

# INOSSIDABILE

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## Summary

For more detailed information please contact directly the names indicated at the end of each notification

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#### COMMERCIAL AND MANAGEMENT CENTRE IN TERNI

##### (Centro commerciale e direzionale a Terni)

For more than 70 years now, stainless steel has been used to manufacture the external cladding elements for the tallest buildings in the world, from the Chrysler Building in 1930 to the Twin Towers in Kuala Lumpur in the 90s.

Nowadays, architects have a wide range of stainless steels available for them, of the highest quality and resistance and with a vast choice of surface finishing, for both outside and inside cladding.

In Italy, apart from the main offices of the Centro Sviluppo Materiali at Castel Romano (1968) just four kilometres from the sea, with external facade and windows in EN 1.4401 (AISI 316) stainless steel and the headquarters of the Cassa di Risparmio di Biella in Biella, stainless steel was not taken much into consideration in the past for the building of facades.

The stainless steel promotion campaign in building is bringing about a change in tendency.

The technical meeting held in November 2004, in collaboration with the Centro Inox, in the company Library of Thyssenkrupp Acciai Speciali Terni, led to the choice of EN 1.4301 (AISI 304) for the external ventilated panels and the profiles of a new commercial and management centre, housing the GS Supermarket and several professional offices.

More than twelve tons of panels (measuring 1000x2000 and 1500x3000 mm), 1 mm thick, with Scotch Brite finishing, protected by an adhesive surface film.

They were worked through press forming and all the joints were welded, both in the workshop and on site.

To prevent oxidation, the panels were fixed to the supporting structure by plastic blocks with stainless steel screws.

Finishing was done using the specific abrasive brushes to reproduce, in the worked part, the sheet finishing.

The complex was finished recently and came into operation last April.

■ Construction: Costruzioni Baldelli Srl – Piazza Europa 5 – I-50100 Terni TR, phone +39 0744 401135, fax +39 0744 405153, info@costruzionibaldelli.it, www.costruzionibaldelli.it

■ Stainless steel sheet supplier: ThyssenKrupp Acciai Speciali Terni S.p.A. - Viale Benedetto Brin 218 – I-05100 Terni - Marketing: Dr.ssa V. Fontana, phone +39 0744 490867, fax +39 0744 490879, valeria.fontana@thyssenkrupp.com, www.acciaiterni.it

■ Fabrication: Mammoli Sabatino – Via Maestri del Lavoro 30 – I-05100 Terni, phone/fax +39 0744 812827, mammolis@mammoli.191.it

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#### THE FURNISHINGS OF CENTROSARCA IN SESTO SAN GIOVANNI

##### (L'arredo del Centrosarca a Sesto San Giovanni)

In the disused area of the ex industrial pole between the northern suburbs of Milan and the town of Sesto San Giovanni, really close to the new residential, university and service area of the "Bicocca", Centrosarca, a vast complex including an Ipercoop megastore, eighty shops and a multiplex cinema with relative underground parking has been built.

The inside area of this really modern centre has been furnished with benches, flower vases and wastepaper baskets in EN 1.4301 (AISI 304) stainless steel with a satin finish.

The simple, compact shapes of the elements fit perfectly into this busy, hi-tech environment. Furthermore, the sober, refined gloss of the satin finished steel gently reflects the

lights and colours creating that magic atmosphere to be found in modern shopping centres.

Top left – Straight bench with steel frame, square and semi-circular paper bins.

Bottom middle – Circular, modular bench with central vase.

Top right – Circular stainless steel vase.

Centre left – Square vase.

■ Client: Coop Lombardia S.C.R.L., Milano

■ Arcade layout and street furniture design: Studio Keyart – Via Fatebenefratelli 15 – I-20121 Milano, phone +39 02 6572832, fax +39 02 36514087, keyart@fastwebnet.it, arch.fiammetta@fastwebnet.it, www.keyart.it

■ Fabrication: International Cartel Sign Srl – Via Piemonte 24/30 – I-20090 Opera MI, phone +39 02 57610027, fax +39 02 57619043, info@cartelsign.it, www.cartelsign.it

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#### FROM OUR MEMBERS

##### MARCEGAGLIA DIVISIONE INOX

###### (Dalle Associate, Marcegaglia Divisione Inox)

Marcegaglia, with a production of more than 4 million t is the biggest steel transformer in the world. The production range of stainless steel, besides welded pipes, includes flat bars (from 10x2 mm to 200x12 mm), cold-drawn round bars (from 5 mm to 100 mm), angular and U-shaped open profiles.

The Marcegaglia Group is strengthening its position in the automotive sector, from axel tubes in the Porsche Cayenne, to stainless pipes for the exhaust systems of the main European car manufacturers. It is for this reason that the Marcegaglia Divisione Inox wants to develop its manufacturing area in Forlì: the present area of more than 100,000 m<sup>2</sup> covered, will soon be joined by 13,000 m<sup>2</sup> of new sheds for the stainless steel welded pipe production and finishing lines manufactured for the car industry. The automotive sector is one of the most competitive with the highest quality index (the world acceptance parameters for product non-conformity are zero parts per million pieces supplied).

Depending on the car model range and to the catalyst use temperature, different qualities of steel are used: ferritic steels: EN 1.4512 (AISI 409) in this case used in the version LI (Low Interstitials); EN 1.4510 (AISI 439); EN 1.4509 (AISI 441) – austenitic steels: EN 1.4301 (AISI 304); EN 1.4541 (AISI 321); EN 1.4828 (AISI 309).

In the Forlì plant today more than 120,000 t/year of welded stainless steel pipes are produced for different uses (food, chemical and petrol-chemical industries, transport of corrosive liquids). But the field using stainless steel tubes that has developed most in recent years is undoubtedly the "Building" one.

Marcegaglia decided to invest heavily in new manufacturing technology and, by using high frequency and laser welding processes, has made a really high quality product, at competitive prices, available for the market. From street furniture to airports, from design radiators to house fencing, stainless steel tubes are being used more and more thanks to their duration and no need for maintenance.

It is thanks to the high frequency welding technology that the heat affected zone has been reduced by section, therefore the welded tube, with the same kind of alloy used, is less likely to oxidise.

Fig. 1, 2 and 3 – The Forlì plant: the site view; the warehouse; coils handling.

Fig. 4 – Micrograph of high frequency welding (HF)

Fig. 5 – Micrograph of traditional TIG welding (Tungsten Inert Gas).

Fig. 6 – Micrograph of laser welding.

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#### EN 10217-7: A NEW STANDARD FOR WELDED STAINLESS STEEL TUBES

##### (EN 10217-7: una nuova norma per il tubo saldato inox)

Last February the new standard which the market had been waiting for so long finally saw the light. It is EN 10217-7 "Welded steel tubes for pressure purposes – Technical delivery conditions – Part 7: Stainless steel tubes".

This document is destined to become an essential reference for manufacturers and users of welded stainless steel tube, a product used in a wide variety of applications, including some involving important responsibilities such as heat exchangers, equipment for the food industry, mechanical and civil constructions, chemical-pharmaceutical equipment, and tubes for conduction and plant engineering.

This standard, once it has been implemented by all members of the European Community, will replace and do away with all the national standards (as DIN 17457 and NF A 49-147) applied to this field in the past. In particular, EN 10217-7 will definitely be subject to the procedure for inclusion in the new harmonised standards under Directive 97/23/EC (PED - Pressure Equipment Directive).

Table 1, extrapolated from an ESTA (European Steel Tube Association) publication, shows all the national standards that will be replaced by EN 10217-7.

Table 2 (from Table 2 of the standard) establishes the specific symbols to be used to indicate on tube markings and certificates in accordance with different delivery conditions. The possible presence of the letter "b" appended next to the symbols listed (e.g. W2<sup>b</sup>, W2R<sup>b</sup>) signifies that the inner welding bead of the weld must be worked.

The most common delivery conditions may be summed up as follows: Brushed tube = W0; Descaled tube = W1 – W2; Bright annealed tube = W1A – W1R – W2A – W2R.

With relation to paragraph 12, "Marking", all producers will gradually abandon the old "wordings" and replace them with those specified in EN 10217-7 which expressly require: the manufacturer's name or trademark; the dimensions of the tubes; the number of the EN 10217-7 standard and the steel name or number; the cast number or a code number; the category, if applicable; the mark of the inspection representative; an identification number which permits correlation of the product or delivery unit to the related document.

In conclusion, let us list the benefits of using European EN standards: EN standards are a valid reference throughout the European Union and in all EFTA nations; the number of different standards in use is reduced; correspondence with European directives is ensured with specific standards; clear definition of products; greater product availability; greater safety in that products cannot be requalified (changing their field of application); easy correlation with the corresponding American or Japanese products.

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#### A PLANT RECYCLING PAPER AND CARTON: ITALIAN STAINLESS STEEL IN SAUDI ARABIA

##### (Un impianto per riciclare carta e cartone: inox italiano in Arabia Saudita)

The mixture preparation line built in Saudi Arabia, uses raw materials like old cartons (OCC Old Corrugated Containers) and/or mixed waste paper to obtain new carton ("fluting" and "testliner") with a final production of 320 t/day, through the following phases:

**Pulping and Pre-depuration** – A conveyor belt continuously feeds the low density pulper, with D tanks (Crescent Cord Type). Then the most part (about 80%) of the mixture is sent to a storage tank and about the 20% is sent to

a detraser where gross impurities (staples, spins, clips, bits of wood, plastic, adhesives and glue) are separated from it. **Thick paste depurator / tank depuration** – A high density cleaner, centrifugally separates the heavy pollutants from the mixture. Another cleaner permits elimination of almost all the sand, protecting the depurator holed tanks of the next phase.

**Splitting** – The mixture is split into two flows: short fibre and long fibre, separately submitted to further depuration processes, followed by re-treatment of the previous phases.

**Depuration with a slotted screen** – This really important phase is to remove stickies and all the small pollutants still present in the mixture.

**Hot plant** – Here the mixture is thickened and transferred to the mixing tunnel, where steam and minute amounts of chemicals are injected and it reaches temperatures of up to 95-100°C. The water squeezed out is sent to the stand tank (the water cycle is closed as much as possible).

These are complex working phases during which machinery is submitted to high temperatures, to contact with chemicals and to different wear situations. It is, therefore, logical that many of the plant parts and all the connecting pipes (welded pipes with diameters varying from just a few millimetres to 800) should be in stainless steel. The most used type is EN 1.4301 (AISI 304) but, on request, EN 1.4401 (AISI 316) is also used.

Top middle – Plant controlling screens, measurers and control valves.

Bottom middle – Pipes connecting the different plants.

Equipment construction: Comer Spa – Via Vicenza 13 – I-36030 San Vito di Leguzzano VI, phone +39 0445 695000, fax +39 0445 695100, comer@comertech.com, www.comertech.com

Piping: Rivit Spa – Via Palladio 129 – I-36030 Caltrano VI, phone +39 0445 359330, fax +39 0445 359339, info@rivit.com, www.rivit.com

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### STAINLESS “ELASTIC” TO PLAY WITH (Un “elastico” inossidabile per giocare)

Children’s open-air games must guarantee safety both from an accident-proof and from a cleanliness and hygiene point of view.

If we consider environmental aggressiveness, the absence of maintenance, possible vandalism and loads that are greater than they are supposed to be (e.g. when used by adults) choice can only go one way: stainless steel which also assures adequate mechanical resistance.

This game structure line, called “Elastic”, is made up of straight and curved tubular elements (diameters of 35, 38 and 60 mm) and fittings in stainless steel EN 1.4301 (AISI 304) as well as supports and profiles in laminated pine. All elements are bolted and protected at their ends by stainless steel laser cut and bent fixing plates.

Thanks to the elasticity of stainless steel components, these structures can bend, bounce and adapt themselves, just like natural trees.

Production: TLF Srl – Via del Molino 42 – I-52010 Corsalone AR, phone +39 0575 53171, fax +39 0575 5317200, tlf@tlf.it, www.tlf.it

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### AN ENTIRELY TRANSPORTABLE STAINLESS STEEL PREFABRICATED DEPURATOR. (Un depuratore prefabbricato interamente trasportabile in acciaio inossidabile)

The depurator of San Martino di Castrozza, a tourist resort in the Trento province, has a potentiality of 42 m<sup>3</sup>/h. During the summer and winter seasons, due to the heavy tourist flow, the plant proved to be insufficient. To handle the environmental and hygiene-sanitary situation which was decidedly compromised, immediate intervention was needed. They opted for a temporary membrane (MBR) depurator, with a capacity equal to the existing one, that could then be recovered once its task was over and used in the future for the necessary upgrading of other depurators. The needs for Life Cycle Cost and compatibility with use led the designers to choose stainless steel as their base material.

The new depurator is housed in two transportable, closed containers, in a self-supporting structure, in EN 1.4301 (AISI 304) stainless steel, lagged to stand the rigid winter temperatures.

Each reaction tank measures 12.00x2.50x2.88 m internally and weighs 7,120 kg, while the relative service module

measures 6.05x2.31x 2.50 m internally.

The membrane housing is also in stainless steel EN 1.4301. These parts weigh about 6,000 kg, while the whole structure, excluding the membrane modules, weighs approximately 13,000 kg.

Connecting up all users was implemented through 200 m of lagged DN80 piping, still in EN 1.4301 (AISI 304) stainless steel.

For normal use, the new prefabricated depurator will be used up to the designed potentiality (42 m<sup>3</sup>/h, equal to about 3,500 inhabitants). Above this level, the rest will be treated by the existing depurator.

Top left – The two stainless steel containers with the oxygenising tanks.

Top right – Inside the second sector (aeration with average bubbles) of one of the containers: we can see the membrane housing stainless steel boxes.

Bottom left – Installation.

Bottom right – Inside the service module with machinery protected by stainless steel cupboards.

Planning and works management: Arch. Adriano Conci, Servizio Opere Igienico-Sanitarie, Provincia Autonoma di Trento – Via Pozzo 6 – I-38100 Trento, phone +39 0461 492763

Realization: Atzwanger Spa – Via Druso 229/233 – I-39100 Bolzano, phone +39 0471 243811, fax +39 0471 243840, info@atzwanger.net, www.atzwanger.net

Tanks manufacturer: Calinox – Zona Artigianale 2 – I-39040 Cortina Strada Vino BZ, phone +39 041 817395, fax +39 0471 817720, calinox@brennercom.net

## AUTOMOTIVE CIRCLE INTERNATIONAL

### Auto technicians meet to discuss lightweight, low cost construction solutions

#### (I tecnici dell’auto a convegno per discutere soluzioni costruttive leggere e a basso costo)

On June 2 and 3 2005, the 14<sup>th</sup> European Lightweight Car Body Conference organised by the Automotive Circle International (www.automotive-circle.de) took place in Germany (Bad Nauheim, Frankfurt) under the title “Low-Cost Concepts VERSUS Lightweight Innovations”. This is a permanent meeting fixture for the automotive sector, where technicians from the most important car manufacturers compare the most innovative technological solutions aimed at reducing the weight and costs of cars.

To confirm the growing interest in stainless steel as structural material, in three speeches stainless steel was the subject of the paper: Porsche AG for the Carrera GT (shock absorbing components); Saab and Volvo for a bumper system using high resistance stainless steel; Pininfarina for the vehicle called “Nido” in which stainless steel has been used massively for all the under-structure with really high safety standards in the case of crashes.

Furthermore, the Fiat Research Centre in its speech effectively illustrated the economic aspects linked to the technological-productive choices for a commercial vehicle.

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### BEAUTIFUL, ELEGANT AND HYGIENIC: THAT’S HOW A STAINLESS STEEL POT IS BORN

#### (Bella, elegante e igienica: così nasce una pentola inox)

The pot described is 20 cm in diameter and belongs to the new line called “Oasi” (fig. 1). Simple and linear, it features a curl inside the rim to harden it. The curl is hermetically closed by a food silicone seal.

**How is the pot body made:** you start from a EN 1.4301 (AISI 304) cold rolled disk, 412 mm in diameter, 1 mm thick, 2B surface finishing, got from a coil (lubricated), with a mechanical 120 ton press.

By drawing the disk with a 250 t oleo-dynamic press, you obtain a can with a 240 mm diameter, 130 mm high and a drawing range of 7 mm (fig. 2).

It is then lengthened taking the diameter from 240 to 202 mm, and the height to 170 mm. This is followed by washing/degreasing to eliminate all traces of lubricants.

**Production of the thermal diffusion base:** the disk for the production of the base, which contains a 99.5% pure aluminium tablet, is in ferritic stainless steel EN 1.4105 (AISI 430) with a diameter of 202 x 0.8 mm thickness and is cut from coils by a 110 t mechanical press. The disk is placed on a 60 t press and drawn, obtaining a semi-finished product measuring 162 mm in diameter, 6.8 mm high.

The braze welding operation is carried out by induction machines (fig. 3), raising the base’s temperature to 560° C.

**Creation of the curl rim:** the can with the welded base is taken to the curling machine where the first deforming of the rim will take place followed by annealing, to eliminate work hardening due to the preceding phases, by a second washing and by curling (fig. 4).

**The final finishing phases:** the following phases are those for external and internal satin finishing and of the base, and handle welding.

**Production of the lid:** to produce the lid, you start from a EN 1.4301 (AISI 304) disk 280 mm in diameter, 1 mm thick and 2B surface finishing.

The first operation is the drawing one, with a 100 ton hydraulic press, followed by: flanging, parting of excess material, internal and external satin finishing, welding of the knob and washing.

**Production of handles:** the handle (fig. 5) is produced by using a laser cut stainless steel EN 1.4301 (AISI 304) plate, 22 x 5 mm. The handle is always satin finished.

Planning, production engineering and manufacture: Zani Serafino di Zani Roberto e C. Sas - Via Zanagnolo 17b - I-25066 Lumezzane Gazzolo BS, phone +39 030 871861, fax +39 030 8970620, zani@serafinozani.it, www.serafinozani.it

Design: Tarcisio Zani, Manager Design Department.

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## STAINLESS WATER BLADES

### (Inossidabili lame d’acqua)

The “Water-blade” series, designed by Peter Jamieson, combines pleasant aesthetics and innovative design with size flexibility and good functionality. The particularly square, angular lines were inspired by a blade, both for the tap itself and for the water movement.

Traditional taps are mounted on a stainless steel EN 1.4301 (AISI 304) support with polished or brushed finishing. These modular supports can be equipped with shower holder and other fittings like toothbrush holder etc.

The chamfering of the taps’ concave corners, the particular sober line, together with the hygiene aspect and how easy they are to clean make this tap series a particularly successful product.

Bottom left – Water-blade tap for basin, with object-holding shelf.

Top right – Water-blade tap for shower. The jet, gentle to the body, reminds you of a waterfall.

Production: Rubinerterie Ritmonio Srl – Via Indren 4, Z.I. Roccapietra – I-13019 Varallo VC, phone +39 0163 560000, fax +39 0163 560100, info@ritmonio.it, www.ritmonio.it

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