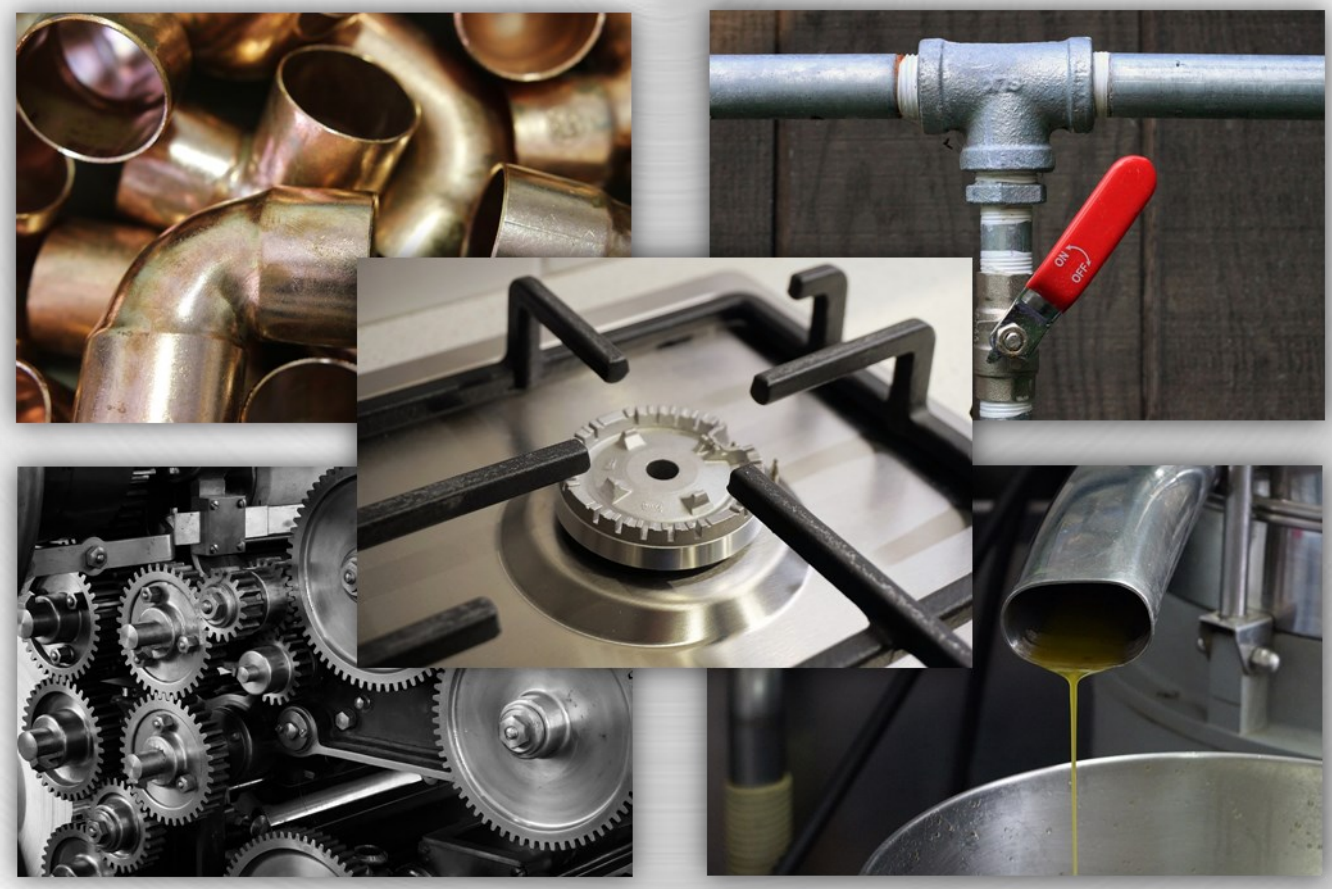
Tecnadis METALCOAT

Non-stick coating for metals which protects from corrosion, impacts and scratches.

SUCCESSFUL APPLICATIONS BY SECTORS



INDEX

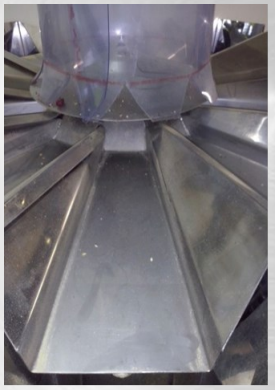
TRANSPORT AND PACKAGING EQUIPMENT

Packaging machine.for food products

Problem: Products such as legumes, cereals, raisin and sugar leave dirt remains on transport and packaging machines, requiring a thorough cleaning between production and production to avoid contamination between them. These cleanings are usually laborious and intensive activities because the food leftovers use to be extremely adhered to the surfaces of these machines..

Application: Tecnadis Metalcoat "Easy-To-Clean" has been applied on different packaging machines for products like cereals, raw cane sugar, cocoa and coffee, among others. Specifically in an automatic multihead packaging machine with 12 hoppers in a nut and cereal production line. On the other hand, this coating has also been applied in cocoa, coffee and raw cane sugar packaging equipment of a fair trade ecological products company.

Results: First of all, after applying the coating on parts of the multihead automatic packaging machine, cleaning could be carried out with a simple compressed air blow, while previously it was done by washing with detergents and scraping operations using spatulas for some products. After 6 months and more than 900 hours of production, it is still observed the ease of cleaning offered by TECNADIS METALCOAT "Easy-to -clean" on the packaging equipment.



Treated

Non-treated

On the other hand, after the application of Tecnadis Metalcoat "Easy-To-Clean" in a packaging equipment of raw cane sugar, the ecological products manufacturing company has saved 20% in the cleaning of this equipment. Previously this company carried out 3 superficial cleanings a day and one deep cleaning every two days. After a month in operation, it has been able to reduce at least one of the superficial cleanings and one of the deep ones thanks to the non-stick properties of this coating that avoids the adhesion of the molasses of brown sugar to the metallic surfaces of the equipment.

Reference customer: Gumendi. Productos ecológicos

Download the video

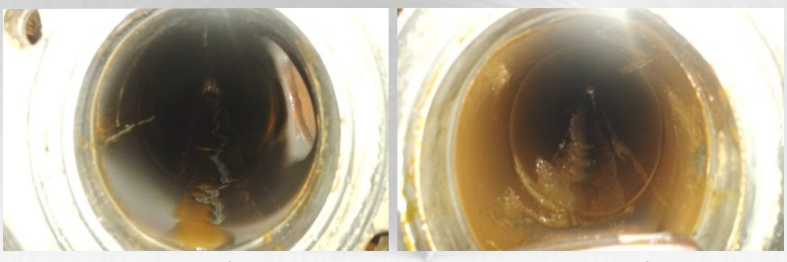
TUBULAR EXCHANGERS

Fried tomato sauce sterilizer

Problem: When sauces like fried tomato go through the tubes of a sterilizer or heat exchanger, the charred sauce is adhered to the tube walls, and it decreases the effective diameter of the tubes. As a consequence, an extra energy is needed to pump the sauce and to reach the necessary temperature inside the tubes, this happens because the layer of the charred material acts as an insulator.

Application: Tecnadis Metalcoat "Easy-To-Clean" has been applied on the inside tube of one of the 7 sections that form an sterilizer or heat exchanger of a fried tomato processing company. This tube is 6 m in length and each section has 3 concentric cavities.

Results: After the implementation of the treated section in a real heat exchanger, it can be seen that after 24h of continuous use, the treated tube keeps completely clean, whereas in non-treated tubes the charred material is accumulated on the walls reducing the energy efficiency of the installation.



Treated Non-treated

Download the video

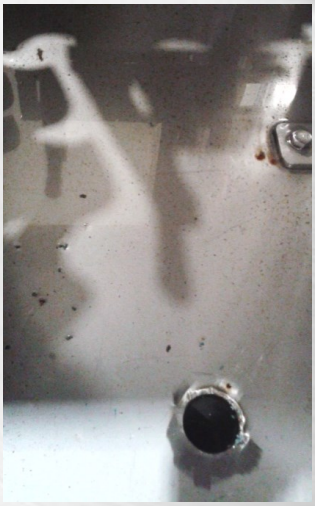
INDUSTRIAL CLEANING MACHINES

Bottle washing machines

Problem: During the storage of containers such as bottles, dust and dirt are accumulated on them. Before marketing them, the bottles are subjected to a cleaning process in which the dirt is adhered to the machine walls. The cleaning of the bottle washing machines is an arduous work because scratching and scrubbing is usually required to clean the surfaces, and moreover this work means to stop all the production line for the maintenance activities.

Application: Tecnan has applied Tecnadis Metalcoat "Easy-To-Clean" product on a twinturbo washing machine from a wine cellar which has this problem.

Results: The treated machine was tested with Gran Reserva wine bottles, which are those that are stored for longer time and therefore those that accumulate more dirt. Immediately, after the complete cleaning process, it was evident that the walls of the treated machine were cleaner than the not treated machines, and the dirt was removed with the own water of the process. Moreover, the dirt remains were eliminated with a simple water hose, leaving the washing machine spotless for the next use. After some time, concretely 9 months after the application of Tecnadis Metalcoat “Easy-To-Clean”, the frequency of stops for maintenance activities was reduced, as well as time and recourses for the cleaning processes, improving company productivity.



Dust and dirt in the cleaning water

Clean surface after water evacuation

Reference customer: MECANIZACIONES ALAVESAS

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VIBRATING EQUIPMENT

Vibrating equipment for candied fruits

Problem: In canning companies and, more specifically, in companies that manufacture candied fruit, syrup or jams, they use Sulphur Dioxide (SO_2) as a preservative for storage before being processed as candied fruit, which avoids colour changes of the products, maintaining the juiciness, shape and natural texture of each fruit (apricot, plum, peach, pear and apple, among others) and inhibits the proliferation of microorganisms. But this chemical additive has the disadvantage of creating very aggressive environments that cause corrosion damage on the outside of the equipment in these companies, besides the risk of contamination if these oxidized parts come into contact with food. To remove the oxide layer generated by the sulphurous environment, these companies carry out maintenance work through arduous polishing and grinding techniques. These mechanical maintenance processes are aggressive for both the metallic material and the workers who perform them at least once a year.

Metal parts with corrosion in fruit vibrating equipment

Application: Tecnan has applied Tecnadis Metalcoat "Easy-To-Clean" on the outside of a vibrating equipment in the candied fruits production line of a company that manufactures canned fruit (jams, candied fruit, fruit in syrup, fruit in alcohol and fruit in SO_2).

Results: After more than 5 and a half months since the application of Tecnadis Metalcoat "Easy-To-Clean" on the vibrator equipment within the fruit production line in SO_2 , the treated area with the coating shows no signs of corrosion compared to non treated areas of the same equipment, where corrosion is evident.

After 2 months since the application: the treated area (blue) does not present corrosion. Non treated area in red

After 5 and a half months since the application: the treated area (blue) continues without corrosion .

WATER AND WASTE TREATMENT FACILITIES

Sludge line

Problem: The installations with corrosive environment undergo various problems by oxidation of the materials. In the case of sludge lines of a Waste Water Treatment Plant, the environment becomes highly corrosive as a result of acid vapours that are generated during the process. Because of this matter, the metallic elements should be protected with thick layers of paint. In the case of valves where the thickness variation is limited in order to proper operation, common paints can not be used. As a consequence, these valves should be often replaced because of the oxide layer that is created and which makes difficult the movement and rotation of them, ceasing to be functional.

Application: Tecnadis Metalcoat "Easy-To-Clean" has been applied on brass valves covered in nickel from a sludge line of the Waste Water Treatment Plant of Estella (Navarre).

Results: Several valves of the Waste Water Treatment Plant of Estella, which are operating in parallel, were treated with Tecnan coating, and after two months, it was verified that the not treated valves were corroded, and therefore, their manipulation was very complicated, whereas the valves treated with Tecnadis Metalcoat “Easy-To-Clean” were totally immaculate. These valves go on in operation for more than one year and a half after their installation.

Treated

Non-treated

[Download the video]

COMMERCIAL STOVES

Gas hobs

Problem: In the home appliance sector, there are several problems such as the adhesion of charred food in microwaves, stoves and ovens, sticking of oil and fat on exhaust hoods, or the corrosion of dishwasher elements. Concretely in the case of gas hobs, when food falls down to the metal elements of the stove, it calcinates because of the high temperature of the stoves, and the charred food is strongly stuck on the surface which is extremely difficult to eliminate. Nowadays, there is not any coating on the market which does not modify the home appliance aesthetic and which provides enough anti-sticking properties, as well as protection against scratches and corrosion.

Application: Tecnadis Metalcoat "Easy-To-Clean" has been applied on satin finish and stainless steel gas stoves from one of the leading home appliance manufactures of the world.

Results: After operating tests of the gas stoves treated with Tecnadis Metalcoat “Easy-To-Clean”, this worldwide home appliances manufacturer reports that this product is the best coating in the market in terms of its combination of anti-adherence and hardness properties. In addition, following accelerated wear tests to evaluate coating durability under simulated real-life conditions, this manufacturer indicates that non-stick properties are maintained for 10 years, with a reduction of less than 2%. The test consisted of 30,000 combined abrasion and cleaning cycles, every 3,000 cycles corresponding to one year of use in real application.

COMMERCIAL GRIDDLES

Hotel duplex griddles

Problem: Within the industrial kitchen and catering sector, there are various problems with the adhesion of food to plates, fryers or plate warmers, where there is also accumulation of fat and oil. Specifically, in the industrial griddles in restaurants, hotels or catering, food leftovers adhere to the metal surface, which together with the high cooking temperatures cause these remains to burn, making cleaning even more complicated.

Application: Tecnadis Metalcoat "Easy-To-Clean" has been applied on duplex stainless steel, mirror finished griddles of show-cooking industrial kitchens of a luxury hotel.

Results: The duplex griddle treated with Tecnadis Metalcoat “Easy-To-Clean” was installed in the kitchen of a hotel in summer and it was used continuously at 300ºC from 10:00 to 23:00 during the two months of the high season to give service to 180 diners. Thanks to the coating properties, the cleaning time per day was reduced 50%, according to the employees of the hotel. After this period, the griddle continues keeping its anti-sticking property.

Show-cooking griddle treated with Tecnadis Metalcoat "Easy-To-Clean"

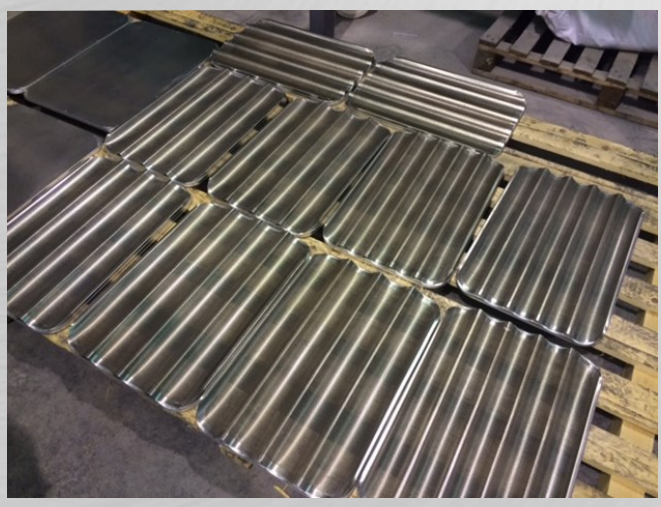
BAKERY AND CONFECTIONERY

Oven trays for bread and pastries

Problem: During the cooking, loafs of bread and other bakery products such as croissants and heart-shaped puff pasty are usually adhered to the metal of the trays and cans, and as a consequence, a lot of final products are broken trying to remove them from the surfaces, and therefore these products can not be sold. Nowadays, coatings like Teflon (PTFE) or silicones as well as bisiliconated papers are used in order to avoid faulty products regarding to adherence problems, but all of them show other type of difficulties. For example, the silicones and Teflon are easily scratched creating defects on the coating, and thus the products start to adhere to the surfaces. Moreover, the PTFE needs high temperature for its curing, and recently there is some controversy regarding to the toxicity of its use. On the other hand, the silicones are porous products and the humidity of the processes goes into the areas of the trays that are not covered with bread, and it causes adherence problems in next cycles and also in first series of the production. Finally, the bisiliconated paper is used as a sacrificial solution for confectionery sector, but it increases the cost of the final products.

Application: Tecnadis Metalcoat "Easy-To-Clean" has been applied on aluminium and stainless steel trays for cooking bread and other confectionary products such as croissants or heart-shaped puff pasty from several companies including a leading cooperative company that has an important national network of more than 600 supermarkets.

Results: The result regarding to anti-sticking properties after to apply Tecnadis Metalcoat "Easy-To-Clean" in aluminum trays that have been working at cooking temperatures between 150-170°C is excellent, according to words of this company. This result is demonstrated by its lower superficial tension (8 mN/m vs 12 mN/m in the case of the best Teflon coatings), and thanks to this, Tecnan coating is more repellent than the other solutions for aqueous and organic materials. Moreover, thanks to its compaction, the porosity level of the coating is lower than the conventional products such as silicones or PTFE, reducing the permeability of the coating and this way the frozen dough for bread and pastries are not adhered to the trays, even in first cycles of productions which are the most troublesome. Finally, thanks to the high hardness of Tecnan coating, it is not scratched, extending its durability.



Several different kinds of trays for bread and pastries after applying Tecnadis Metalcoat "Easy-To-Clean"

SWEET AND CANDY INDUSTRY

Sweet transport trays

Problem: During manufacturing and transport processes of sweets, the paste that they use with the combination of high temperatures (80-120 °C) forms a viscous mass that is usually adhered to the metallic elements of the lines and it is very difficult to take off and clean. Other usual problem in this industry happens in the area of thermal sealing of plastic bags in which in many cases the sweets get adhered at the end of the bag, leaving the sealing machine impregnated with the paste. For this reason, the machine needs to be stopped many times for cleaning, reducing the effectiveness of the line.

Application: Tecnan has applied Tecnadis Metalcoat "Easy-To-Clean" on a transport tray for sweets and on a die to cut and seal the sweet bags of one global company of candy production.

Results: Pilot applications were carried out on different areas of the production line, concretely on transport and packaging equipment, in order to prevent the adhesion of gum paste to the metallic compounds, even in areas with high temperatures (80-120 °C) or thermal sealing areas. It was tested to melt and charred completely the sweets on treated and on not-treated areas in order to value the difference. On the treated area, the charred material was cleaned with a wet cloth, whereas on the untreated area it was necessary to scratch the surface to eliminate the stuck material. Regarding to these successful results, it was seen that the difference between the treated and the not treated areas is very remarkable and new applications are being planned.

Download the video

PAINTING OF AUTOMOTIVE PARTS

Auxiliary elements for painting processes

Problem: Secondary tools and elements of painting installations as well as walls, floor and cabins, after painting processes, usually get dirty because of the spillages and splatters of the paints. These paint spillages and splatters usually adhere to the secondary tools and elements, being necessary the use of plenty of recourses to clean them, such as chemical compounds, metallic scrapers, water, detergents and too many hours of hard work. In the case of the painting cabin walls, the surfaces are usually coated with vaseline, and after this, one-use plastics are put on. However, this solution is highly expensive because the plastics should be replaced continuously and the vaseline reapplied in order to assure the fixing of the new films. Another drawback is that in the case of the tools that are in contact with automotive parts, this solution is unacceptable.

Application: Tecnadis Metalcoat "Easy-To-Clean" has been applied on auxiliary elements of painting lines such as metallic frames and painting cabin walls.

Results: With the application of Tecnadis Metalcoat "Easy-To-Clean" on the tools, elements and cleaned surfaces, the paint residues are removed only with pressure water jet, not using metallic scrapers, chemicals and abrasive products and reducing the cleaning time and workforce resources.

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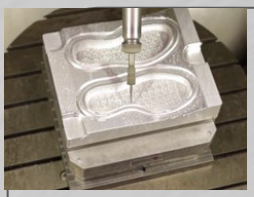


FOOTWEAR

Moulds for rubber soles

Problem: In order to facilitate the demoulding of soles made from rubber, nowadays, footwear manufacturers spray release agents in their moulds. These agents are single-use products, which need to be re-applied every time a sole is manufactured, thus decreases the productivity of the process. Other companies in the sector do not use this type of products, and a cleaning process is necessary by means of shot blasting when rubber leftovers remains in the mould. These leftovers can also appear glued on the soles, which forces to discard them because they are not valid for commercialization.

Application: Tecnadis Metalcoat "Easy-To-Clean" has been applied in rubber sole moulds in a company dedicated to the manufacture of vulcanized footwear for more than 50 years.

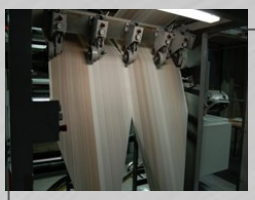
Results: The application of Tecnadis Metalcoat "Easy to Clean" in the moulds used for the manufacture of rubber soles, has allowed to double its productivity without having to make stops for cleaning compared to moulds without treatment. Today, after 6 months in operation and more than 8,000 manufacturing cycles, the treated moulds are free of burned rubber remains on the surface, while the untreated moulds presented rubber remains at 500 cycles and after 4,000 production cycles it was necessary to carry out a cleaning process by shot blasting in order to maintain the quality of the manufactured soles. The treated molds are still installed on the production line manufacturing vulcanized rubber soles.

Non-treated mould

Treated mould

Reference customer: CALZACOMODO

PAPER AND CARDBOARD SECTOR



GLUING LINES FOR CARDBOARD

Gluing rollers

Problem: In paper and cardboard industry, glues are normally used to apply on the final products and they are often impregned and adhered to the metallic compounds of the lines as a clear example in glue roller lines. These rollers have small cells that are filled with glue to use later to coat the paper or cardboard. With the use of the rollers, some of the glue is gelling in the metal, reducing cell volume and therefore applying less adhesive material to the cardboard. For this reason, these lines are often stopped for cleaning and maintenance processes. Moreover, this task is laborious since the cleaning of the cells needs to be meticulous due to its complex morphology surface, not being possible to use scrapers for it. On the other hand, taking into account that the cardboard is highly abrasive, the anti-sticking conventional coatings like Teflon can not be used because they detach quickly leaving the surface bare again.

Application: Tecnadis Metalcoat "Easy-To-Clean" has been applied onto stainless steel anilox rollers with 2,56 m length and 30 cm of diameter of one of the leading companies in the sector of gluing and corrugated rollers production.

Results: Applying Tecnadis Metalcoat “Easy-To-Clean” on the gluing rollers, the amount of the gelatinized glue was lower than before thanks to the reduction of the contact surface between the material and the metal. Regarding to this, the operative time of the roller between cleanings was lengthened, and in addition, the cleaning of the rollers was simplified considerably being possible to eliminate the rest of the glue with pressure water without carrying out a meticulous cleaning. These rollers had been operating in this paper and cardboard company more than one and a half year, with a highly satisfactory performance in terms of easy to clean properties.

Reference customer: TIRUÑA

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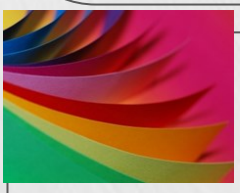

PAPER AND CARDBOARD PRINTING MACHINES

Printing units

Problem: Printing machines for paper industry use inks in their processes that usually get adhered to the machine walls, return trays and pipe bends. The ink is extremely difficult to eliminate being necessary to use a complicated and arduous cleaning system. The conventional solution for this problem is to coat all the metallic elements of the line with grease, vaseline or waxes to reduce the adhesion of the inks. In any case, the machine has to be frequently dismantled for cleaning the inks which mixed with the protective grease create like a coloured paste that is very difficult to eliminate. For this process, firstly metallic scrapers are used to remove most of the paste and, later water, soap and high hardness solvents are used to eliminate the rest of the inks. This cleaning system usually generates damages and scratches on the surfaces of the machines, making next cleaning cycles even more difficult in addition to the risks that the hard solvents imply to the employees, the high consumption of resources and large stops that the maintenance activities need.

Application: Tecnadis Metalcoat "Easy-To-Clean" has been applied on CASEMAKER printing units, EMBA 245 model, from a paper and cardboard company, CARTONAJES SANTORROMÁN.

Results: A first application test was made on one of their printing machines in order to protect its critic parts such as trays and bends against ink and other contaminants excesses of the process. After 9 months, thanks to the anti-sticking property of this innovative and highly durable solution, Tecnadis Metalcoat "Easy-To-Clean", it is possible to clean easily the surfaces with pressure water, a cloth or with a sponge, because the ink is not adhered to the metallic elements and therefore their cleaning is easier than before. Concretely, 25 minutes are reduced to clean one printing unit which means a reduction of 75% of the time that it took them before to carry out the same task. On the other hand, due to its high resistance to different solvents and chemical products, against corrosion, scratches and impacts, the durability of the coating is high and its reapplication is not required after each use. As a consequence, during the first 9 months after the application of the product, it was verified that the coating keeps its properties avoiding completely the use of products like grease, waxes and vaselines from which about 1,5 - 2 kg per printing unit and week were used previously, with its corresponding economic saving. As conclusion, it is worth to underline that the use of Tecnadis Metalcoat "Easy-To-Clean" involves a high economic saving because it assures that the coating works at least 9 months since its application with similar properties as the first day, with only one application and making easier the cleaning processes of the printing units as well as reducing the required resources in terms of staff and cleaning materials.

Moreover, according to the production manager of the company this problem was already solved with commercial greases and vaselines, but this cleaning work was awful and difficult for the staff that had to deal with it, although they were reluctantly willing to do it. After the application of the new solution, they devote one quarter of time that they used to for cleaning the machines, the process is easier and the surface is cleaner. Thanks to the successful results of the application of Tecnadis Metalcoat "Easy-To-Clean", CARTONAJES SANTORROMAN and TECNAN have reached an agreement to coat the rest of the printing machines of this company.

***LEFT**: Dismantled metallic bends ready to clean them.*
***RIGHT**: Bend treated with Tecnadis Metalcoat, painting easy cleaning.*

Reference customer: Cartonajes Santorromán
Download the video

BOOK BINDING MACHINERY

Gluing equipment

Problem: In the graphic arts industry, concretly in the areas of post-printing and binding, adhesives are commonly used at different stages of the process, for instance gluing the endpaper, back cover and cover, among others. After each production stop, the glue application equipment is impregnated with adhesive remains which must be removed before drying to avoid any negative interference with the quality of the gluing in subsequent productions, and to prevent the formation of layers of glue that would leave the application equipment unusable. Today, adhered glue remains are removed by manual methods, using aggressive tools such as spatulas or cutters, and cleaning is a tough job for employees.

Application: Tecnadis Metalcoat "Easy-To-Clean" has been applied on a cold glue roller applicator in an important rotary press company specialized in printing and binding books in large series, being a reference in the manufacture of some of the most important Best Sellers on the market.

Results: After the application of Tecnadis Metalcoat "Easy to clean" coating, the company has noticed a greater fluidity of the glue during the pouring of the glue applicator, leaving a smaller amount of glue to get removed in the cleaning process and also a smaller amount adhered to the walls of the equipment. All of this has allowed a 50% reduction in cleaning time, going from 20 minutes that used to take previously to 10 minutes. They have also eliminated the use of spatulas, as they only use a cloth to remove the glue residues.

Reference customer: Rotativas de Estella

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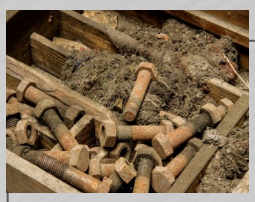


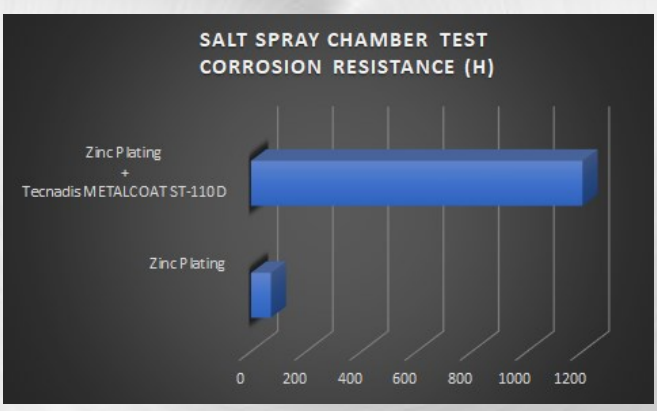
ANTI-CORROSIVE COATINGS

Fastening Elements

Problem: The application of coatings for corrosion protection of fastening elements is a widespread technique, which confers different degrees of protection depending on the type of treatment applied. Among the most common coatings are zinc plating which, although it offers low protection against corrosion, is one of the most commonly used for steel screws due to its versatility and price, since it admits subsequent treatments such as organic/inorganic sealants when it is necessary to increase its protection against corrosion.

Application: Tecnadis METALCOAT ST-110D has been applied in zinc-plated screws of a national reference company dedicated to coat the surface of any type of parts using various treatments.

Results: Tecnadis METALCOAT ST-110D has been applied to screws with zinc plating treatment in order to increase their corrosion resistance and they have been tested in a salt spray chamber at the facilities of this treatment company. The test result has shown that the combination of the zinc plating treatment with Tecnadis METALCOAT ST-110D has a corrosion resistance of more than 1,200h, as opposed to the 72h resistance of the zinc plating treatment.



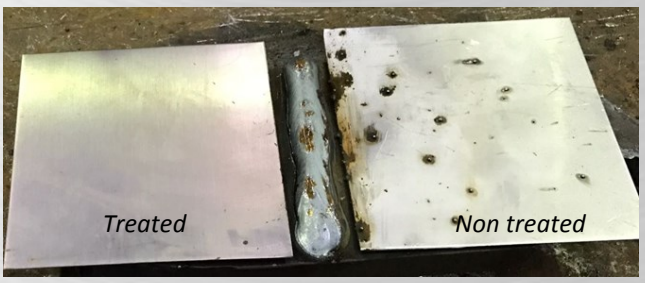
WELDING

Welding projections

Problem: When welding works are carried out in the manufacture and/or maintenance of metal parts and equipments, the projections generated when welding are stuck to the surface of the metal, in the tools for positioning the parts or even in the nozzles of the welding equipment, being necessary to use tools like scrapers, screwdrivers or spatulas for their elimination. Nowadays, there is a great variety of products on the market, such as silicone-based, water-based, oil-based or ceramic products, some of which present a series of drawbacks that sometimes make them useless for certain sectors. This is the case, for example, of silicone-based products, because they are incompatible with surface treatments such as painting and are highly contaminating, being this reason why in the automobile sector is prohibited the use of any product containing silicon components, and neither they are recommended for their use in welding equipment torches due to the amount of smoke they generate. Water-based products can cause bubbling during welding, affecting the quality of the weld, as pores are created. The oil-based ones avoid the adhesion of the projections thanks to a lubricating effect of the surface, and in a similar manner to the silicone-based products, they are incompatible with the paints, being necessary to eliminate the remains completely before painting. Finally, reggarding ceramic products, it has to be remarked that they are mainly intended for the protection of torches, holders or moulds, among others, not being advisable to use on the pieces because of the white layer they create on the surface.

Application: Tecnadis Metalcoat "Easy-To-Clean" has been applied on AISI 304 stainless steel sheets that after the treatment have been exposed to semi-automatic welding projections.

Results: In order to prove the performance of Tecnadis Metalcoat “Easy-To-Clean” in the welding sector, a test was made in a company specialising in the maintenance of petrochemical industry. This test consisted in placing two stainless steel sheets, one treated with the coating and the other one not treated, welding between them a cord using a semi-automatic welding equipment. After the test, it was checked that the use of the coating does not interfere the process or the final result of the welding. It facilitates the cleaning of the projections generated when welding, being able to remove all the remains out of the treated surface just with a damp cloth, without leaving residues that may affect subsequent protective treatments. In addition, it does not generate gases or additional harmful fumes during the process. In the words of the professional who carried out the tests, who has been engaged in soldering for decades,"I have never seen anything like it”.



Stainless steel sheets after welding process

Download the video

Tecnadis METALCOAT

Find out more about the product on:

www.metalcoat-by-tecnan.com

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