

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

AN ABSOLUTELY UNIQUE CONCEPT

(Un "Concept" davvero unico)

Considering that the international law on environmental issues regulates the use of chrome-plating in a more and more restrictive way, a well-known manufacturing company of shotguns based in Urbino, has been studying for many years now the possibility to eliminate from its products, as a protective coating against corrosion, chrome-plating. As a consequence, the company decided to conduct a research aimed at replacing the basic materials with stainless steels, and at evaluating the opportunity to provide stainless steels with different finishing options and colours, so as to completely eliminate chrome-plating processes (thereby respecting the environment) and improve their corrosion resistance (as well as product performance). The test product this research was focused on is the new "Raffaello 2013". At the two international exhibitions of sporting arms held in Nurnberg and Brescia, two new models of "Concept Gun" were presented, which include several elements made of stainless steel, such as the barrel assembly, the breechblock, the pin guide connecting rod, the follower, the drives and the springs. **Manufacturing company:** Benelli Armi Spa – I-61029 Urbino PU – Via della Stazione 50, phone +39 0722 3071, www.benelli.it

PAGE 5

STAINLESS STEEL PERFORATED SHEETS FOR THE REQUALIFICATION AND RENEWAL OF THE MARITIME STATION OF THE PORT OF GENOA

(Lamiere forate in acciaio inox per la riqualificazione della Stazione Marittima del Porto di Genova)

When architects choose materials, they do not only consider their functional characteristics, but also a set of less quantifiable characteristics, among which, in particular their aesthetic look, which is an essential element of the final result. At the Maritime Station of Ponte dei Mille, which is the main boarding area for the cruising traffic of the port of Genoa, the perforated sheets used for the requalification and renewal interventions on the existing building, have allowed building a shell that improves and enhances the overall appearance of the structure. The perforated sheets are made of EN 1.4404 (AISI 316L) stainless steel, which proves an essential choice, considering the close proximity of the building to the sea. In particular, two different kinds of perforated sheets were used, both obtained from 1,000 mm high, AISI 316L stainless steel coils. 1.5 mm thick perforated sheets are installed in lower part of the shell, while 2 mm thick perforated sheets are installed in the upper part of the shell acting also as parapets.

Contractor: Schiavetti Lamiere Forate S.r.l. – I-15060 Stazzano AL - Viale della Vittoria 4, phone +39 0143 607911, fax +39 0143 61297, commerciale@schiaivetti.it, www.schiaivetti.it / *Stainless steel produced by:* Acciai Speciali Terni S.p.A. – I-05100 Terni TR – Viale B. Brin, 218, phone +39 0744 490282, fax +39 0744 490879, marketing_ast@acciaiaterni.it, www.acciaiaterni.it

PAGES 6-7

FROM OUR MEMBERS

ILTA INOX: 50 YEARS OF STAINLESS STEEL (ILTA INOX: 50 anni d'acciaio)

The first and most important company belonging to the Arvedi Group, Ilta inox is considered today one of the leading manufacturers of welded round-section stainless steel tubes. Along with the traditional austenitic stainless steel grades 304, 304L, 316L, 316Ti, 321, 310S, and duplex 31803, the company recently introduced in its production range also the 309 grade and 444 grade steels (the latter is being currently registered). Tubes are welded through TIG and laser technology, in full compliance with the most demanding quality standards (ISO 9001:2008), and are certified by important international test and certification authorities. Ilta inox has recently supplemented its product offer of tubes made from coils, with a range of calendered and press tubes available in diameters up to 1,000 mm. **Laser welding technology** - Most of the company's investments in welding systems are currently focused on laser technology. Today, there are 20 laser plants in operation, which represent almost entirely the production flow. Ilta Inox has developed a specific know-how concerning the rolling process, aimed at monitoring the roughness of the laser weld.

Extension of the range of annealed tubes - The furnace for thermal treatment and bright annealing of tubes up to 219.1 mm diameter was lately introduced in order to further extend the range of thermally treated tubes. **New size range and new tube straightening line** - The size range was recently upgraded to include 1,000 mm diameter tubes, while a new advanced high-productivity tube straightening line was added, which is integrated with an automatic bundle packaging system. **Ilta inox: a strategic partner** - In order to meet the increasingly stringent service requests from our customers as much as possible, the stock of tubes available in our warehouse has been further extended, and the in-house logistic service has been considerably improved, to guarantee prompt deliveries to customers within 24/72 hours.

ILTA INOX S.P.A

Strada Statale 45 bis - 26010 Robecco d'Oglio (CR) – Italy, phone +39 0372 9801, fax +39 0372 921538, sales@ilta.arvedi.it, www.arvedi.it

PAGES 8 - 9

CRYOGENIC PROPERTIES OF STAINLESS STEELS

(Proprietà criogeniche degli acciai inossidabili)

As is known, the mechanical characteristics of many materials, including steels, may vary in consequence of temperature fluctuations. -150 °C (-238 °F): this is the approximate reference value that establishes the upper-end limit of cryogenic temperatures. In particular austenitic stainless steels (face-centered cubic lattice – c.f.c.) are successfully used when temperature lowers, in virtue of their excellent toughness that goes far below of the above-mentioned limit. On the contrary, ferritic structures (body-centered cubic lattice – c.c.c.), and martensitic structures (body-centered tetragonal lattice),

have to deal with the hereafter described "transition" phenomenon. **Toughness** expresses the capacity of a material to combine breaking with a more or less marked elongation, that is to say, the capacity to absorb the mechanical energy imposed upon it by a load through deformation mechanisms. High-toughness **ductile** materials are opposed to the so-called brittle ones, the toughness of which is extremely reduced. Toughness is strongly influenced by temperature, as well as by the way in which the load is applied. During the **impact test**, performed according to the diagram reported in **Pict. 1** (Charpy test), the mechanical energy the sample (and consequently, the material) is capable to absorb before breaking – if subject to the stroke inflicted by the pendulum – is measured. By repeating the test at different temperatures, it is possible to point out the presence of a phenomenon called **transition**, which consists in the transition from a tough to a brittle behaviour some materials are subject to when test temperatures increasingly drop. **Pict. 2** reports the trend of the absorbed energy value during the impact test performed on different material types, which points out the transition phenomenon.

Some austenitic grades of 300 and 200 series are generally used for all applications in which temperatures drop much below zero, up to reach the boiling point of liquid Helium at -268°C. By way of example, **Table 1** reports the values referred to the mechanical characteristics of EN 1.4301 (AISI 304) stainless steel at different below-zero temperatures. **Pict. 3** reports the impact strength trend of the different stainless steels families. Austenitic stainless steels are used for applications providing for extremely low temperatures, such as tank farms, tanks for liquid gas transport, conveying pipes, pumps, valves, laboratory equipment elements, heat exchangers, structures, and in general, mechanical parts.

Pict. 4, 5, 6 courtesy of: SIAD S.p.A. – I-24126 Bergamo – Via S. Bernardino 92, phone +39 035 328111, fax +39 035328318, www.siad.it

PAGES 10 - 11

DESIGNER HANDLES

(Maniglie d'autore)

"H 5015 Serie K2" belongs to a product line of stainless steel handles completely made of EN 1.4404 (AISI 316L) stainless steel. For the production of these handles, 25 mm bars, 22 mm tubes – which are subsequently rolled and intersected – and 1,2 mm thick strips, were used. The handles can be supplied in the following surface finishing options: ground, satin-finished, sandblasted, electro-polish finished or coated with black or orange leather. The manufacturing process provides for filler wire welding and subsequent grinding process. The other elements of the handle are assembled by means of joints or tie-rods. The choice to use stainless steel was imposed by the need to prevent wear and the effects of corrosion over time. In addition, the good weldability of stainless steel combined with its properties of stability and flexibility, ensure ductility and malleability.

Fusital Collection: a brand by Valli&Valli/ASSA ABLOY ITALIA – I-20838 Renate MB – Via Concordia 16, www.assaabloy.it / **Design:** Antonio Citterio



DESIGN AND TECHNOLOGY WITH "HIGH-END" EN 1.4016 STAINLESS STEEL: TODAY, ALSO KITCHEN HOODS BECOME DESIGNER FURNISHING ELEMENTS

(Design e tecnologia con l'acciaio inox EN 1.4016 "Alta Gamma": oggi anche le cappe arredano)

Thanks to the use of "High-end" EN 1.4016 (AISI 430) BA stainless steel, kitchen hoods can change into actual furnishing elements. These kitchen hoods combine their unique design with the capacity to purify the air and perfectly light up the cooking area. These elements are made of 0.6 and 0.8 thick stainless steel plates welded through the TIG welding process. The reflective capacity of "High-end" BA stainless steel is obtained directly in the steel mill during the rolling process and the subsequent annealing process in inert atmosphere. In consequence of these processes, the stainless steel sheet is not subject to further mechanical polishing processes, thus avoiding small defects on the surface caused by abrasives, visible under particular light conditions. The annealing process allows to obtain a perfectly smooth reflective surface of high visual and aesthetic impact. The properties of stainless steel are well-known: from its corrosion resistance to its easy-cleaning characteristics, which combine the visual and aesthetic properties of a refined design with efficiency and effectiveness, low noise emissions, energy savings, safety, and respect for the environment.

Manufacturing company: Best Spa – I-60043 Cerreto d'Esse AN – Via Verdi 34, phone +39 0732 6921, fax +39 0732 626310, info@best-spa.com, www.best-spa.com / **K30 "High-end" (EN 1.4016) stainless steel produced by:** Aperam Stainless Services & Solutions Italy S.r.l. – Service Center, Massalengo – I-26815 Massalengo LO – Località Priora, phone +39 0371 49041, www.aperam.com

PAGES 12 - 13

SUN PROVIDES CLEAN ENERGY TO OBTAIN WATER

(Il sole, energia pulita, per ottenere acqua)

"Solaflux" and "Tetraflux" are two patented solar pumps developed for the purpose of drawing water from deep wells. These pumps operate with a patented system of opposed balanced pistons working through the energy produced by photovoltaic solar panels driven by a dedicated controller.

The aim of this manufacturer of electric transfer pumps made of EN 1.4301 and 1.4401 (AISI 304 and 316) stainless steel, consisted in reducing the size and weight of the pumps to allow them being used in any circumstance. By reducing the size of the main elements, the company succeeded in reducing the overall size of the pump to a simple 9.5 cm diameter cylinder. These pumps operate by means of electric power ranging from 300W to 500W. The main characteristics of these pumps can be summarized as follows: no need to use human resources; they make use of renewable energy; they succeed in pumping out water drawn from great depths and are guaranteed up to 150 m depth with a maximum water flow of 16,000 l/day; they can be very easily and quickly assembled; almost no maintenance is needed; maximum reliability; perfectly suitable for drip irrigation.

Manufacturing company: Fluxinos Italia – I-58100 Grosseto – Via Genova 10, phone +39 0564 451272, fax +39 0564 454237, info@fluxinos.it, www.fluxinos.it – **Headquarters in Milan:** Mencarelli Pompe Srl, www.mencarellipompe.it

THE "INOX" BRAND ON CHIMNEYS: AN IDENTIFICATIONS MARK THAT MEANS "GUARANTEE"

(Marchio "INOX" per le canne fumarie: un segno di "garanzia")

This article collects the account of by one of the main chimney manufacturers which has made use of the mark issued by Centro Inox as a distinguishing element. "In

a crowded market, the opportunity for a company to avail itself of a valuable identification mark capable to convey the actual nature of the material used for its products, helps keeping consumers' perception at high levels as regards the quality of the end product, which has been produced using stainless materials of controlled origin. The high-responsibility task performed by a chimney requires the utmost attention in the choice of raw materials, as well as a correct vehiculation of the message aimed at reminding end users of its characteristics and nature: stainless steel, a material that in virtue of its corrosion resistance properties, is capable to guarantee performance durability and safety of a chimney over time".

Manufacturing company: GBD Spa – I-22079 Villa Guardia CO – Via Monte Rosa 23, phone +39 031 563736, www.gbd.it / **Stainless steel mark:** issued by Centro Inox, www.centroinox.it/marchio

PAGE 14

STAINLESS STEEL ESPRESSO COFFEE MACHINES: MORE ATTRACTIVE AND STRONGER

(Le macchine per caffè in acciaio inox: più belle e resistenti)

The company this article is focusing on manufactures professional and semi-professional espresso coffee machines. The construction of each model of the professional coffee machine line provides for the use of stainless steel, a synonymous of strength, quality, and aesthetical properties. This highly performing material and state-of-the-art technology combine with a captivating design, sometimes more futuristic, and sometimes more traditional. EN 1.4301 (AISI 304) austenitic stainless steel plate is generally used for the external shell of the machine. Another essential element of these coffee machines is the boiler, where water is brought to a boil, and therefore subject to non-negligible strains. This element, too, in most cases is made of stainless steel, which due to its well-known corrosion resistance properties and to its surface finish, substantially reduces the risk of limescale build-up.

Manufacturing company: Bezzera – I-20088 Rosate MI – Via Luigi Bezzera 1, phone +39 02 90848102, fax +39 02 90870287, tech.dep@bezzera.it, www.bezzera.it / **Stainless steel produced by:** Acciai Speciali Terni S.p.A. – I-05100 Terni TR – Viale B. Brin 218, phone +39 0744 490282, fax +39 0744 490879, marketing.ast@acciaitermi.it, www acciaitermi.it

PAGE 15

12th INTERNATIONAL STAINLESS & SPECIAL STEEL SUMMIT

London, UK, September 3 ÷ 5, 2013

The 12th International Stainless & Special Steel Summit will be held in London, the world capital of raw materials, on September 3-5, 2013. The underlying theme of the summit will be "The Road to Recovery". Key speakers will be the top experts, decision makers, CEO of the stainless steel industry.

For additional information: www.metalbulletin.com/events/ists

STAINLESS STEEL WORLD 2013 CONFERENCE & EXPO

Maastricht (The Netherlands), November 12 ÷ 14, 2013

The Stainless Steel World Conference & Exhibition will be held in Maastricht, The Netherlands, on September 12-14, 2013 at the MECC (Maastricht Expo and Congress Centre).

For additional information: www.stainless-steel-world.net

WELDING STAINLESS STEEL: NEWS AND EXPERIENCES

Milan, Italy, Università degli Studi, November 23, 2013

Palazzo Greppi – Sala Napoleonica – Via S. Antonio 10 h. 9.00 ÷ 17.30

(La saldatura degli acciai inossidabili: esperienze e novità)

The meeting is organized by Centro Inox and Istituto Italiano della Saldatura.

All over the world, the ever-growing large-scale use, in different industrial sectors, of stainless steels, in all forms and grades, has involved, as a natural consequence, the development of more and more dedicated and specialized material types addressed both to "traditional" market segments, and to more innovative or "niche" market areas. As welding technologies play a main role in the manufacturing process of elements and parts, the organizers considered it advisable to devote one day of study to the welding processes of some particular next-generation stainless steels, and to state-of-the-art welding systems.

For additional information and registration: Istituto Italiano della Saldatura, Ms Ivana Limardo, phone +39 010 8341373, fax +39 010 8341399, ivana.limardo@iis.it

PAGE 16

FROM THE EXHAUST MANIFOLD OF A SUPERCAR, THE SOUNDTRACK OF PASSION

(Dalla marmitta di una supercar la colonna sonora della passione)

"iXoost", the name of which recalls the English term "exhaust", is the first audio system "made in Modena" especially developed for iPhone and iPod. The result of the cooperation of several artisan companies, all based in Modena, "iXoost" strikes at the heart all those who are keen about motors and their sounds, as the body of the audio system consists of the exhaust manifold of an 8, 10, or 12 cylinder supercar. And just as if it were a car, you can configure your "iXoost" to your liking, and choose its colour, the satin finish, the kind of leather lining, and even the Allen screws. The console has been conceived as the typical crankcase of '60s and '70s motor-bikes. All the rest consists in high-precision mechanical and finishing processes rigorously made by hand by the best and most skilled local craftsmen.

Pict. 1: "iXoost" is an absolutely exclusive and unique object, due to its peculiar design and construction characteristics.

Pict. 2: A model developed using the EN 1.4301 (AISI 304) stainless steel exhaust manifolds and turbines of a 1991 12-cylinder Bugatti EB110.

Pict. 3: A detail of the model manufactured with the turbines of a 1991 12-cylinder Bugatti EB110. A special ad-hoc "app" changes your iPod or iPhone into an ideal partner for the "iXoost" dock station.

Pict. 4: As well as from the exhaust manifolds of supercars, also a new model derived from the EN 1.4301 (AISI 304) stainless steel exhaust manifold of an Extra aircraft equipped with a 300 CV Lycoming engine has recently produced.

"iXoost": Born from an idea of Matteo Panini and from the drawing pencil of Mirco Pecorari – I-41126 Modena – Via Corletto sud 320, www.ixooost.it

CENTRO INOX

The Italian Stainless Steel Development Association

Piazza Velasca, 10 - 20122 Milano - Italy
Telephone +39 02 86450559 - +39 02 86450569
Fax +39 02 860986

redazione.inossidabile@centroinox.it
www.centroinox.it

The subscription to the quarterly INOSSIDABILE, outside Italy, is free of charge.

