

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/PAGE 3

GEOHERMAL SECTOR: THE CONTRIBUTION OF STAINLESS STEEL (Geotermico: il contributo dell'inox)

One of the many possibilities for alternative energy sources is the exploitation of geothermal sources. There are areas of the planet that conceal endogenous fluids beneath the earth's crust that can be used as energy sources.

This article presents two installations carried out by an Italian company, leader in this sector and operating mainly abroad. These plants use austenitic, duplex or superduplex stainless steels that are in direct contact with the geothermal fluid.

The plants follow the ORC (Organic Rankine Cycle) process, which involves a phase of converting heat into electricity. In particular, the products used are pipes, tube plates and heat exchanger distributors, but also various accessories. The operating temperatures vary from 100 to 200 °C and it is in this range that the particular performance of resistance to corrosive phenomena is required.

Realization: Turboden SpA - I-25124 Brescia BS - Via Cernaia 10, phone: +39 030 3552001, fax: +39 030 3552011, info@turboden.it, www.turboden.com

PAGES 4/5

MODULAR MACHINE GUARDS: SAFETY AND HYGIENE

(Protezioni perimetrali modulari: sicurezza e igiene)

In production areas, it may be necessary to delimit the areas in which machinery operates. In sectors where high standards of hygiene are required, special hygiene requirements may also be demanded of auxiliary structures.

This article presents modular perimeter machine guards, which have been designed to guarantee maximum hygiene performance. The entire protection system is made of austenitic stainless steel EN 1.4301 (AISI 304), with the exception of the fastenings, which are made of a special technopolymer in addition to the stainless steel mentioned above.

The special feature of these guards is their structure, made up only of frameless panels, obtained from electrowelded mesh, connected together by means of posts. The structure is

then completed by hinged or sliding doors for access to the delimited area.

Realization: Satech Safety Technology SpA - I-23892 Bulciago LC - Via Conte Taverna 1, phone: +39 031 8623011, info@satech.it, www.satech.it

PAGES 6/7

FROM OUR MEMBERS ARINOX: INNOVATION AND SUSTAINABILITY

(Arinox: innovazione e sostenibilità)

Past and present - Arinox is one of the youngest companies of the Arvedi Group. It started out in 1989 in Sestri Levante with the production of stainless steel precision strips. Ever since the early years, the company established itself on the market thanks to the innovative spirit of its founder and president, Cav. Giovanni Arvedi, who understood customers needed greater flexibility.

The key moment in the history of Arinox was in 2006, when Cav. Arvedi decided to increase the width of the production cycle from 650 mm (the standard up until then) to 1270 mm. Using the best technologies available on the market, the precision mill processed the first extra-thin strip with a width of 1270 mm in 2008. In 2014 Arinox decided that the future was to be 1570 mm wide. Two years later, the world's first 0.07 mm thick and 1570 mm wide strip was produced, another world record for the company. Thanks to the latest investments, Arinox was able to strengthen its position within the world of extra-thin stainless steel strip manufacturers.

Applications and market - The automotive industry is the largest market for precision strips. Arinox also provides a wide range of products in many key sectors of the industry: petrochemical, biomedical, thermotechnics, plant engineering and electronics. Arinox exports 90% of its production and its main market is Europe. The Asian market, together with the Middle East and the two American continents played an important role in the market share increase.

Future - From 2008 to the present day, Arinox has seen a regular growth of 10% every year and intends to maintain this growth trend also in the near future, with an approach aimed at customer satisfaction and by focusing on new technologies and applications.

Recently, Arinox presented the 'zero impact' project, to zero the environmental impact of the

production process through three phases: climate neutrality, circular economy and zero waste.

ARINOX SpA - I-16039 Sestri Levante GE - Via Gramsci 41/A, phone: +39 0185 3661, fax: +39 0185 366320, sales@arinox.arvedi.it, www.arvedi.it/arinox

PAGES 8/9/10

METALLIC COATINGS: EXAMPLE FOR A BALL VALVE

(Rivestimenti metallici: esempio per una valvola a sfera)

Introduction - There are fields of application in which stainless steel components cannot guarantee sufficient performance in terms of abrasion and wear resistance.

This is particularly the case when conveying fluids that flow with high turbulence or contain abrasive particles in suspension. In these situations, the conditions for corrosion can also be created.

Metal-to-metal coating on stainless steel ball valves for the oil & gas sector - The focus is on a type of valve that is particularly important for the Italian manufacturing industry: the ball valve. The choice of materials for the valve must be such as to guarantee adequate resistance to the many types of stresses in operation. In this context, austenitic, duplex and superduplex stainless steels are among the most commonly used materials.

Abrasion resistance and sealing characteristics - If the fluid contains abrasive particles, the internal surface of the valve must provide adequate resistance to erosion. If the service conditions require a seal with high reliability over time, a "metallic" seal between the seat and the ball is usually employed. An example is presented of a cer-met (ceramic-metallic) coating, based on tungsten carbides, deposited by supersonic thermal spray process (HVOF process, "High Velocity Oxy Fuel") on the contact surfaces.

The coating process - The HVOF process is a type of thermal spray process that provides excellent performance in terms of the mechanical characteristics of the produced coating. In the HVOF process, a liquid fuel and high-pressure oxygen are injected into a combustion chamber, while the material to be deposited, in powder form, is transported by an inert gas to the outlet section of the same combustion chamber. The final coating has a thickness of approximately 0.2-0.5 mm and is produced by several layers.



The mechanical properties of HVOF coating on ball valve components - Engineering companies and oil companies have now defined specifications that are worldwide standards. These specifications provide rules on how to apply the coating process and provide acceptance criteria on the final product. Most valve manufacturers have defined their own procedures in compliance with these standards, which are specified in the article.

We thank Flame Spray SpA for the information provided.

PAGE 11

**STAINLESS STEEL ROOFS
(Coperture inox)**

In the heart of north-eastern Italy, a leading manufacturer of snack pellets recently completed the re-roofing of part of its factory. The work involved approximately 1,700 m² of roofing and involved the removal of the existing asbestos roofing, which was replaced by a new insulated metal roof.

Between the reinforced concrete Y-beams, two 0.6 mm thick curved corrugated sheets of EN 1.4301 (AISI 304) stainless steel were laid, between which a glass wool insulation mat and a layer of anti-condensation polyethylene were placed.

The choice of EN 1.4301 stainless steel is not random: the European standard EN 1993-1-4 recommends this material, possibly with some good sense, for buildings exposed to rural and urban-industrial environments.

Production: Alubel SpA - I-42011 Bagnolo in Piano RE - Via Torricelli 8, phone: +39 0522 957511, fax: +39 0522 951069, alubel@alubel.it, www.alubel.com / **Installation:** ECO-ROOF Srl - I-33080 Porcia PN - Via Maestri del Lavoro 21, phone: +39 0434 921805, fax: +39 0434 591895, info@eco-roof.it, www.eco-roof.it / **Client:** Mafin Srl - I-35015 Galliera Veneta PD - Strada degli alberi 7, phone: +39 049 9981900, fax: +39 049 9470718, sales@mafin.it, www.mafin.it

PAGES 12/13

**STAINLESS STEEL PUMPS
FOR MULTI-SECTOR APPLICATIONS
(Pompe inox per impieghi plurisettoriali)**

Centrifugal and positive-displacement pumps used in the food, pharmaceutical and chemical industrial sectors are generally made of austenitic stainless steel.

Among the positive-displacement pumps suitable for food contact, single-flow twin-screw pumps are among the most popular for pumping products with different characteristics. They are also used in the cosmetics, pharmaceutical and chemical industries for pumping various preparations and substances. Single-flow twin-screw pumps transfer the pumped product via two rotors, keyed on EN 1.4462 (type 2205) duplex stainless steel shafts. They have no plastic or rubber sliding

parts, ensuring high performance over time and preventing contamination of the pumped product. The components of the pumping part are made from rolled EN 1.4404 (AISI 316L) bars, while the support components are made from lost wax investment casting in CF8. The connections with the piping of the systems in which the pumps are installed are obtained by TIG welding.

Realization: CSF Inox SpA - I-42027 Montecchio Emilia RE - Strada per Bibbiano 7, phone: +39 0522 869911, fax: +39 0522 865454, italia@csf.it, www.csf.it

PAGE 14

**THE ROLE OF JOINING PROCESSES IN
THE PERFORMANCE OF STAINLESS
STEEL FOR THE WINE INDUSTRY**

(Il ruolo dei processi di giunzione nelle prestazioni di componenti ed impianti in acciaio inossidabile per l'industria enologica)
Gambellara (VI) – 10 May 2022

Centro Inox and IIS (Italian Institute of Welding) propose a focus on the construction and treatment of welded joints of equipment intended for the wine industry, considering at the same time the aspects related to the process and the quality of the joints and the obligations required by the food discipline. The event is offered in mixed mode: remote and in-person.

The detailed programme and registration forms are available on our website: www.centroinox.it

For further information and subscription:
IIS - Ivana Limardo - phone: +39 010 8341373 - e-mail: ivana.limardo@iis.it

**STAINLESS STEEL WEBINARS
APRIL 2022**

(Lezioni webinar sugli acciai inossidabili - aprile 2022)

For the month of April 2022, Centro Inox has organised the following stainless steel webinars:

- 14 April 2022: "The inspection documents for stainless steels: 2.2, 3.1 and 3.2 certificates". Focus: EN 10088-2, EN 10088-3 and EN 10217-7
- 28 April 2022: "The main documents required by the market". Focus: REACH, RoHS, DoP, Conflict Minerals, declaration of preferential origin, SCIP

The detailed programme and how to register are available on our website: www.centroinox.it

For further information and subscription:
Centro Inox - phone: +39 02 86450559 - e-mail: eventi@centroinox.it

**L'ACCIAIO INOX
(L'Acciaio inox)**

"L'Acciaio Inox" ("Stainless Steel") is now available, a practical compendium on stainless steels published by Centro Inox Servizi Srl and written by Eng. Fausto Capelli.

The 380-page book is available at a cover price of 39 Euros + postage. Discounts are available for Associated members of Centro Inox and

Affiliated and Subscribed members of Centro Inox Servizi Srl

For further information and for the purchase: phone: +39 02 86450559 - e-mail: centroinoxservizi@centroinox.it

PAGE 15

**INTER-COMPANY TRAINING COURSE
"THE STAINLESS STEELS"
(Corso di formazione on-line interaziendale
"Gli Acciai inossidabili")**

Riconversider and Centro Inox organise the training course "Stainless steels: characteristics, processing and applications". The course is aimed at employees of companies in the steel, engineering and metalworking sectors interested in developing and consolidating the professional skills of their staff, through an inter-company course structured in 3 modules of 8 hours. Lecturer: Eng. Paolo Viganò (Centro Inox).

The detailed programme is available on our website: www.centroinox.it

For further information and subscription contact the Riconversider secretariat:

Fabio Pia - phone: +39 02 66146 607, e-mail: fabio.pia@riconversider.it

Mara Lorenzini - phone: +39 02 66146 603, e-mail: mara.lorenzini@riconversider.it

PAGE 16

**STRUCTURAL USE FOR INTERIORS
(Impiego strutturale per interni)**

In order to cope with increasing workloads, Elettracqua Srl, a company specialising in the design and construction of water purification plants for pharmaceutical purposes, purchased part of an industrial building where its technical and administrative offices are located.

The load-bearing structure of the roof is made of EN 1.4301 (AISI 304) stainless steel square tubes (120x120x5 mm), used for both the columns and the beams supporting the sandwich panel roof. The architectural design has ensured that the structure, of which only the columns are visible, is also conceived as a furnishing element.

Project: Ing. Sergio Picchio - I-16129 Genova GE - Via Montevideo 16 R, phone: +39 010 3625200, ing.picchio@libero.it / **Client:** Elettracqua Srl - I-16165 Genova GE - Via Adamoli 513, phone: +39 010 803556, fax: +39 010 808189, info@elettracqua.com, www.elettracqua.com

CENTRO INOX

**The Italian Stainless Steel
Development Association**

**Via Rugabella, 1 - 20122 Milano - Italy
Telephone +39 02 86450559 - +39 02 86450569
Fax +39 02 86983932**

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

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

