

## INOSSIDABILE

Edited and published by Centro Inox



## Summary

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

## COVER/PAGES 3/4

## THE FORM OF JUSTICE

## (La forma della giustizia)

The new building of the Law Courts of Arezzo includes the main hearing courtrooms and the offices of the Court presidency, and is connected to a neoclassic building – formerly a hospital, which was later on restored and used as an office and archive house. For the project of the new wing of the Court, the architect Manfredi Nicoletti planned a bio-climatic building marked by a strong environmentally-friendly imprint. The southern side of the building relates to the rich vegetation of the surrounding park and to the natural forms through a sun-breaking stainless steel façade, while the northern side is included in a concave building structure lined with black granite (diomite). The southern façade was planned and designed for a continuous exposure to the sun in all the four seasons of the year. The bearing structure of the sun-breaking façade is formed by brushed stainless steel cylindrical pillars. Each pillar has a different inclination, but they rest all on vertical planes placed side by side at a distance of about 2.40 m. Each pillar slope, whether facing inwards or outwards, produces different dimming angles. The pillars have 270 mm diameter and support the 150 x 150 mm reverse-L satin-finished stainless steel sun-breaking elements, which are all resting on horizontal and vertical planes placed at a distance of 300 mm from one another. These elements reflect the natural daylight inwards by blocking direct sunbeams in summertime, but they allow however their partial entry in wintertime. The pillars are anchored to the sun-breaking systems through an open-section stainless steel bearing arm. On the end of the sun-breaking element, the arm is equipped with a hinge provided with stainless steel flaps and an internal pin, and on the end of the bearing structure, with a slot and a rotation pin. This stately structure is completely made of EN 1.4301 (AISI 304) stainless steel and is almost 20 m high.

**Customer:** Comune di Arezzo / **Architectural project:** Manfredi Nicoletti / **Collaborators:** Fabrizio Pagliano Tajani, Luisa Campagna, Anna Senesi / **Stainless steel supply:** Eclano Lamiere di Minichello R.B.– Ctr. San Leonardo – 83036 Mirabella Eclano AV, tel. +39 0825 447900, fax +39 0825 447604, eclanolamier@libero.it

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## TWO DUPLEX ARCHES SUPPORT THE NEW BRIDGE ON THE RIVER BRENTA

## (Due archi duplex sostengono il nuovo ponte sul Brenta)

A formal and functional simplicity characterizes the new bridge on the river Brenta built in Corte di Piove di Sacco, near the city of Padua. The bridge is characterized by a pair of 16.5 m-high twin arches of made of 2304 (EN 1.4362) duplex stainless steel with a 1,300 mm diameter round section and thicknesses ranging from 12 to 26 mm, weighing in total 110 tons, which rest on two elliptically shaped piers and are linked up by cross-section stainless steel connections. The transversal section is formed by two driving lanes for vehicles, each 4.75 m wide, and by two 2.00 m-wide sidewalks, which provide easy transit to pedestrians and cyclists. The framework has a total length of about 120 m and consists of a system of longitudinal beams made of S355 steel with a HE-type profile, connected by a 30 cm-thick concrete slab. The bridge is externally lined with an EN 1.4304 (AISI 304) stainless steel carter, while it is supported in the central part by four hanging steel rods. These hanging rods support, in turn, two cross girders, which come out of the framework shell. The use of stainless steel in the construction of public works, such as for example bridges, cuts down the time spent in the building yard, and ensures resistance to corrosion, long life and performance, reduced maintenance operations, and considerable money saving. Today, in the case of metal bridges, the use of duplex stainless steels represents an innovative planning solution as these steels, in addition to high resistance to corrosion, have also con-

siderable mechanical resistance, fatigue resistance, and weldability properties.

**Customer:** Provincia di Padova / **Planner and works supervisor:** Ing. Silvio Collazuol, Provincia di Padova / **Architectural concept:** Prof. Ing. Enzo Siviero, Progeest, Padova, www.progeest.net / **Structure executive project:** Ing. Berto Cristiano, TreEsse, Padova, www.3essesrl.com / **Metal structure executive project:** Ing. Pierangelo Pistoletti, Seteco Ingegneria S.r.l., Genova, www.seteco.com / **Metal structural work:** Castaldo Spa, Napoli, www.castaldospa.it / **URANUS 35 N Duplex 2304 (EN 1.4362) steel and technical advice to the development:** Industeel Gruppo ArcelorMittal, www.industeel.info

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## FROM OUR MEMBERS

## ILTA INOX: FOCUS ON TUBE CORROSION (Ilta Inox: focus sul tubo corrosione)

The first company that joined the Arvedi Group, Ilta Inox began its activity in 1963 with the production of steel tubes. In the last few years, production has mostly focused on high-quality tubes, while the sector of decoration/structural tubes with high-frequency welding has been abandoned. The traditional austenitic 304, 304L, 316L, 316Ti e 321 stainless steels have been lately supplemented with refractory 309 and 310s steels and duplex 31803 steels. Tubes are welded through TIG, Plasma or Laser processes. To complete the range of profiling tubes, the offer of calander and press tubes up to 1000 mm diameter has been further extended. **Laser-welding technology:** Today, Ilta owns 20 operating Laser-welding plants, which nearly represent its total production. The use of Laser technologies in the stainless steel tube welding process allows achieving considerable advantages in terms of production and/or metallurgy compared to traditional welding methods (TIG, plasma, and HF), thanks to the possibility to achieve very high thermal values (welding operations are four times as fast, thickness being equal) and to the very reduced size (0.8 mm) of the Laser beam (heat-affected zone reduction). However, the reduced size of the Laser beam demands very precisely formed tubes and very careful monitoring and control in the welding process. Welding precision is achieved through the use of tracking television cameras in order to exactly centre the Laser beam with respect to the edges in motion.

Ilta has developed a special know-how concerning the rolling process of the Laser-welding seam, which allows achieving the extremely narrow roughness values required for applications in the food and pharmaceutical industries. **Solubilized tube range extension:** In March 2008, a new furnace for the heat treatment of tubes and pipes up to 219.1 mm diameter, 6.3 mm thickness, for applications in the chemical and petrochemical industries was installed. Differently from tubes up to 114.3 mm diameter, which are heat-treated in a protected atmosphere roller furnace, tubes with greater diameters ranging from 129 to 219.1 mm are annealed by an in-line induction furnace and then pickled. **Customer service and quality:** The range of stock tubes, which includes conduits up to 711.2 mm (28 inches) diameter, food pipes conforming to DIN 11850 standards, water pipes conforming to DVGW standards, annealed tubes conforming to EN standards, and schedule tubes conforming to ASTM standards, has been further extended.

**Ilta Inox SpA** – Strada Statale 45 bis, Km 13 – I-26010 Robecco D'Oglio CR, phone +39 0372 9801, fax +39 0372 92 15 38, sales@ilta.arvedi.it, www.arvedi.it/ilta

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## REACH

## (REACH: ce n'è per tutti)

REACH (Registration, Evaluation and Authorization of Chemicals) is a new E.C. regulation concerning chemical substances passed on December 18, 2006 and published as Regulation n° 1907/2006 in the Official Journal of the Euro-

pean Community on December 30, 2006. Insofar as it is a regulation, REACH does not require to be acknowledged by the law systems of the single member countries, and therefore it is immediately applicable in all Member States as from June 1, 2007, the date of its enforcement, according to the schedule and procedures provided for.

To summarize:

Each company shall register any substance used if...		
It is produced in the EC	and	in quantities > 1 ton/year
It is imported from third countries		
It is imported from third countries and included in chemical preparations		
It is included in items imported from third countries	and	in quantities > 1 ton/year, and destined to be released under normal and reasonably predictable circumstances

Possible roles and obligations of the REACH iron and steel industry protagonists		
Entity	Possible role	Obligations / Formalities
Steel Mill	Importer (if importing from third countries)	Registration and document/paper exchange
	Manufacturer	Registration and document/paper exchange
Processing Company	User (since using pickling and lubricating products, etc., ... that is to say, substances and articles)	Document/paper exchange
	Importer (if importing pickling and lubricating products and welding electrodes from third countries)	Registration and document/paper exchange
	Manufacturer (i.e. if bringing process sub-products onto the market, such as pickling sub-products)	Registration and document/paper exchange
Distributor	Importer (if importing pickling and lubricating products and welding electrodes from third countries)	Registration and document/paper exchange
	User / No role	Document/paper exchange

For the provision of the information and the essential details concerning this subject, we wish to thank Ing. A. Schweiger (FEDERACCAI www.federacciai.it) and Dr. R. Monguzzi (LATA - Laboratorio Analisi e Tecnologie Ambientali S.r.l. www.lata.it). We also wish to thank ASSOFERMET (www.assofermet.it) for its support.

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## A NEW FINISH: INOXWINE™

## (La nuova finitura InoxWine™)

Winemakers are very careful in selecting materials, as they may alter the organoleptic characteristics of wine. Both the steel materials used for manufacturing the wine vessels and the detergents needed to wash them must undergo a range of tests to make sure they will not release any substance that may affect the taste and the aroma of the wine. The inspiring principle of the new finish consists in providing a more efficient and safer material in terms of tank hygiene and preservation of the organoleptic characteristics of the wine. Keeping the substrate EN 1.4301 (AISI 304) or EN 1.4404 (AISI 316L) unaltered, the InoxWine™ surface finish meets the winemakers' objective, that is, to



minimize the deposit of foreign substances on the inner walls of the vessels coming into contact with wine. Among the different winemaking operations, this improved finish proves particularly effective during decanting and tartar precipitation, as these processes may affect the integrity of the tank surfaces due to the presence of foreign agents, especially potassium bitartrate, which build up on the tank surfaces and slow down the winemaking process.

**InoxWine™ finish:** ThyssenKrupp Acciai Speciali Terni SpA - Viale B. Brin, 218 - I-05100 Terni, www.acciaiterni.it - **Marketing:** Dr. F. Ricci Feliziani, phone +39 0744 490275, fax +39 0744 490879, fabrizio.ricci-feliziani@thyssenkrupp.com

#### STAINLESS STEEL: A DIRECT LINE WITH ENERGY SAVING

**(Acciaio inox: un filo diretto col risparmio energetico)**

The building system schematically described by the pictures is based on a set of modular panels, formed by two electrically-welded galvanized steel grids enclosing an interposed expanded polystyrene core, which are interconnected by connectors. These panels are then completed by a layer of concrete plaster. Further to the enforcement of Law Decree 192/2007, which has established the maximum thermal transmission levels for the opaque vertical walls of buildings, the use of stainless steel in the construction of the electrically welded grids has been introduced. The stainless steel used for this application is an austenitic steel with a 17-19.5% chromium and an 8-10.5% nickel content, which, because of its low thermal conductivity, allows attaining the thermal transmission levels required by the energy-saving laws and regulations currently in force. This particular solution is supplemented with a range of additional building elements for the construction of floors, covers, partition walls and stairs.

**Panel production:** EMMEDUE S.p.A. - Via Toniolo 39/b Z.I. Bellocchi - I-61032 Fano PU, phone +39 0721 855650/1, fax +39 0721 854030, info@mduie.it, www.mduie.it / **Stainless steel wire supply for connectors:** Arvic Metalli S.r.l. - Via Bizet, 36/N - I-20092 Cinisello Balsamo MI, phone +39 02 99785190, fax +39 02 99785189, info@arvicmetalli.it, www.arvicmetalli.it / **Stainless steel wire production:** Cogne Acciai Speciali S.p.A. - Via Paravera 16 - I-11100 Aosta, phone +39 0165 3021, fax +39 0165 43779, info@cogne.com, www.cogne.com

#### 441LI: A WINNING ALTERNATIVE IN PUMP PRODUCTION

**(441LI: un'alternativa vincente nella produzione di pompe)**

The replacement of 304 with 441LI stainless steel has been successfully tested also by some of the major manufacturers of the pump industry. Pumps have been manufactured using both AISI 304 and 441LI stainless steels, and in particular:

- The elements with greater deep-drawing levels, have been manufactured with EN 1.4301 (AISI 304), as this material is better suited for cold forming;

- The elements with a simpler structure have been instead manufactured with EN 1.4509 (441LI) stainless steel supplied by ThyssenKrupp Acciai Speciali Terni.

Particular attention is required during the welding stage: protection gases cannot be used, since they may lead to the structure embrittlement, and the utmost care must be placed also in the pressing and forming stage. Before deciding whether ferritic steel could be effectively used in pump manufacture, it was necessary to test the two kinds of stainless steel (AISI 304 and 441LI). The corrosion-resistance tests were carried out on the welded parts of the pump, as the corrosion process usually starts from the weld seam. All responses to corrosion tests carried out with clean water have been identical up to 50 ppm chloride content. Between 50 and 100 ppm, austenitic steel has proved to be slightly more effective. From an aesthetic point of view, at the beginning, 441LI has shown a greayer colouring compared to the austenitic stainless steel one, but after a polishing process, this aesthetic difference has been completely removed. Therefore, in many cases, 441LI can represent an excellent and effective alternative to austenitic steel in several market applications.

**Pump production:** Vertical S.p.A. - Via Asolo, 7 - I-36031 Dueville VI, phone +39 0444 360366, fax +39 0444 360363 / **Stainless steel supplied by:** ThyssenKrupp Acciai Speciali Terni SpA - Viale B. Brin 218 - I-05100 Terni, www.acciaiterni.it - **Marketing:** Dr. F. Ricci Feliziani, phone +39 0744 490275, fax +39 0744 490879, fabrizio.ricci-feliziani@thyssenkrupp.com

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**STAINLESS STEEL AND MINERAL WATER - For all its products, Sanpellegrino continues to rely on stainless steel**

**(Inox e acqua minerale - Per il proprio prodotto la Sanpellegrino continua a puntare sull'acciaio inossidabile)** Sanpellegrino S.p.A. commits itself to preserve the original characteristics of its products up to the moment in which they are drunk. Since the very beginning of the

process, water is picked up by means of stainless steel pipes and equipment, which comes directly into contact with the source, and then is carried straight to the bottling plant (again through stainless steel pipes) where packing operations are carried out, subject to preliminary storage into tanks. Mineral water must consequently keep its natural characteristics unchanged. Therefore, it has to come into contact only with absolutely inert materials from a chemical, chemical-physical, bacteriologic and organoleptic point of view. Due to its intrinsic properties, stainless steel perfectly meets all these requirements. In particular, from a hygienic point of view, in the case of water pipes, the T.I.G. welding system allows achieving a perfectly smooth and continuous inner surface, thereby minimizing any risk of stagnation of foreign bodies and particles, as well as any residual of chemical products used for the sanitization processes. Pipes are laid down into prefabricated concrete conduits and this solution represents today one of the most effective confinement techniques to avoid any potential corrosion onset. In the event that pipes are directly buried in the soil, it is advisable to use pipe bars pre-coated with a PEAD sheath or, as an alternative, with plastic material ones.

**Planning and project management:** C.d.I. Consulenze di Ingegneria - Dr. Ing. Riccardo Savarino - Via Vignazza 17 - I-27100 Pavia, phone +39 0382 303296 / **Project execution:** Nord Inox di Sosio Daniele & C. S.n.c. - Via Ponti 94 - I-23038 Semogio Valdidentro SO, phone +39 0342 927091 / **Water pipe supply:** Ilta Inox S.p.A. - Strada Statale 45bis Km 13 - Robecco D'Oglio CR, phone +39 0372 9801, fax +39 0372 921538, sales@ilta.arvedi.it, www.arvedi.it/ilta

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#### STAINLESS STEEL WINS OUT THE CHALLENGE OF HISTORY

**(L'inox vince la sfida della storia)**

On August 20, 1465, in the former countryside round Milan, Johannes de Braschis built a watermill on a spring called Sant' Agnese. This watermill, located in a spot that today is part of the metropolitan area of Milan, belonged in 18<sup>th</sup> century to the family Visconti di Modrone and continued to work uninterrupted until 1960. Historical memories are a too precious heritage for running the risk to get lost, particularly for the new generations. Hence, the idea to recover and revalue the past and bring the plant back to its original correct operating conditions, but paying particular attention to the use of modern materials. The mill vanes, still working and cyclically immersed into the water, were exposed to the risk of giving way, also because the effort to contrast the water thrust is expanded by the considerable lever arm represented by the length of the blades. Therefore, an EN 1.4301 (AISI 304) stainless steel rod with 9 mm diameter and M10 threading has been used for manufacturing the tie-rods connecting the wheel vanes, in order to exploit all the flexibility and wear-resistance properties of this type of steel. The thread placed on one end, by means of a hole through the oak wood blade, allows the tie-rod to be firmly tightened to the following one by means of an eye. The function of these tie-rods, two for each vane and 38 in total, is to keep the single blades integral to the wheel-hub and keep a suitable distance to allow the wheel staying balanced, but first of all, to ensure a homogeneous distribution of the water-thrust on the whole wheel. The different parts have been planned and designed keeping their original shape, which has been drawn from some samples of the past centuries that had remained buried into the bottom of the spring. A dynamic, and at the same time, a static function that AISI 304 is able to effectively perform reaching a perfect compromise of efficiency, aesthetic properties and rational harmony. This consolidation and strengthening intervention has proved absolutely successful with minimum impact on the existing structures and long life guarantee over time.

**Customer:** Famiglia Villa - Via Antonio Mosca 118 - I-20152 Milano / **Planning:** Ing. Marco Rossetti - Milano, marcorossetti@libero.it / **Material supplied by:** Trafileria Eure Inox S.r.l. - Via L. Da Vinci 2/4 - I-20068 Peschiera Borromeo MI, info@eureinox.it, www.eureinox.it / **Working and machining operations:** OMP di Prati Massimo & C. S.n.c. - Via Antonio Mosca 118 - I-20152 Milano, phone +39 02 4563625, ompdiprati@virgilio.it

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#### ADVANCED MODULAR COURSE "STAINLESS STEELS" - 7<sup>th</sup> Edition

**(Corso modulare avanzato: "Gli acciai inossidabili")** Organized by AIM (Italian Metallurgy Association) in cooperation with Centro Inox

Milan, FAST Building, Piazzale R. Morandi 2  
**1<sup>st</sup> Module:** metallurgy, characteristics, corrosion, stainless steel production and market, 11-12-18-19-25-26 February 2009

**2<sup>nd</sup> Module:** machining, installation, selection and design criteria, stainless steel applications, 3-4-10-11-17-18 June 2009

The detailed program of the second module classes will be presented on issue 175 of Inossidabile (March 2009). Director and coordinator: Prof. Gabriele Di Caprio.

The official language is Italian.

**For information and registration:**

Associazione Italiana di Metallurgia (AIM)

Piazzale R. Morandi 2 - I-20121 Milan

Phone +39 02 76397770 - Fax +39 02 76020551

aim@aimnet.it - www.aimnet.it

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#### PROCEEDINGS OF THE CONFERENCE: STAINLESS STEEL SERIES 300: IS THERE ANOTHER ALTERNATIVE?

- A comparison among series 300, 400 and 200 stainless steels -

**(Atti del convegno: "Inox serie 300: esiste un'alternativa? Inossidabili della serie 300, 400 e 200 a confronto")**

The proceedings of the conference organised by Centro Inox on 5 November 2008 in Milan are now available (in Italian only) under the following titles: Welcome address and opening of the meeting - (E. Amenduni - President of Centro Inox) / **TECHNICAL-SCIENTIFIC SESSION**

(Introductory notes on corrosion, performed tests and results): **A general survey of the Italian market: the reasons for change** (P. Viganò - Centro Inox), **Corrosion: General aspects** (P. Pedferri - Politecnico di Milano),

**Performed test programme: Corrosion tests, materials and purposes** (G. Stella, G. Rivolta - RTM Breda), **Test results** (M. Boniardi, S. Cincera - Politecnico di Milano)

/ **APPLICATION SESSION** (From theory to practice: Users' experience): **Developments in regulations on food** (V. Boneschi - Centro Inox), **Merloni TermoSanitari S.p.A.** (A. Mancini) - **Università Politecnica delle Marche** (R. Fratesi), **Vertical S.p.A.** (A. Cogo - R. Fornasa), **N&W Global Vending S.p.A.** (T. Rota), **Facilitas S.r.l.** (A. Albani), **Elica S.p.A.** (R. Del Basso).

For additional information: Centro Inox - Piazza Velasca 10 - I-20122 Milan, phone +39 02 86450559 / 69, fax +39 02 860986, eventi@centroinox.it, www.centroinox.it

**ALUMOTIVE 2009: THE 4<sup>th</sup> EDITION OF THE GREAT EVENT ON TRASPORTS**

**(Alumotive 2009: la IV edizione del grande evento sui trasporti)**

The 4<sup>th</sup> edition of Alumotive, the International Exhibition of Components, Sub-Contracting and Innovative Solutions in Aluminium, Metals and Technological Materials for the Transport Industry, will be held from April 2 to 4, at the Garda Exhibition Centre of Montichiari, Brescia. The exhibition will be joined by a rich programme of highly specialized meetings. Centro Inox will take actively part in this event and will be present with its own stand. For additional information: www.alumotive.it

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#### FURNISHING TILES

**(Piastrine d'arredo)**

"Inoxtile" is a stainless steel EN 1.4301 (AISI 304) tile with a porcelain stoneware support, which allows meeting in an elegant and refined manner particular aesthetic and furnishing requirements. These tiles can be supplied in different formats and sizes in a wide range of finishing options, from smooth and polished tiles to differently decorated ones. The main characteristics of these products consist in that they are very resistant to wear and tear, can be easily cleaned thereby ensuring maximum hygiene, and have antistatic properties.

**Pict. 1** - Kitchen furniture stainless steel top, which joins sink and stove top in the same assembly. Stainless steel is also used for the refined back panelling.

**Pict. 2** - Floor with smooth stainless steel tiles.

**Pict. 3** - For daily stainless steel cleaning, you only need to wash the surface with water and soap, rinse it well with clear water, and then dry it well with a soft cloth. It is advisable never to use abrasive cloths or towels, or detergents with a chloride basis.

**Kitchen top and tile production:** Artinox Spa - Via F. Fabbri 39 - Z.I. Campidui - I-31015 Conegliano TV, phone +39 0438 4531, fax +39 0438 453200, commerciale@artinox.com, www.artinox.com

#### 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**

**info@centroinox.it - www.centroinox.it**

