

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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STAINLESS SCULPTING ART

(Arte scultorea inossidabile)

“Valbruna world” (“Il mondo Valbruna”) is the title of the work made in EN 1.4307 (AISI 304L) stainless steel, realized by the German artist Peter Schwenk. The spherical sculpture interprets the will of “Acciaierie Valbruna” branches, from all over the world, to pay tribute to their President on the occasion of his 100th birthday. Installed in the main entrance of the head office in Vicenza, it represents the geographical profile of the countries where the branches are located, the range of their steel products and their regard for the President. The work was achieved by welding together some pictures previously obtained by laser cutting sheets having a thickness of 5 mm. It gained a such success that it was decided to replicate the spherical work on a small scale, in the form of paperweights.

Artist: Peter Schwenk, www.peter-schwenk.de

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A SPORT AS OLD AS INNOVATIVE

(Uno sport tanto antico quanto innovativo)

A company specialized in artisan downhill skis, located in the province of Sondrio (Italy), with the collaboration of CRYOLAB, a interdepartmental laboratory of Politecnico di Milano, designed and patented bottoms for skis completely in modified EN 1.4310 (AISI 301) stainless steel: starting from sheets having a thickness of 0.5 mm, they are obtained through laser cutting and then assembled with the other components of the ski. The better resistance to corrosion and to abrasion are two of the many advantages to substitute ultra high molecular weight polyethylene (UHMWPE) with stainless steel. Moreover, this material is characterized by high mechanical properties and a great resistance to scratches and impacts: these aspects remarkably reduce the maintenance operations on the skis. The research project is still in progress.

Manufacturer: Blossom Ski, registered trademark of Penz Srl – I-23020 Gordona SO – Via al Piano 38, phone: +39 0343 36207, info@blossomski.com, www.blossomski.com

In collaboration with: Interdepartmental Laboratory CRYOLAB, Politecnico di Milano

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FROM OUR MEMBERS

TECNOFAR: STARTED THE NEW

PLANT FOR TUBE CUTTING

(Tecnofar: avviato nuovo impianto per taglio tubi)

Tecnofar SpA extends its production capacity of cut-to-length tubes by starting a new and modern 4.0 plant able to cut, deburr, wash and control tubes having diameters between 8 and 76 mm and lengths between 90 and 1,000 mm, to perform the automatic loading and to emit control reports. The new plant completes an already state-of-the-art department, composed by ten machines capable to cut directly from bars or rolls, with centesimal tolerances, tubes having diameters between 1 and 76 mm and lengths between 3 and 3,000 mm.

PRODUCTION - The production capacity of Tecnofar SpA is based on eleven TIG and plasma welding lines, equipped with continuous heat treatment, which can weld round section tubes of diameters ranging from 3 to 76 mm and thickness ranging from 0.12 to 3 mm, bars having lengths up to more than 25 m and rolls up to 1,000 m of development. A part of this production is converted into drawn tubes available both in bars and in coils with a reduction of their diameter and their thickness.

The R&D department allows Tecnofar SpA to follow the development or the outset of new systems with targeted investment. **USED MATERIALS:** 200 series and 300 series austenitic steel grades; 400 series ferritic steel grades; duplex steels; nickel alloys.

TECNOFAR SpA – I-23020 Gordona SO – Via al Piano 54/A, phone: +39 0342 684115, fax: +39 0342 684500, info@tecnofar.it, www.tecnofar.it

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THE ROLE OF SHIELDING GASES IN WELDING

(Il ruolo dei gas di protezione nella saldatura)

Among the many ways that the actual technological solutions allow to adopt for the protection of the weld pool towards the atmosphere, the gas afflux from the torch represents a widely used procedure. In particular, gas shielding is adopted for electric arc welding processes, such as GMAW (Gas Metal Arc Welding) and GTAW (Gas Tungsten Arc Welding). For the former, the gas can be active or inert, while for the latter inert or reducing gases shall be used.

Among the inert gases, Argon (Ar) and Helium (He) can be surely cited. Argon is characterized by a high atomic number (18) and so by a low

ionization potential, that allows a good arc stability during the whole welding process. On the other hand, this gas has a low thermal conductivity, causing the concentration of the heat in the centre of the weld pool. This condition can lead to the formation of rather critical defects, such as the undercuts.

Helium has a very low atomic number (2); the ionization potential is therefore higher and, in order to assure a good arc stability, higher welding parameters should be selected. However, its thermal conductivity is one order of magnitude greater than Argon's one, resulting in a better heat distribution over the weld pool.

As previously reported, GTAW is incompatible with active gases. So, an inert gas shall be selected, typically Argon or a mixture of Argon and Helium (usually 70% Ar and 30% He). For austenitic stainless steels, it is possible to partially substitute Hydrogen to Helium (up to 5%), in order to assure a better weld penetration.

As far as the oxidizing active gases are concerned, molecular oxygen (O₂) and carbon dioxide (CO₂) are commonly used. Molecular oxygen reduces the weld pool and the melted filler material's surface tension, leading to a better union between the weld and the base material, a good arc stability and a reduction in the welding parameters. Because of the oxidizing behaviour of molecular oxygen, it is mixed with an inert gas (Argon), and its concentration is less than 2%. Carbon dioxide allows an enhancement in terms of weld penetration or welding speed. It should be obviously considered that the chemical elements that constitute these molecules are Oxygen and Carbon: the former has a strong oxidizing power, while the latter has a carburizing effect, mainly when the Carbon content of the weld is less than 0,07%. So, particular care must be taken when low carbon grades have to be welded. For these reasons, carbon dioxide is mixed with Argon and its concentration does not exceed 5%.

Back shielding of stainless steels has to be guaranteed when the welding of the back side cannot be performed. Obviously, oxidizing gases are not used during this operation, because the presence of oxygen causes the formation of several defects.

Article written by Eng. Giovanni Garbarino – Italian Institute of Welding

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STAINLESS STEEL TOOLS: THE QUALITY IN THE PALM OF YOUR HAND



(Utensili in acciaio inossidabile: la qualità nel palmo della mano)

Beta Utensili, a company specialized in the design, production and commercialization of tools and equipment for professional use, realized a line ("Beta Inox") completely in stainless steel. Martensitic stainless steels have been selected, mainly because of their high mechanical properties; specifically, the tools are made in AISI 420 stainless steel, with different carbon content.

The line is completed by other components in EN 1.4301 (AISI 304) stainless steel, such as the mobile roller cabs and the tool boxes. This company chose stainless steels also for their hygiene and the low bacterial retention, making these materials easy to clean. Beta Utensili has recently purchased the "INOX" trademark, granted by Centro Inox, which identifies products made of stainless steel, allowing them to be recognised by the end user.

Manufacturer: Beta Utensili SpA – I-20845 Sovico MB – Via Volta 18, phone: +39 039 20771, info@beta-tools.com, www.beta-tools.com / **Stainless steel trademark granted by:** Centro Inox, www.centroinox.it/it/marchio

PAGES 12/13**CENTRO INOX SERVIZI SRL AND THE AFFILIATED MEMBERS**

(Centro Inox Servizi Srl e le società affiliate)

The company Centro Inox Servizi Srl, founded by the association Centro Inox 25 years ago, is involved in a specific action in terms of education and technical advice, through two ways:

- an annual **subscription** which provides to companies and/or freelance workers a "package" of services (technical advice, discounted subscription for events, etc.).
- an annual **affiliation** for the companies that request, in addition to the "package" of services furnished through the annual subscription, specific technical and promotional services.

All the details referring to the services offered to the affiliated members of Centro Inox Servizi Srl are reported in the following link: www.centroinox.it/it/affiliazione-cis

PAGE 14**ADVANCED COURSE ON STAINLESS STEELS. THEORY – PRACTICE – EXPERIENCES. II EDITION**

(Corso completo sugli acciai inossidabili Teoria – Pratica – Esperienze. IIª EDIZIONE)

6 – 7 – 13 – 14 – 20 – 21 November 2019

Location: AQM Srl, via Edison 18, Provaglio d'Iseo (BS)

Centro Inox organized, in collaboration with AQM (Technical Services Center for Companies) and with the sponsorship of Federacciai, the Italian Institute of Welding and Politecnico di Milano, the second edition of the Advanced Course on Stainless Steel. The aim of this six-day course is to provide a detailed

technical preparation on these materials. Centro Inox and AQM have tried to give space to practical and theoretical applications with some scheduled visits to the AQM laboratories. A visit to a leading company in the sector is also planned (**Fiav Mazzacchera SpA** – Agrate Brianza MB).

Days and topics covered

6 November 2019 - FROM METALLURGY TO MECHANICAL AND PHYSICAL PROPERTIES

7 November 2019 – REGULATORY AND LEGISLATIVE REFERENCES, CLASSIFICATION AND CERTIFICATION

13 November 2019 - PROCESSING, HEAT TREATMENTS, SURFACE FINISHES.

MARKET NOTES: PRODUCTION, CONSUMPTION, IMPORT AND EXPORT AND RELATED ISSUES

14 November 2019 - JOINTS METHODS. WELDING: TRADITION AND INNOVATION COMPARED

20 November 2019 - PRACTICAL APPLICATIONS IN LABORATORY

21 November 2019 - CORROSION: CAUSES, TYPICAL MORPHOLOGIES, OPTIMAL CHOICE CRITERIA

The complete programme and the registration form are available on Centro Inox website: www.centroinox.it

For further information and registration:

Centro Inox

phone: +39 02 86450559 / +39 02 86450569

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AQM Srl

phone: +39 030 9291784

e-mail: valentalombardi@aqm.it

PAGE 15**FLASH COURSE**

HOW TO CORRECTLY ORDER STEEL PRODUCTS: NORMATIVE REFERENCES, CERTIFICATES AND ADDITIONAL DOCUMENTS

(Come ordinare correttamente i prodotti siderurgici: riferimenti normativi, certificati e documenti aggiuntivi)

25 September 2019 - 9.00÷13.00

Location: Hotel Ascot – Via Lentasio 3 - Milan

Centro Inox organized, in collaboration with IGQ (Italian Institute of Quality Assurance), and supported by Unsider, a flash course directed to the operators of the supply chain that usually deal with the purchase, the commercialization and/or the transformation of steel products without a detailed knowledge of the normative references, necessary for a correct order.

The complete programme and the registration form are available on Centro Inox website: www.centroinox.it

For further information and registration:

phone: +39 02 86450559 / +39 02 86450569

e-mail: eventi@centroinox.it

FLASH COURSE

THE COLD FORMING OF STAINLESS STEEL

(La formatura a freddo degli acciai inossidabili) 25 October 2019 - 9.00÷13.00

Location: Hotel Ascot – Via Lentasio 3 - Milan

The flash course is directed to all users/transformers dealing with stainless steel in the principal industrial sectors, traders, service centres and subcontracting companies.

The aim is to furnish the necessary information for a detailed knowledge on the cold forming characteristics of the many stainless steel families, with a particular focus on forming and drawing processes, on deep-drawing materials and on the main defects that can be found in the finished products.

The complete programme and the registration form are available on Centro Inox website: www.centroinox.it

For further information and registration:

phone: +39 02 86450559 / +39 02 86450569

e-mail: eventi@centroinox.it

18TH INTERNATIONAL STAINLESS & SPECIAL STEEL SUMMIT

Seville, Spain, 17÷19 September 2019

The event is organised by Fastmarkets MB Events and SMR Events. Centro Inox will be media partner of the event.

For further information: www.metalbulletin.com/events/international-stainless-special-steel-summit/details.html

PAGE 16**WORKMANLIKE KNIVES**

(Coltelli d'autore)

The collector's knives reported in the article are produced by a Ligurian artisan who mostly works to order. These products can guarantee, as far as the blades are concerned, high hardness values and consequently a remarkable wear resistance, and a proper corrosion resistance. ATS 34 martensitic stainless steel is, for the blades, the most employed material.

Before the blade is assembled with the other components of the knife, it is heat treated, in order to acquire the desired mechanical properties, and, subsequently, polished. The handle and the guard are usually decorated by hand.

Manufacturer: Laboratorio Tecnico di affilatura Carlo Gigante – I-16142 Genova GE – Corso Sardegna 369, phone: +39 010 8327918, gigantecarlo@inwind.it, www.gigantecarlo.com/

Photographs: Francesco Pachi

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