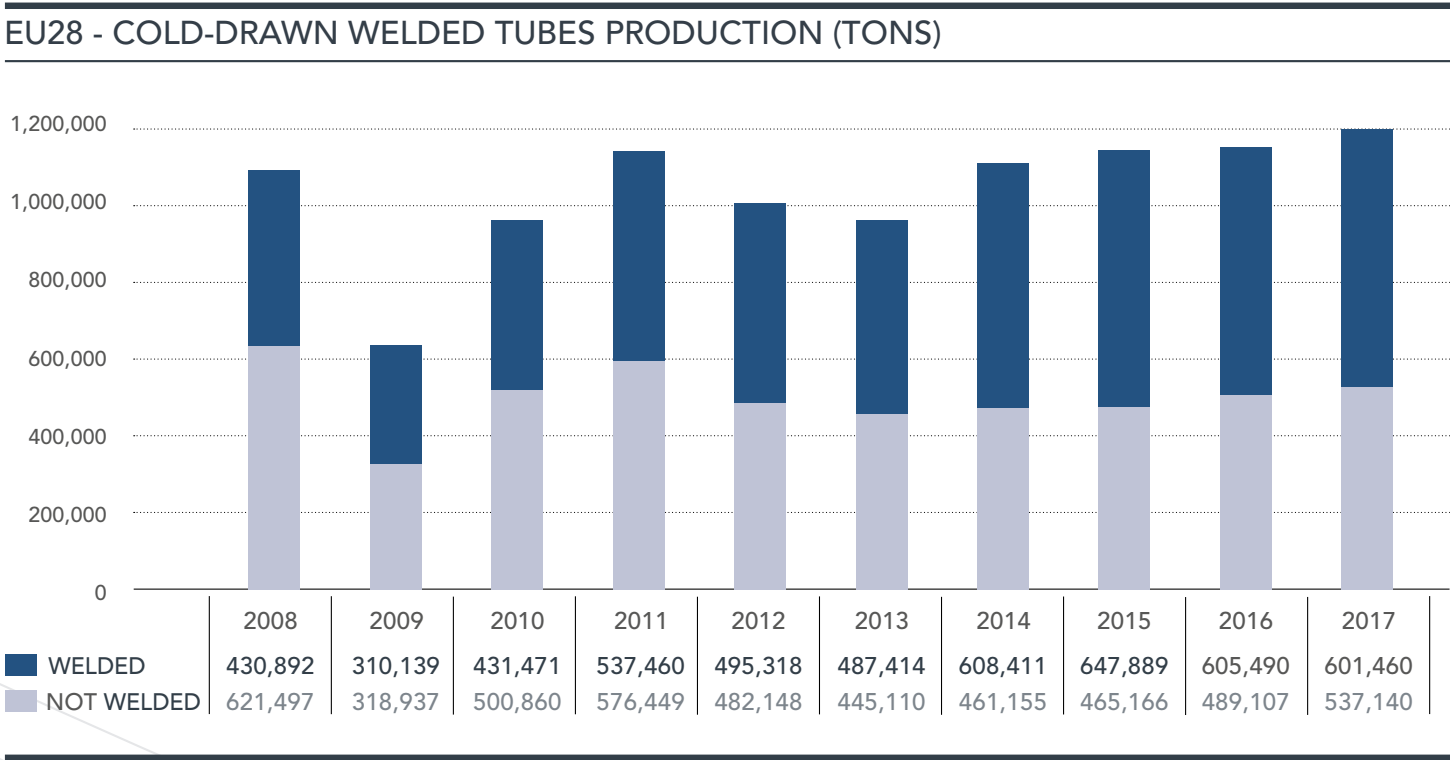


MARCEGAGLIA

CARBON STEEL

MARKET SEGMENTATION

2008-2017



Source: ESTA

Since 2012, the quantity of cold-drawn tubes produced from welded tubes has exceeded that of products from seamless tubes.

FEATURES AND BENEFITS

- Full body normalizing of the shell stock after welding ensures that both the welding and the surrounding areas are **metallographically and mechanically homogeneous with the rest of the tube**
- **Improved quality surface** (less defect after painting and consequently improved fatigue life)
- **Reduce eccentricity** → The eccentricity is 3% max (better roundness OD / ID)
- Tubes are **100 % controlled** by ultrasonic test (full body)
- **Good toughness** at low temperatures



MARCEGAGLIA
CARBON STEEL

FEATURES AND BENEFITS

- Today the WE production range is covering 80% of the HYCY market
- The main end user has already shifted from SS to Welded 100% (Caterpillar, J.C.B., etc.)
- Benefits are mainly technical, but also the production costs (not price) are lower
- Total cost of the finished product (cylinder) is lower due to less machining



MARCEGAGLIA
CARBON STEEL

PRODUCT RANGE AND TYPICAL APPLICATIONS

PRODUCT RANGE

15-245 MM

OUTSIDE DIAMETER MIN-MAX

1.5-15 MM

THICKNESS

SUPERIOR THICKNESSES ON REQUEST
(IN EXECUTION SEAMLESS)

Marcegaglia Carbon Steel offers a **wide range** of precision cold-drawn tubes, welded and seamless, in all carbon steel and low-alloy steel varieties.

 **MARCEGAGLIA**
CARBON STEEL

TYPICAL APPLICATIONS



70%
Hydraulic

30%
Automotive



MARCEGAGLIA
CARBON STEEL

PRODUCTS



HYDRAULIC CYLINDERS

- Tubes for cylinder ready to use H9
- Tubes for cylinder suitable for honing or skiving & roller burnishing
- Tubes for cylinder finished H8
- Tubes for telescopic cylinders
- Tubes for piston rods

AUTOMOTIVE AND MECHANICAL APPLICATIONS

- Tubes for mechanical applications
- Tubes for automotive applications
- Tubes for cardan shafts

HYDRAULIC CYLINDERS

READY-TO-USE CYLINDERS TUBES H9

USED MAINLY
FOR AGRICULTURAL APPLICATIONS

Low pressure cylinders: <200 bar

TECHNICAL CHARACTERISTICS

GRADE E355

TREATMENT +C Hard

SURFACE FINISHING

- **Outside diameter:** smooth as drawn (EN 10305-2)
- **Inside diameter:** roughness $R_a < 0.80 \mu$ (average $0.50 \div 0.60 \mu$)

DIMENSIONAL TOLERANCES

- **Outside diameter:** 50% EN 10305-2
- **Inside diameter:** ISO H9 (ISO H10 for thickness < 4 mm)
- **Eccentricity:** < 3%
- **Straightness:** 1:1000 mm

Outside diameter (mm): min 30 - max 145

Thickness (mm): min 2.5 - max 7.5



HYDRAULIC CYLINDERS

TUBES FOR CYLINDER SUITABLE FOR HONING OR SKIVING & ROLLER BURNISHING

TECHNICAL CHARACTERISTICS

GRADE	E355
TREATMENT	+SR Stress Relieved
SURFACE FINISHING	<ul style="list-style-type: none">• Outside diameter: smooth as drawn (EN 10305-2)• Inside diameter: with stock allowance (skiving/roller burnishing)
DIMENSIONAL TOLERANCES	<ul style="list-style-type: none">• Outside diameter: 50% EN 10305-2• Eccentricity: < 3%• Straightness: 1:1000 mm



Outside diameter (mm): min 30 - max 245

Thickness (mm): min 5 - max 15

HYDRAULIC CYLINDERS

MAINLY USED
FOR EARTH-MOVING MACHINES AND LIFTS

TUBES FOR CYLINDER SUITABLE FOR HONING OR SKIVING & ROLLER BURNISHING



Telehandler



Fork Lift



Drill Rig



Skip Loader



Turf Care



Hauler



Truck Mounted Crane



Harvesting Head



Snow Plow



Truck Mounted Log Loader



Forest Machine



Wheel Loader



Backhoe Loader



Roll-Off



Refuse Collecting

- High pressure hydraulic cylinders: >200 bar

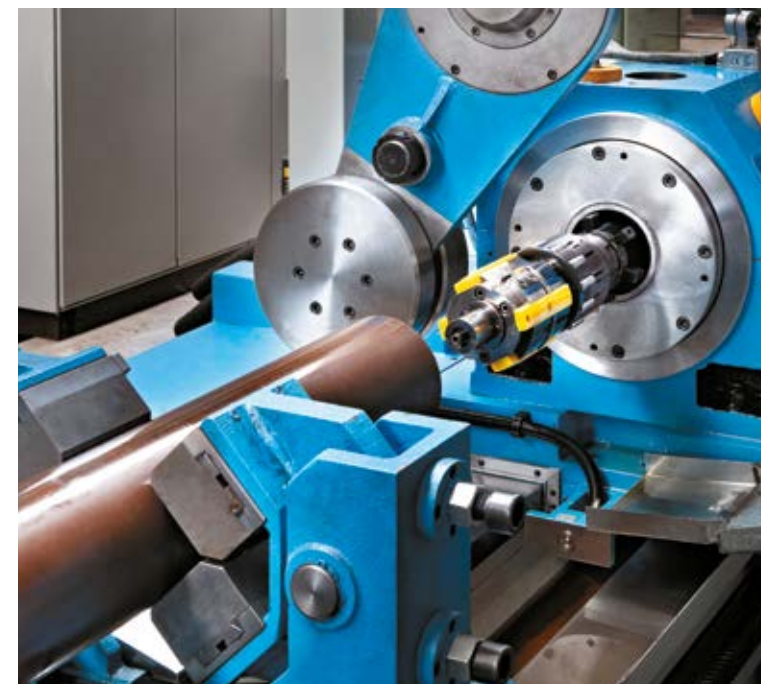
HYDRAULIC CYLINDERS

TUBES FOR CYLINDERS FINISHED H8

TECHNICAL CHARACTERISTICS

GRADE	E355
TREATMENT	+SR (BKS) Stress Relieved
SURFACE FINISHING	<ul style="list-style-type: none">• Outside diameter: smooth ad drawn (EN 10305-2)• Inside diameter: skived and roller-burnished H8 Ra max 0.3 μ
DIMENSIONAL TOLERANCES	<ul style="list-style-type: none">• Inside diameter: ISO H8, min. 40 mm - max. 220 mm

Inside diameter (mm): min 40 - max 220



HYDRAULIC CYLINDERS

TUBES FOR TELESCOPIC CYLINDERS

TECHNICAL CHARACTERISTICS

GRADE	E355
-------	------

TREATMENT	+SR Stress Relieved
-----------	---------------------

SURFACE FINISHING	<ul style="list-style-type: none">• Outside diameter: smooth as drawn (EN 10305-2)• Inside diameter: roughness $Ra < 1.6 \mu$
-------------------	--

DIMENSIONAL TOLERANCES	<ul style="list-style-type: none">• Straightness: 0.50 mm/m max
------------------------	--

Outside diameter (mm): min 40 - max 245

Thickness (mm): min 5 - max 15



 **MARCEGAGLIA**
CARBON STEEL

HYDRAULIC CYLINDERS

COLD-DRAWN TUBES SUITABLE FOR CHROME PLATING

TECHNICAL CHARACTERISTICS

GRADE	E355
-------	------

TREATMENT	+N Normalized, +SR Stress Relieved
-----------	------------------------------------

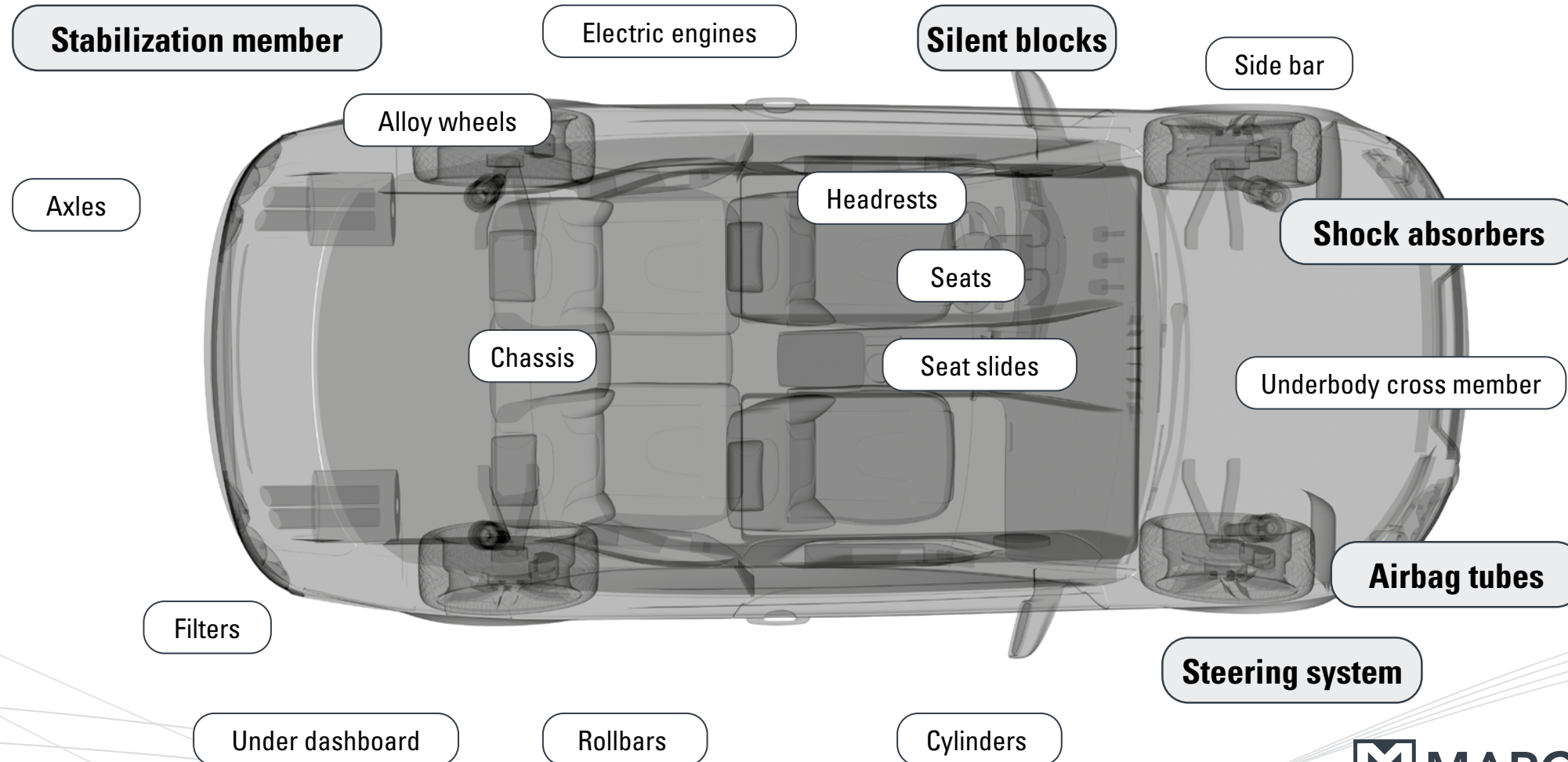
SURFACE FINISHING	<ul style="list-style-type: none">• Outside diameter: with stock allowance (for subsequent reworking)• Inside diameter: smooth as drawn (EN 10305-2)
-------------------	---

Outside diameter (mm): min 30 - max 200

Thickness (mm): min 5 - max 15



AUTOMOTIVE AND MECHANICAL



AUTOMOTIVE AND MECHANICAL

COLD-DRAWN TUBES FOR AUTOMOTIVE AND MECHANICAL APPLICATIONS

TECHNICAL CHARACTERISTICS

GRADE	E155 - E195 - E235 - E275 - E355 - E410
-------	---

	+C Hard
--	---------

	+LC Soft
--	----------

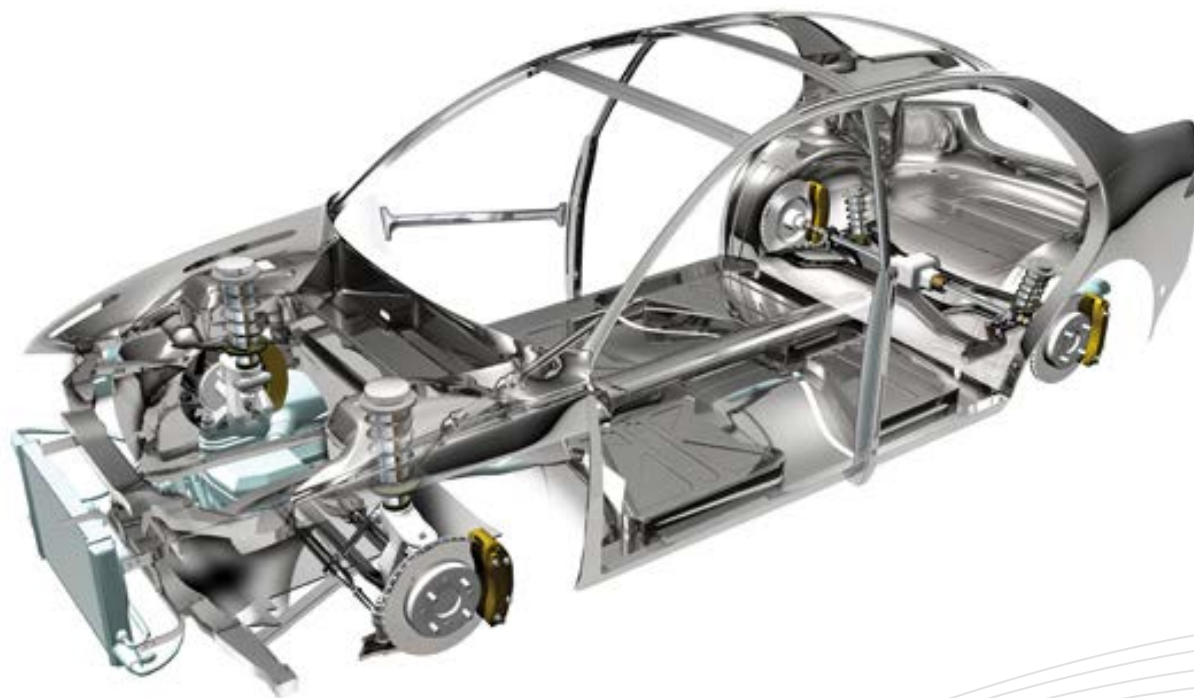
TREATMENT	+SR Stress Relieved
-----------	---------------------

	+A Annealed
--	-------------

	+N Normalized
--	---------------

Outside diameter (mm): min 15 - max 245

Thickness (mm): min 1.5 - max 15



MARCEGAGLIA
CARBON STEEL

AUTOMOTIVE AND MECHANICAL

COLD-DRAWN TUBES FOR CARDANS SHAFTS (TRILOBULAR, SPECIAL SHAPES, ETC.)

TECHNICAL CHARACTERISTICS

GRADE	E235 - E355
-------	-------------

TREATMENT	+C Hard
-----------	---------

+LC Soft

+N Normalized

DIMENSIONAL TOLERANCES	According to customer request
------------------------	-------------------------------

DIMENSIONS AND PROFILES	According to customer request
-------------------------	-------------------------------



SOME OF OUR CUSTOMERS

CATERPILLAR®



CASE
CONSTRUCTION



FASSI
LEADER IN INNOVATION

OCIMA
OLEODINAMICA

HYVA®

 **MARCEGAGLIA**
CARBON STEEL

November 2023

STEEL FOR GREEN GROWTH



tubitrafilati@marcegaglia.com
www.marcegaglia.com