

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

WINE, STAINLESS STEEL AND THE COUNTRYSIDE

(Vino, acciaio inox e territorio)

In the heart of southern Maremma, near Castiglione della Pescaia, an estate is located, which covers 270 hectares. The farm has a state-of-the-art cellar with a cylindrical underground structure, and all the tanks are made from EN 1.4401 (AISI 316) and EN 1.4301 (AISI 304) stainless steel. The entire production cycle is gravity fed from top to bottom. The winemaking tanks hang from the ceiling, without pumps. This allows an important energy saving and functional use of the space underneath the tanks. The cellar is arranged on three levels. On the top floor, where the grapes are delivered; expert hands select the grapes. The must drops into the stainless steel tanks, placed on the floor below, where fermentation is carried out at a controlled temperature. Then the wine fills the barrels in the basement for refinement. The cellar's heart is a large stainless steel and wood spiral staircase that unfolds into the central light well and provides functional and visual communication to all the building's floors.

Estate: Fattoria Le Mortelle – Località Ampio – I-58043 Castiglione della Pescaia GR, phone +39 0564 944003, visite@lemortelle.it, www.lemortelle.it / **Tanks hanging from the ceiling (with circular walkways and included design stairs):** LASI Srl – Via delle Industrie II, n. 43 – I-30020 Meolo VE, phone +39 0421 345553, fax +39 0421 345094, info@lasi-italia.com, www.lasi-italia.com / **Tank pict. 5:** Sidercamma

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PHOTO CHEMICAL MACHINING: PRECISION AND INNOVATION

(Fotoincisione chimica: precisione e innovazione)

Photo chemical machining uses chemical solutions to remove metal, and it is useful for making prototypes, and small, medium and large productions. It reduces time and equipment costs, enabling simple and fast master-change operations. The use of this technology is beneficial when you need to obtain complex profiles from thin strips (thickness from 0.05 mm to 1.5 mm) with exact tolerances and no burrs. The stainless steel used is EN 1.4301 (AISI 304) with 2R finish, or EN 1.4401, EN 1.4310 (AISI 316, 301) and work hardened 301Mo. The company we are talking about has added laser cutting a few years ago alongside its photo chemical machining technology. The owner of the company has created interesting artwork and compositions where the chemical milling - photography combination is linked by an innovative spacer system that gives an abstract tridimensional effect to the metal. This new technique is called "METALphotoART".

Photo chemical machining: Chimimetal s.r.l. – Via Per Cerrione 8 – I-13888 Mongrando BI, phone +39 015 667995, fax +39 015 2564 300, www.chimimetal.com - **Artist and owner:** Marco Tognelli, www.marcotognelli.com, www.artae.it / Statim Service – Viale Pavia 6 – 26900 Lodi LO, phone +39 0371 564095, fax +39 0371 548094, www.statimservice.it / **Stainless steel produced by:** Aperam Stainless Precision – 20122 Milano – Via San Calimero 3, tel. 02.49485112,

robert.duryasz@aperam.com / Aperam Stainless Services & Solutions Italy S.r.l. – Divisione Massalengo – Loc. Priora – I-26815 Massalengo LO, phone +39 0371 49041, fax +39 0371 490475, leonardo.frosali@aperam.com, www.aperam.com

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FROM OUR MEMBERS NICKEL INSTITUTE - SUSTAINABLE WATER FOR ALL

(Nickel Institute – Acqua “sostenibile” per tutti)

Nickel Institute, a founding member of Centro Inox, is the global association of leading primary nickel producers. It's mission is to promote and support the use of nickel applications. Through its independently incorporated science division NiPERA Inc., it carries out leading edge scientific nickel research relevant to human health and the environment. With over two-thirds of all nickel production destined for the stainless steel market, the Nickel Institute is active in developing the market for end users of nickel-containing grades. **The water issue** - Water losses across the world are at unsustainable levels. In many developing countries, 50% of water is lost between the water treatment plant and the consumer. Even in developed countries losses above 20% are not uncommon. **Tackling water shortages** - The two big issues for supplying potable water are safety and efficiency and nickel-containing stainless steel already plays a key role. Nickel-containing stainless steel provides safe water, and with a lifetime in excess of 100 years, really does offer a sustainable solution.

Tokyo, Japan - Before the 1980's, water shortages in Tokyo were chronic. The city's water provider, Tokyo Metropolitan Government Waterworks Bureau (TMGWB), analysed leakage repairs, they determined that 97% were on the distribution pipes of 50 mm diameter or less. Historically, lead was the preferred material for distribution lines. Once a lead pipe is in the ground, however, various forces can act on it. **Innovative corrugated AISI 316 pipe** - In 1998 an innovative corrugated AISI 316 stainless steel pipe was introduced for distribution lines to take water from the mains to final destinations in homes, offices and industrial plants. The pipe is corrugated at regular intervals to allow bending during installation, to accommodate changes in direction and the avoidance of obstacles without additional joints. It also allows for movement of the pipe during earth movement and seismic events. In switching to stainless steel pipe, the reliability of the water supply has increased, and the leakage rate has been cut by 86% from 15.4% (1980) to 2.2% (2013). To put this into context: Tokyo has reduced annual water leakage by nearly 142 million cubic metres since 1994. Annual leak repairs decreased from 60,000 (1983) to 10,000 (2013). Due to the corrosion resistance of stainless steel, TMGWB expects service life in excess of 100 years. **Investing in the future** - Influenced by the success of the technology in Tokyo, water authorities in Taipei, the Western Cape and Korea have implemented similar technology. The Nickel Institute in partnership with IMO and the ISSF is working to give water authorities in other cities worldwide the confidence to specify nickel-containing flexible pipe solutions. There are huge possibilities to replace the ageing water infrastructure in many European cities. While

the initial cost compared to competing materials may be higher, stainless steel has been shown to be a good investment over its long life, paying back each year in reduced maintenance and cost per litre processed. **NICKEL INSTITUTE** – www.nickelinstitute.org

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HYDRAULIC BEHAVIOUR OF STAINLESS STEEL PIPES

(Caratterizzazione idraulica di tubi in acciaio inossidabile)

In May, last year, Centro Inox commissioned the Politecnico di Milano's Professor of Hydraulics, Enrico Orsi, to conduct a study of stainless steel pipes to understand their behaviour to flow resistance in water conveyance. This is the “resistance” that water encounters when travelling through the pipe made with this material. This critical study required experiments which defined a formula that relates the reduced resistance λ with the Reynolds number: $\lambda = 0,225 Re^{-0,22}$. The graph (Re / λ) in the article compares the obtained experimental results with the data available in technical literature about other materials, such as, carbon steel, PVC, etc. It made possible to obtain a nomograph to determine the head J in the experimented type of stainless steel ducts. Centro Inox wanted to provide industry professionals with a new tool for selecting the pipe material as a result of the experiment. The sector's technical experts could not rely on data on the flow resistance of stainless steel pipes since no specific experiment had ever been carried out. The only data available on these pipes was about their time durability and hygienic data since they have been widely tested (see Ministerial Decree no.174). This experiment not only covered this unknown aspect but also acquired some important data. For example, in the same hydraulic conditions, the behaviour of the stainless steel pipes is not only comparable to the pipes made with other materials but is competitive in the flow resistance parameter values while conveying the same flow rates. The experiment shows a noticeable reduction up to 5-6% in the value of the flow resistance compared to that of the other materials. In the case of a gravity conveyor this may be less important, but during pressure operations, it is vital as it affects the propulsion systems' power and decides the energy demand and the final COST of the plant itself. The ENERGY BALANCE must be considered as a topic that is important for all production activities.

Text drafted by Eng. Riccardo Savarino – C.d.i. – Pavia. The pipe tests were conducted by Centro Inox in collaboration with the Department of Civil and Environmental Engineering of Politecnico di Milano (Prof. E. Orsi) and with C.d.i (Eng. R. Savarino). The tests will be performed on two 2 mm thick stainless steel EN 1.4301/1.4307 (AISI 304/304L) welded tubes with internal diameters of 71.67 and 124.78 mm respectively. The experiments were carried out at the “G. Fantoli” Hydraulic laboratory of the Politecnico di Milano. We thank the sponsors: ILTA INOX for the supply of pipes, DI MARCO Spa for the supply of flanges, ITW Orbital Cutting & Welding for orbital welding, SOL GROUP for the provision of welding gas and IMO - International Molybdenum Association as a project partner.

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CITYLIFE: A NEW URBAN AREA IN THE CENTRE OF MILAN (CityLife: un nuovo polo urbano nel centro di Milano)

CityLife is a project designed by three internationally renowned architects, which upgrades 366,000 square metres of the former Fiera Milano historic urban area. This multifunctional space required special drainage systems with gratings and slotted drains in EN 1.4301 and EN 1.4404 (AISI 304 and 316L) stainless steel. "Self Euroline", which is a V-section duct with a 97 mm height, coupled with gratings made from electro-polished stainless steel was used. The V-shaped, 100 mm wide "Drain Multiline" ducts were chosen for their excellent drainage performance and self-cleaning ability. With its minimalist design, slotted drains were used for the exposed elements of this duct. This was tailored made to meet the different technical requirements related to the area's paving.

Producer: ACO Passavant SpA – Via Beviera 41 – 42011 Bagnolo in Piano RE, phone +39 0522 958111, fax +39 0522 958254, info@aco.it, www.aco.it

A STAIRCASE THAT UNITES STYLE AND FUNCTIONALITY

(Una scala che unisce lo stile alla funzionalità)

In the heart of Milan's CityLife there is its tallest building – the Isozaki tower. The tower is accessed through a double-floor lobby, with +122 and +129 units connected by a prestigious staircase. The Made in Italy painted steel staircase consists of lateral sides with parapets, which are inlaid with laminated tempered glass slabs and a polished-edge treatment on four sides. Each glass panel is framed and spaced by a satin EN 1.4401 (AISI 316) stainless steel bar. The AISI 316 stainless steel handrail is placed on both sides and inside has a 40 mm diameter circular section which contains an integrated LED lighting system.

Staircase implemented by: Fontanot SpA – Via P. Paolo Pasolini 6 – I-47853 Cerasolo Ausa RN, info@fontanot.it, www.fontanot.it, www.fontanotcontract.com – Fabio Gasperoni: fabio.gasperoni@fontanot.it / **Tower designed by:** Arata Isozaki with Andrea Maffei

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AN OPTIMAL SOLAR ENERGY TRANSMISSION SYSTEM

(Il sistema per il trasporto ottimale dell'energia ricavata dal sole)

This system keeps a solar thermal panel's performance intact to have solar power in the house. Dubbed the "Solar Tube", the system consists of two corrugated AISI 304 pre-insulated stainless steel pipes (water delivery and return) and special fittings for connecting solar thermal panels to the boiler or heat accumulator. The advantages are easy installation, durability, high flexibility, UV resistance, high-temperature resistance (+220 °C). The tube walls have a thickness of 0.30 mm, to guarantee greater durability, resistance to stress and breakage. The pipes have internal diameters ranging from 12 to 26.5 mm and external diameters from 15.8 to 33 mm. The "Solar Tube" is supplied in different sizes (10 to 40 metres).

Producer: Würth Srl – Via Stazione 51 – I-39044 Egna BZ, www.wuerth.it

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STAINLESS STEEL: THE CLIMBING SPECIALIST

(Acciaio inox: lo specialista dell'arrampicata)

One of the most renowned and sought-after rock climbing destinations, Kalymnos is a small Greek island, north of Kos, which annually attracts climbers to a climbing meeting. Between 2015 and 2016 the Island carried out a project to restore the cliffs. The project involved the opening 100 new routes and the restoration of the old ones – more than 2,700 routes altogether. The restoration involved the replacement of corroded anchors with new products made from

EN 1.4404 (AISI 316L) stainless steel and the creation of new climbing routes. Stainless steel plates, anchors, stacking units and chippers (drilling nails) were used. AISI 316L is the ideal choice for its corrosion resistance in marine environments. All products are made of this material to provide greater stress resistance and exceptional durability.

Producer: Raumer Srl – Via Lago di Lesina 15/B – I-36015 Schio VI, phone +39 0445.575993, info@raumerclimbing.com, www.raumerclimbing.com

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31ST STAINLESS & ITS ALLOYS CONFERENCE Pittsburgh – USA, 25 – 26 October 2017

Event organised by American Metal Market Events and SMR Events. Centro Inox will be a media partner. **For further information:** <http://www.amm.com/events/stainless-and-its-alloys-conference/details.html>

STAINLESS STEEL AS A STRUCTURAL MATERIAL IN BUILDING AND INFRASTRUCTURE. DURABILITY - SAFETY - NEW TECHNICAL DIRECTIVES FOR CONSTRUCTION

(L'acciaio inossidabile quale materiale strutturale in edilizia e nelle infrastrutture. Durabilità – Sicurezza – Le nuove Norme Tecniche per le Costruzioni)

Sala Napoleonica – Palazzo Greppi – Via S. Antonio 12 – University of Milan Milan, 26 October 2017 – 9.00 a.m.

Ordine degli Ingegneri della Provincia di Milano in collaboration with Centro Inox will co-organise the seminar, which is sponsored by Fondazione Promozione Acciaio, Federacciai and CTA - Collegio dei Tecnici dell'Acciaio.

PROGRAMME:

- **Participants welcome and introduction.** Riccardo Guidetti - University of Milan / Fausto Capelli - Centro Inox, Milan
- **The reinforced concrete and steel construction in the new technical standards for buildings: newly designed and existing buildings. The role of stainless steel products.** Walter Salvatore - University of Pisa, Civil and Industrial Engineering Department, Pisa
- **State-of-the-art about the standard on the stainless steel structural hollow sections.** Paolo Viganò - Centro Inox, Milan
- **A designer's view. Advantages and issues.** Maurizio Milan - Milan Ingegneria, Milan
- **The role of stainless steel in architectural façades and elements. Application examples.** Alan Tomasi, Marco Prest - Permasteelisa Group, Vittorio Veneto TV
- **Durability and Life Cycle Cost: criteria for the manufacture of steel structures. Practical examples in the rebar sector.** Antonio Bianco - ABICert, Ortona CH / Fabio Bontempo – Ugitech Italia, Peschiera Borromeo MI
- **Stainless steel dampers as seismic protection of structures.** Francesco Tomaselli - FIP Industriale, Selvazzano PD
- **Fire resistant stainless steel structures: studies, experiences and legislation.** Giuliana Zilli – RINA Consulting - Centro Sviluppo Materiali, Rome

The official language will be Italian.

For information and registration: CENTRO INOX – Via Rugabella 1 – I-20122 Milan, phone +39 02 86450559/69 – Fax +39 02 86983932, eventi@centroinox.it, www.centroinox.it

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STAINLESS STEEL 2.0 - ADVANCED COURSE ON STAINLESS STEELS. THEORY - PRACTICE - EXPERIENCES (INOX 2.0 - Corso completo sugli acciai inossidabili. Teoria - Pratica - Esperienze) Provaglio d'Iseo (BS), 8-9-15-16-22-23 November 2017

This six-day course provides a detailed technical

preparation on stainless steel. The proposed topics are technically and horizontally across all industry sectors (including third parties) that buy, transform or use stainless steel. We have tried to give space to practical and theoretical applications with some scheduled visits to the laboratories where corrosion cases, typical microstructures, welded joints issues, etc. will be illustrated. A visit to a leading company in the sector is planned. The initiative was conceived and organised by Centro Inox and AQM. Recipients: designers, technical-commercial personnel, manufacturers or processing companies, quality managers, retailers, service centres, students and decision makers.

Days and topics covered

8 November 2017 - STAINLESS STEEL: FROM METALLURGY TO MECHANICAL AND PHYSICAL PROPERTIES

9 November 2017 - REGULATORY AND LEGISLATIVE REFERENCES, CLASSIFICATION AND CERTIFICATION

15 November 2017 - PROCESSING, THERMAL TREATMENTS, SURFACE FINISHES. MARKET NOTES: PRODUCTION, CONSUMPTION, IMPORT AND EXPORT AND RELATED ISSUES

16 November 2017 - JOINTS METHODS. WELDING: TRADITION AND INNOVATION COMPARED

22 November 2017 - CORROSION: CAUSES, TYPICAL MORPHOLOGIES, OPTIMAL CHOICE CRITERIA

23 November 2017 - PRACTICAL APPLICATIONS IN LABORATORY AND VISIT TO FIAV L. MAZZACCHERA SPA

The complete programme is available on the sites: www.aqm.it – www.centroinox.it

The official language will be Italian.

FOR INFORMATION AND REGISTRATION:

- AQM srl - formazione@aqm.it, phone +39 030 9281782, fax +39 030 9291777
- Centro Inox - eventi@centroinox.it, phone +39 02 86450559 / +39 02 86450569, fax +39 02 86983932

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STAINLESS STEEL FOR A MODERN VINEYARD

(L'acciaio inossidabile per un vigneto moderno)

The stainless steel products used to make a vineyard include trellis posts with a diameter of 60 to 76.1 mm and a 1.00 to 2 mm thickness, vine posts of 50 to 60 mm in diameter and a 1.00 to 2.00 thickness and lastly the stakes of 25 to 38 mm diameter and a 0.70 to 1 mm thickness. The full range of vineyard posts, presented here, are made of EN 1.4510 (AISI 439), EN 1.4512 (AISI 409) and EN 1.4509 (441) stainless steel.

Stainless steel is a long-lasting material that maintains its characteristics over time, resisting stress and degradation due to moisture, air, light, high and low temperatures, and the corrosive action of some substances used for vineyard treatments. Stainless steel is a material with high mechanical strength and excellent flexibility. The trellis and vineyard post holes allow easy and quick assembly of the wires and accessories. The reflectivity of stainless steel allows for greater diffusion of light and heat during winter.

Producer: Thema Inox Srl – Località Ca' Verde – I-29011 Borgonovo Val Tidone PC, phone +39 0523 863085, fax +39 0523 864974, www.themainox.it

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