

INOSSIDABILE

Edited and published by Centro Inox Servizi S.r.l.

Summary

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

COVER PAGES 3-4

VENICE: STAINLESS CHARM (Venezia: fascino inossidabile)

We tried to unify the image of the municipal water taxi stations as much as possible, also thinking of the shelter - a recognisable urban element for each station. The manufactured products, however, having to be made within the historic centre of Venice, needed to assume suitable landscape compatibility.

For all structures, due to the marine environment, the choice of the designs was oriented towards stainless steel EN 1.4404 (AISI 316L), to guarantee corrosion resistance due to the aggressive atmosphere.

The taxi station pontoons shown in the photos accompanying this article, have, as can be seen, physiognomies which are very different between them, but, in general, the completion of the standardisation of the pontoons concerned the implementations described below.

The ROOFS of the pontoons do not have this, and were instead obtained by means of appropriate frameworks. These roofs essentially consist of:

- uprights (4 square welded hollow sections).
- beams and crosspieces (2 longitudinal square hollow sections equal to that of the uprights).
- upper frame (6 round hollow section and 5 longitudinal tubes).
- 2 side gutters made from sheet metal.
- 2 sheet metal fronts bearing the inscription "TAXI".
- Handles for wooden railings obtained from a tube.

All the carpentry and the aforementioned tinsmithery were made entirely from stainless steel EN 1.4404 (AISI 316L).

Contractor: Metropolitan City of Venice Supervision of Public Works

Viability Venice C.S. and Isole - Microportualità and Rive Maintenance Office.

S. Marco 4136 - 30124 Venice. - Tel. 041/2748861, roberto.megera@comune.venezia.it, www.comune.venezia.it

Contracting company: MENELA.COM Trasporti Opere Lagunari S.r.l.

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AN INOX TRACK... IN DUBAI (Una pista inoxa Dubai)

There are many uses of stainless steel in the public space: both in Europe and outside Europe it is now used in all kinds of spaces - in airports, leisure centres, playgrounds, shopping centres, etc.

The application shown here for Dubai is interesting, innovative and very original. The floor shown here is made from stainless steel sheet EN 1.4401 (AISI 316) with a 2B finish and a thickness of 3.5 mm, to give good consistency and good resistance to wear. An Italian company has created a new special project within SNOW PARKS: it is the classic "bumper car" model FPU-FLOOR PICK UP SYSTEM, in a version with a fully electrified floor with direct current.

Given the particular location, all of the materials needed to make the floor had to respond to the characteristics of mechanical seal with constant

working temperatures of at least -10°C

Made by: I.E.Park S.r.l. SOLI BUMPER CARS via Don P.Borghesi 3, 42043 Gattatico RE, Italy. Tel. 0522/1678695, Fax 0522/1678750, info@iepark.com, www.iepark.com

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SIDERVAL: SPECIAL STAINLESS STEEL PROFILES

HOT EXTRUDED FOR ARCHITECTURE... AROUND THE WORLD

(Siderval: profili speciali di acciaio inox estrusi a caldo per l'architettura nel mondo)

Founded in 1972 in Talamona, in the Province of Sondrio, current location of the production activity, Siderval S.p.A. is a leading international company in the extrusion sector. Siderval is part of the Italian group Calvi Holding S.p.A. / Calvi Network, divided into the Metallurgical Division (Siderval SpA, Cefival SA, Hoesch Schwerter Extruded Profiles GmbH, Falci Srl, Fiav L. Mazzacchera SpA, Calvi SpA, Rathbone Precision Metals Inc., Hoesch Schwerter Profile GmbH) and the Mechanical Division (Lift-Tek Elecar SpA and Lift Technologies Inc.). The group also has a stake in Tifast S.r.l, which produces titanium for the most advanced technologies.

Since 2016, Siderval has managed Holding's Hot Extrusion Business Unit, which includes the companies Hoesch Schwerter Extruded Profiles GmbH in Germany and Cefival S.A. in France. Siderval designs and manufactures special custom profiles, designed in close collaboration with the customer. With over 45 years of experience, over the years the company has made more than 6,000 different shapes produced in various types of steel (stainless, carbon, alloy, special), titanium and nickel-based superalloys. Siderval's extruded products are generally applied for civil and mechanical constructions, but also in the aeronautical, energetic, chemical, petrochemical, food and pharmaceutical fields: high-tech sectors where stainless steel can express all its potential for mechanical resistance (even at a low temperature) and corrosion. Siderval mainly extrudes austenitic stainless steels, but also ferritic, martensitic, duplex and precipitation hardened.

Although this technology is still mostly unknown in the architectural field, the extruded steel elements offer incredible versatility, combining aesthetic needs and technological innovation. This allows the designer to express their creativity, while improving the functionality of design choices.

Furthermore, steel is sustainable: it is made up of about 70% recycled material and is 100% recyclable for an infinite number of times. Siderval's inox extruded stainless steel profiles are mainly applied to curtain walls, but not only (just think of the stainless steel profiles that form the protection barrier of the National Library in France, those for the London Park Bridge balustrade in stainless steel EN 1.4462, as well as profiles for civil works such as joints for bridges or sheet piles). Siderval is currently working on the supply of satin-finished and polished stainless steel AISI 316 pipes and profiles for the anchoring systems to fix the curtain walls of the new Monaco Princess Grace Hospital, a huge project that was presented in 2013 and completion is expected in 2027.

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STAINLESS STEEL DISSIPATORS AS SEISMIC PROTECTION FOR STRUCTURES (Dissipatori in acciaio inox come protezione sismica delle strutture)

Among the many uses of stainless steel, perhaps its structural use in the anti-seismic field is the least known. To frame the topic, we define "traditional" seismic engineering, also called Hierarchy of Resistances or Capacity Design, as an approach based on the concept of structural ductility: sufficient ductility (local or global) which ensures that the structure (bridge, building or any other structure), does not collapse in the event of a strong earthquake, even if seriously damaged. At the time of the earthquake, the greatest possible number of "plastic hinges" (classic cracks) must be formed before the collapse, and the structure will be able to dissipate (eject) the greatest possible amount of energy.

An alternative and much more effective way of proceeding on the implementation and practical results, involves the insertion of anti-seismic devices with the main aim to avoid damage to the structure. We call this: "Energy approach to seismic design". Essentially, the energy entering the structure due to the sudden shaking of the earth (earthquake), is lower than the energy that the structure can absorb without damaging it, that is, remaining in the elastic field: structural cracking must not be created. In other words the "question", which depends on the seismic zone, ground but also on the conformation of the work, must be inferior to the "offer", i.e. the ability to cope without structurally damaging the energy coming from the earthquake: **question < offer**. If, calculations to hand, a structure that is not seismically protected does not respect this inequality, it intervenes by providing for the insertion of ad hoc anti-seismic devices, which can be part of two large families: the **Base isolation**, which reduce the demand, and the **Dissipators** which increase the supply.

In particular, in the dissipators family there are "stainless steel hysteretic dissipators", subject of the present article and of the intervention during the Seminar: "Stainless steel as a structural material in construction and infrastructure", held in Milan on the 26 October last year.

In general, steel hysteretic dampers exploit, as a source of energy dissipation, the plasticisation of appropriately shaped steel elements, often with particular characteristics, designed to ensure a stable and repeated cyclic behaviour of the force-displacement curve, whose internal area represents the dissipated energy. During the earthquake, the hysteretic dampers are deformed by repeatedly going into the plastic field - heating up and expelling a lot of energy. The Piolo, with its axial-symmetric shape, similar to a pin, has the following characteristics:

- Stainless;
- Excellent plasticity characteristics;
- Sufficiently high mechanical resistance.



A valid balancing of the indicated characteristics is ensured by the **austenitic stainless steel of the 300 series**. Test campaigns conducted on different elements, have shown a better functional compliance of the types made in AISI 316L but selected according to particular indications regarding the chemical analysis and heat treatment.

APPLICATIONS:

ENEL BUILDINGS IN NAPLES
BRIDGES AND VIADUCTS
THE 'NUVOLA DI FUKSAS'
ROME CONVENTION CENTER.

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TANKS AND STAINLESS STEEL TUBES FOR COASTAL DEPOSITS

(Serbatoi e tubazioni inox per depositi costieri)

URA The story of an Italian company that started its business for third parties in 1951 is summarised here. They started building tanks for the storage of plant and fat products, used for the disembarking and embarking activities at the port of Genoa. The company grew, and in the 1970s they had a total of 41 tanks with a total capacity of 29,196 cubic meters.

During the 1960s, however, they began to move category "C" chemical products, but expansion continued in a constant way, exceeding 35,000 cubic meters.

Following the increase in the traffic of chemical products, during the 1990s, 11 tanks were built entirely from stainless steel from 1,270 mc. which gradually multiplied until reaching the current situation which is configured with a total storage capacity of 78,000 cubic meters relative to 84 tanks of various capacities, but made from 700Al stainless steel.

Made by: SILOMAR S.p.A., Ponte Etiopia - 16149 Genova Porto. Tel. 010/4699274, Fax 010/6469794, direzione@silomar.it, www.silomar.it

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ITALIAN CUTLERY

(Coltelleria da tavola tutta italiana)

This is an all-Italian produced product in the field of table cutlery. The design, cutting and processing of the blades as well as the final packaging was carried out in Italy. In addition the handles were produced from the hot injection of plastic material.

The blades were produced from martensitic stainless steel type EN 1.4028 (AISI 420), grade B, which were then serrated. These are heat treated in order to obtain a high surface hardness to guarantee optimal cutting duration. In this case, hardness values of 52/53 HRC were produced.

Made by: Coltellerie Paolucci, via Teste 3, 86095 Frosolone IS.

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STAINLESS STEEL CONVEYOR BELTS: FOR SECURE AND RELIABLE MOVEMENT (Nastri trasportatori in acciaio inossidabile: una movimentazione sicura ed affidabile)

In various industrial sectors including the food sector, cosmetics, chemicals and pharmaceuticals and the metallurgical industry of heat treatments, the automatic movement of moving products along production lines inside a plant requires the use of conveyor belts comprised of the most diverse shapes and characteristics.

These conveyor belts can be made from either round or flat wire. In the food industry, for example in the bakery sector, in the production of pasta, or in the management of fresh products such as vegetables, stainless steel conveyor belts are an ideal product due to the capacity of the material to resist corrosion, temperature and thermal shock as well as for its hygiene, reduced maintenance and ease of cleaning.

Among the most commonly used models in this sector are the welded edge conveyors (see Fig. 1) and those with tight links. The conveyor belts with welded edges are essentially made from wire spirals with alternating torsions on the right and left; these are held together by pre-corrugated cross-pieces, and lastly the edges are welded to give greater stability to the belt. Pinion conveyor belts (see Figures 2 and 3) are, to date, increasingly in demand by various industrial sectors. The materials used vary from sector to sector, but in addition to AISI 304 and 316 which make up the two most commonly used materials, stainless steels of the AISI 310 or type 314 are used in sectors in which working temperatures are particularly high.

Manufacturer: Larioreti Italia S.a.s. di Riva Giovanni & C. - 23900 Lecco - Via Piloni 2/4 tel. 0341.250499, fax 0341.254350, info@larioreti.com, www.larioreti.com

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A STAINLESS STEEL "TANK" OF WATER AND ENERGY

(Un "pieno" inossidabile di acqua ed energia)

Hands up those who, on holiday, have never walked along the dock to "admire" the beauty of the docked yachts and sailing boats. Whilst in the harbour, these boats are connected to the service stations to charge "full" of electricity and drinking water before leaving for new beaches or the open sea. The monolithic body of the dispenser is entirely made from AISI 316L. The regulators have dimensions 220x350x760 mm or 220x350x1000 mm, a IP 56 degree of protection, and can withstand operating temperatures between -30°C and + 70°C.

They are manufactured using sheet metal with a thickness of 15/10 and, in order to optimise the resistance to corrosion in these environments, they are made with a glossy finish.

Manufacturer: Plus Marine S.r.l. - 48124 Ravenna - Via Braccessa 80 - tel. 0544.270335, fax 0544.271498, info@plusmarine.com, www.plusmarine.com

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HEAT TREATMENTS FOR STAINLESS STEEL AND NICKEL ALLOYS

16 October 2018

Nerviano (MI), Hotel dei Giardini

(I trattamenti termici per acciai inossidabili e leghe di nichel)

On 16 October 2018, Centro Inox will organise a one-day technical-practical meeting dedicated to the various heat treatments which stainless steels can be subjected to.

The following topics will be discussed:

- Introduction to the works: the reason for the theoretical-practical courses
- What heat treatment is used for: metallurgical meanings and performance requirements
- Conventional heat treatments for the main families of stainless steels.
- Temperatures/durations/cooling media/atmospheres, etc.
- Thermal treatments for PH stainless steel/superaustenitic and super-duplex stainless steels/nickel alloys.
- Criticalities deriving from incorrect thermal treatments (grain enlargement, precipitated carbides, etc.).
- Heat treatment techniques in the production of electrowelded pipes.
- Pre and post welding thermal treatments: when are they useful?
- Surface hardening treatments: tradition and innovation (nitriding, PVD, DLC).
- Guided tour of the facilities at T.T.N., in Nerviano (MI).

The course will be structured with both a theoretical and a practical-applicative part.
Official language: Italian

For information and registration:

Centro Inox - tel. 02 86450559/69

www.centroinox.it - eventi@centroinox.it

ACCADUEO - THE FAIR OF SUPPLY CHAINS WHO VALUE TO WATER

(ACCADUEO - la fiera delle filiere che danno valore all'acqua)

The 14th ACCADUEO - the international water exhibition organised by BolognaFiere - has been an Italian water services sector reference event for 28 years. It will take place in a dedicated and renovated space in Bologna from 17-19 October 2018.

Centro Inox will be present for the entire duration of the event with a stand in which, as usual, both the "member" companies and the "affiliates" will be presented, and a meeting will be organised on the afternoon of 17 October entitled: "Water and stainless steel: a winning combination for the future". (room G - "CH4" - time 14.30-17.30)

Meeting program:

- **Introduction to the work: stainless steel is a "cheap" material**
Fausto Capelli, Paolo Viganò - Centro Inox, Milano.
- **Hydraulic characterisation of stainless steel pipes**
Enrico Orsi - Polytechnic University of Milan, Milan.
- **Stainless steel and the integrated drinking water cycle**
Riccardo Savarino - C.d.I. Consulenze di Ingegneria, Pavia.
- **The corrosion of stainless steel in water services: the behavior of welded joints**
Marco De Marco - Italian Institute of Welding, Genoa.
- **What is happening in the rest of the world: the examples of Tokyo and Taipei**
Benoit Van Hecke - Nickel Institute, Brussels.

Official language: Italian

For further information:

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BRESCIA METRO: INOX PROTAGONIST (Metropolitana a Brescia: inox protagonista)

The Brescia metro was designed to connect the northern districts of the city with those of the south-east area, through the center, and stainless steel has been used in the construction of the various stations. These stations are the result of a project with both functional and aesthetic connotations, envisaged by Brescia Infrastruttura, aimed at unifying their shape, both for the design and for the choice of materials. Here we can see examples from the 14 stations. EN 1.4301 (AISI 304) 1 mm thick and with various surface finishes was widely used. For some types of infill walls, composite panels were used which consist of a coupling between an external "skin" of stainless steel sheet (with thicknesses varying from 0.5 to 0.8 mm) and aluminium honeycomb. Using this technique, excellent flatness and a typical stiffness of the composite materials was obtained.

Stainless steel products supplied by: Steel Color S.p.A. via per Pieve Terzagni 15, 26033 Pescarolo ed Uniti CR. Tel. 0372/834311, Fax 0372/834015, info@steelcolor.it, www.steelcolor.it.

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