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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ROVATO'S STREETLAMPS – A "RATIONALIST" PLAN TO ILLUMINATE A CITY
(I lampioni di Rovato. Un progetto "razionalista" per l'illuminazione della città)
Rovato's streetlamps do a good job at conveying the purpose for which they were created thanks to the plasticity of their structure, which does not spoil their surroundings.
More than three hundred curved lampposts have replaced the old, hanging streetlamps and they represent the new street lighting plan for the town of Rovato (Brescia).
The posts are 145 mm in diameter and 3 mm thick and are made of EN 1.4301 (AISI 304) stainless steel. The streetlamp is made of a single, bent piece that has a lightly polished finish and is 5 or 6 meters higher than the spot to be lit, according to location.
This streetlamp does not have an actual lamp, which is a decided advantage when it comes to matters such as maintenance, safety and the ability to withstand strong winds.
The style is therefore decidedly minimalist, dictated by a very precise purpose—the need to illuminate only those spaces where lighting is required without producing too much light pollution.
These streetlamps illuminate only the street they run along and do not disturb residences facing the street, and, as an added benefit, this ensures higher energy savings.
It is a plan that is doubly environmentally-friendly, considering that the choice of material, stainless steel, does not require any additional protective coatings, like paint, and can be recycled an endless number of times—in fact, more than 80% of new stainless steel is obtained by scrapping old stainless steel.

| Commission:
Comune di Rovato, Via Lamarmora 7, I-25038 Rovato BS
phone 030.77131, fax 030.7713217,
rovato@comune.rovato.bs.it, www.comune.rovato.bs.it

| Design, planning and patent:
Franco Fettolini, Via Govine 19, I-25055 Pisogne BS
phone 0364.89411-89377-86537, fax 0364.899889
fettolini.srl-@libero.it, renatotonsi@tiscali.it

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"STAINLESS" MARKED TAPS
(Rubinetti marchiati "inox")
There has been a noticeable, ever-growing interest in stainless steel exhibited by new manufacturing sectors that appreciate its reliability, cleanliness, ease of maintenance and durability.
A typical example of this is the domestic taps and fittings sector which, for some years, has seen a growing number of manufacturers who view stainless steel as a valid alternative to traditional chrome-plated brass.
If, in addition to the type of material, one considers the range of innovative designs possible, thanks to the "flexibility" of a material which allows manufacturers to achieve increasingly varied shapes, the results are astonishing.
These taps are all made from EN 1.4401 (AISI 316) stainless steel rods and pipes obtained using different manufacturing processes. There are no welded joints, but only mechanical couplings. Even the original brass sucker rods in the cartridge are replaced with stainless steel sucker rods.
Each individual item produced is guaranteed for 10 years and is hand numbered to ensure that the product can be identified during its lifetime.
Another distinctive trait is the label that identifies products made of stainless steel—a mark that guarantees that the material employed is stainless steel, with all the usual features of these alloys. Hotels, spas, wellness factories, boats and private homes are some end users of these taps that are a blend of aesthetics and functionality.

| Production:
Mina S.r.l.,Via Zignone 26/A, I-13017 Quarona VC
phone 0163.432410, fax 0163.432977
mina@minait.com, www.minait.com

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FROM OUR MEMBERS
THYSSENKRUPP ACCIAI SPECIALI TERNI
A WIDESPREAD PRESENCE IN THE STAINLESS STEEL MARKET
(Dalle Associate: ThyssenKrupp Acciai Speciali Terni. Una presenza capillare sul mercato dell'inossidabile)
With the acquisition of Tad Metals, now called Terninox, ThyssenKrupp Acciai Speciali Terni's distribution network has expanded considerably, achieving almost complete coverage of the main stainless steel consumption areas in Italy.
Terninox is among the largest distributors of quality stainless steel products, especially in the rolled flat products sector, and offers a high degree of service to its industrial and retail customers. Terninox has reorganized its "core business", shifting from the simple transformation of rolled flat products to the creation of an integrated business system, based upon a strong service component and a decentralized distribution network. In particular, the evolution of the Terninox strategy has followed two main guiding principles:
- specialized processing to create special products targeted at niche markets,
- the creation of a distribution network for "just in time" standardized products for the retail market.

The capacity of Terninox, which distributes over 70,000 tons each year of stainless steel flat and long products, has been added to those of the service centres located in Terni and Padua.
The range of stainless steel products includes both hot and cold-rolled sheets and strips, corrugated sheets, floor patterned plates, rolled, drawn, sheared, and drilled bars and rods, TIG, HF and Laser welded pipes, square and rectangular bars, seamlees pipes, angular and flat sections, and pipe fittings of various kinds.
The Service Centres offer: transversal and longitudinal cutting to size, strapping, satin and Scotch Brite finishing.
Terninox has recently added Vivinox (anti fingerprint, prepainted or coloured or primered stainless steel) to its product portfolio.
Thanks to the support of its steel mill, Terninox is able to offer an expert technical consulting service to its customers.

| Sales management:
Terninox, Via Milano 12, I-20020 Ceriano Laghetto MI
phone 02.96982.1, fax 02.96982328 – 382 - 385
www.terninox.it

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THE SHEET TAKES SHAPE
PROCESSING STAINLESS STEEL SHEET
(La lamiera prende forma. Lavorazioni della lamiera di acciaio inossidabile)
We discussed drawing in a past issue (Inossidabile 154) and now we continue with examples of processing by viewing the process of transforming stainless steel sheets through cutting, cold bending, forming and welding.
In order to demonstrate these processes, we will take a look at the processing done by Delinox, a firm that transforms stainless steel sheets for constructing commercial dishwashers frames.
In the first step, the sheet is cut to size using shearing. There must a clearance of about 1/10 the thickness of the sheet between the blades of the machine, especially for austenitic stainless steels. Given the high figure of percent ultimate elongation of stainless steels, excessive clearance could cause the material to elongate too much and cause the formation of especially hard burrs and give it a tensile strength greater than that of the base material, which could damage the blades of the shear and cause problems in the later steps, resulting in additional processing costs.
The cutting speed should be reduced by 30% compared to similar work done on carbon steels (the tensile strength of austenitic stainless steels increases markedly when the deformation speed is raised) and greater power should be used.
In the event thin sheets are worked, we suggest coating the device locking the sheet to the shears with elastomers.
Depending upon the component that must be made, the subsequent steps could be: laser cutting, cold bending and forming—these are techniques that allow one to obtain complex shapes starting from simply-shaped semi-finished flat pieces. Laser cutting allows one to create both a flat product with a definite shape and to prepare a component for later processing.
A thin beam of light, invisible to the human eye, serves as a heat source for melting the steel, while a flow of gas concentric to the beam removes the melted material. The gases used are nitrogen or oxygen. The latter, especially, produces heat when it comes into contact with melted metal, permitting higher cutting speeds. The type of laser used in this step is similar to that used in CO_2 or Nd-Yag welding, while the maximum thicknesses workable are about 10 – 15 mm.
Using a laser to cut sheets has the advantage of offering the opportunity to create complex shapes with small radiuses and a much smaller cutting width.
Bending and forming are used to make three-dimensional components.
In performing the bending process, one must consider the spring-back (which, for austenitic types, is up to 2-3 times that of carbon steel) of the material after the step is completed, since it requires that suitably larger angles be provided for in order to obtain the desired results once processing is completed. It is also important to take into account the direction in which the sheet is rolled; parallel bending is actually harsher on the material than perpendicular bending.
Another process for obtaining complex shapes is forming the stainless steel, especially Cr-Ni austenitic types, lend themselves well to this type of processing, due to the high percent ultimate elongation. Usually carbides utensil steels or even aluminium bronze are used for the dies.
The micro plasma method is used for welding. It is similar to the plasma welding that is currently used for stainless steel, but different power can be used and different thicknesses can be welded. The welding is done using ionized gas that is transferred to the material, forcing a "hole" into it ("key-hole" method). The torch then continues forward and the hole is closed immediately after the plasma stream passes; this is due to the surface tension of the melted metal. All this is always done using gas-shielding (usually a mix of argon and hydrogen with the possible addition of nitrogen). Currents ranging between 0.1 and 15 A inclusive are used in the micro plasma method.
This method allows higher concentrated energy to be used which means that welding joints with good mechanical properties can be achieved on very thin pieces.
In order to eliminate oxides formed, once welding is completed, the weld beads are pickled using brushes or suitable chemical products. Afterwards the item is satin finished to restore its surface appearance.

| Delinox – Lavorazioni Acciaio Inox
Viale Europa 38, I-26885 Lodi Vecchio LO
phone 0371.753750 fax 0371.464621, www.delinox.it

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THE NEW AQUEDUCT FOR NUS IN VALLE D'AOSTA
(Il nuovo acquedotto di Nus in Valle d'Aosta)
During the flood of 14 and 15 October 2000, the village of Nus lost part of its water network, including springs and water tanks.
The new design provided for the use of stainless steel pipes inside the two new water tanks, each having a capacity of

about 150 m^3.
The water tanks were constructed by a company that, for several years, has been operating in the area of managing public aqueducts, performing new works and carrying out maintenance, testing, meter reading, etc.
All the parts placed inside the water tanks are made of type EN 1.4301 (AISI 304) stainless steel; pipes, ladders, conduits for electric cables, etc. The pipes, with major diameters varying among 150, 100, 80, and 50, are 3 mm thick. The ladders, the suspended platform and the dividing walls of the remote control room are made using EN 1.4301 (AISI 304) stainless steel square sections with a thickness varying between 2 and 3 mm.
The transparent part of the wall that divides the remote control room from the control room are screwed on stainless steel sections. The pipes for connecting the level control valves are made of EN 1.4401 (AISI 316) stainless steel and have a diameter of 22 mm and a thickness of 1.5 mm. All the welding was done using the manual TIG welding process. About 3,000 - 3,500 kg of stainless steel were used.

❙ Design:
Studio Ing. Franco Blanc, Via XXVI Febbraio 20,
I-11100 Aosta AO, phone 0165.363049

❙ Realization:
So.Ge.A. di Francesconi E. & C. Snc, Regione Arionda 14
I-11100 Aosta AO, phone 0165.555187

DESIGNER KNIVES
(Coltelli d'autore)
A solid foundation of familiar tradition and experience gained over years of sharpening, like a knife grinder, spurred a craftsman to try manufacturing designer knives, inspired by American models.
His goal was the search for elegance, for ease of handling, for the sense of safety that one feels gripping a knife made with extreme care. It is from this love for details and the desire to create unique objects that the research, the close study and the comparison with the work of other craftsmen throughout the world were born.
Starting with the first knives made with steel recycled from old blades, this quest has led to the search for ever better steel, to furnaces for personalized quenching, to the use of ATS34 steel for the blades and EN 1.4005 (AISI 416) martensitic stainless steel (with a colour close to silver) for use in guards or cuffs, to the use of stag or ram horn, mammoth ivory, mother-of-pearl, exotic woods, corals, precious stones for the handles.

❙ Production:
Carlo Gigante, Corso Sardegna 369r, I-16142 Genova GE
phone 010.888929, fax 010.8327918
gigantecarlo@inwind.it, www.gigantecarlo.com

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THE PIEVE DI LEDRO PURIFICATION PLANT
(Il depuratore di Pieve di Ledro)
The Pieve di Ledro purification plant, located about 660 m above sea level, designed to carry out the biological clarification treatment of liquid sewage deriving from the city sewers of four villages in the province of Trento, with a total of 11,000 inhabitants, was expanded.The expansion provided for new reservoirs for treating liquid sewage.The plant is able to treat an average daily flow of 3,840 m^3.
The process starts by intaking the liquid sewage using three pumps, then passing it through a revolving screen to remove materials larger than 6 mm in size from the sewage.
The liquid sewage is separated, using a stainless steel sump, into two treatment lines. From here, two machines, also made of stainless steel, separate sands from the water using a decantation process involving an aeration system. Then, in subsequent treatments, the liquid sewage is piped into tanks for denitrifying, oxidation and the final decantation, followed by the reduction of the suspended particles and the killing of bacteria.
EN 1.4301 (AISI 304) stainless steel was used to construct the parapet, the access ladders for the tanks, the seven dividers (for a total of over 8.7 tons) and the welded pipes, of various thicknesses, that altogether total over 930 meters in length. The various structures (3 tons), eight sluice gates (1.6 tons) and machinery (1.2 tons) are also made of EN 1.4301 (AISI 304) stainless steel. About 1 ton of EN 1.4541 (AISI 321) was used for the other machinery.

❙ Planning and Works Management:
Arch. Adriano Conci, Servizio Opere Igienico-Sanitarie,
Provincia Autonoma di Trento, Via Pozzo 6, I-38100 Trento
phone 0461.492763.

❙ Metal structural work:
Fram S.r.l., Via dell'Artigianato 51,
I-25030 Torbole Casaglia BS, phone 030.2150642.

❙ Profiles and piping:
Marcegaglia-Divisione Inox, Via Bresciani 16
I-46040 Gazoldo degli Ippoliti MN
phone 0376.6851, fax 0376.657577
divisione.inox@gruppomarcegaglia.com
www.gruppomarcegaglia.com

WATER PURIFICATION SYSTEM IN THE PAVIAN
(Impianto di potabilizzazione dell'acqua nel pavese)
The aqueduct network of Bascapè, in the province of Pavia, is drawn from an aquifer through a well located in the township. The results of recent tests conducted on the water have revealed the need for a water purification system that uses an ozonization treatment, a series of filters and chlorination of the water.
Currently, the water is treated without including an ozonization cycle, even though the system is capable of including this step. The material chosen for the piping was EN 1.4301 (AISI 304) stainless steel. The pipes, which are welded to reach an overall length of 115 m, and the pipe fittings (fasteners, restrained joints, elbows and tee joints), assembled using TIG or arc welding, form a system capable of treating 72 m^3/h of water, enough to satisfy users' current and future requirements.
In addition to offering the required resistance to corrosion by agents dissolved in the water and those introduced during treatment, EN 1.4301 stainless steel possesses characteristics that made it suitable for contact with drinking water—it is hygienic, can be easily cleaned and does not react with fluids.

❙ Realization:
Impiantistica Lombarda Viletti S.r.l., Via Porta Pescarina 49
I-27010 San Genesio ed Uniti PV
phone 0382.580014, fax 0382.286652, viletti@libero.it

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NEW MARK FOR STAINLESS STEEL
(Un nuovo marchio per l'acciaio inossidabile)
Centro Inox has created a new mark which can be used by all producers of items made entirely in stainless steel or in which in any case more stainless steel is used than other materials.
The initiative arose from the following needs: 1) to distinguish stainless steel clearly from other materials; 2) to make sure that end users can immediately recognise a material which is a byword for durability and hygiene 3) to make known the presence of stainless steel in emerging fields.
The sole purpose of the mark is to identify the nature of the material without any reference to its quality level. It is not therefore a mark of quality and does not represent any kind of guarantee as regards any performance shortcomings arising, for example, from inappropriate maintenance or cleaning, machining, installation or choice of type of stainless steel according to use.
The Regulation states that the mark can be accompanied only by wording containing the declaration that it has been issued by Centro Inox, that the material used is stainless steel which is a hygienic, non-toxic, strong, recyclable material etc.The mark has been registered in Italy and is therefore protected throughout the country, while the registration process has also started for this protection to be enjoyed througho ut the
EC.Use is granted by Centro Inox Servizi, on licence from Centro Inox. For further details please send the coupon on page 14 via fax.

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STAINLESS STEEL FROM TRADITONAL APPLICATIONS TO EMERGING MARKETS
(L'acciaio inossidabile dalle applicazioni tradizionali ai mercati emergenti)
Milan, 9 June 2004 – 9:00 am
Politecnico di Milano – Room S.0.1 (Leonardo da Vinci Campus) – Piazza Leonardo da Vinci 32
The purpose of the conference is to provide a better understanding of the large family of stainless steels, especially the wide range of properties and characteristics that these materials must ensure as regards their final applications.
Another important purpose of the conference is to get engineers and experts in the stainless steel sector in touch with the requirements and expectations of emerging and traditional markets.
It also covers topics such as the products/parts life-cycle costs and European and International standards in the sector.
The conference is targeted at technical and sales personnel working in manufacturing, mechanical, civilian industries, transportation and the components industry in general.
The seminar language is Italian.
All registered participants will be provided with the proceedings and with other technical documentation and payment receipt.
Programme:

9.00 Registration

Welcoming address
Marco Boniardi – Mechanics Department, Politecnico di Milano
Fausto Capelli – Centro Inox, Milano

What are stainless steels? Properties and features
Walter Nicodemi – Mechanics Department, Politecnico di Milano

Stainless steels and corrosion resistance
Marco Boniardi – Mechanics Department, Politecnico di Milano

Welding of stainless steels
Maurizio Vedani – Mechanics Department, Politecnico di Milano

Stainless steels and surface finshes
Vittorio Boneschi – Centro Inox, Milano

14.30

The stainless steel market: stratification of uses, distribution of steel products and development of emerging sectors
Paolo Viganò – Centro Inox, Milano

Structural use of stainless steel in construction
Massimo Majowiecki – DCA-IUAV, Università di Venezia

Stainless steel in infrastructures and public spaces
Pierangelo Pistoletti – Seteco, Genova

Applications of stainless steel in transportation
Alessandro Segala – Centro Sviluppo Materiali, Roma

The role of stainless steel in the food and drinking water industries
Riccardo Guidetti – Agricultural Engineering Institute, Università di Milano

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THE MARGHERA SCIENCE AND TECHNOLOGY PARK
(Il Parco Scientifico-Tecnologico di Marghera)
Back in "Inossidabile" no. 144 (June 2001), we published the front façade, panelled in stainless steel, of the building representing the first lot of the restoration work at the former industrial area in Marghera. It consists of a series of old warehouses, combined with brand new construction, in a building 342 m long, known as the "Incubator", completely covered in stainless steel.
Now, the second lot has also been completed and the restoration plan for the large, disused area (about 30,000 m^2) can be seen in all its glittering splendour, thanks to the 5,000 m^2 of stainless steel panels that cover the buildings.
It actually employed a system using metal sheets that forms an organic whole with the walls, resting on a concrete floor composed of a steel substructure, a profiled galvanized steel bearing sheet, a vapour barrier, and an insulating layer of mineral fibres. The panels are 500 mm wide and are made from EN 1.4401 (AISI 316) stainless steel strips that are 0.6 mm thick for the roof and 0.8 mm thick for the walls, and are joined using a mechanical standing seam and hidden fasteners without drilling the mantle, thereby ensuring the complete tightness.
The technological innovation of the Megaroof® system used consists in being able to profile sheets up to 48 m long in one span, without joints for the roofing, and panels 12 m long for the walls, bent using positive rays directly at the worksite, using a mobile manufacturing unit (Rollformer). www

❙ Design: Prof. Arch. Wilhelm Holzbauer, Prof. Arch. Paolo Riva, Arch. Roberto Sordina.

❙ Realization:
Hedar Edilizia Metallica S.r.l., Strada Prov. Est Sesia 2
I-28060 Vicolungo NO, phone 0321.835522,
fax 0321.835420, info.hedar@tin.it, www.hedar.it