SLF Oberflächentechnik

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Strahlen – Lackieren – Fördern – Innovative solutions

Issue 4 · 2014

Dear Readers,

An old proverb says "A rolling stone gathers no moss". We interpret this philosophy of life as a demand to constantly stay in motion thus creating a positive influence on your strength and power of endurance. In this sense motion is an essential part of a successful life.

Transferring to the world of business this idea leads to the conclusion that in the long run only those companies that constantly keep moving are able to stand their ground in a competitive market. Our innovative and enhanced products, adapted to environmental requirements and customer needs, enable us to gain access to new markets.

The spirit of mobility in a company diffuses to all employees, feeds their motivation and inspires them to create innovation and technical progress.

With this in mind during the last almost 25 years we have continued to expand our range of products and orientated ourselves to the requirements of our customers. Thus we have introduced a wide range of innovative products to the market.

One of our most recent developments is the production of a blasting robot series called "ReCo-Blaster®". Now with a teach-in-mode it additionally offers offline programmability and thus has an even higher potential for economic efficiency. Furthermore, among experts in the enamelling and drying sector "DARC®" technology developed by us is considered revolutionary.

In order to continue this process and to provide for extra space, which at our present headquarters in Greven-Reckenfeld, offer no further expansion possibilities, we have decided to move to the neighbouring town of Emsdetten.

Our new factory in Emsdetten

The first stage of construction – erection of a production hall – will be completed before the end of this year. For the next step, after the construction of an office building, the relocation of our company headquarters will be accomplished.

Our new residence will give us the opportunity to even better commit ourselves to customer's needs.

Sincerely yours

Fritz Gaidies *Michael Bahlinghorst*

SLF expands its position in the rail vehicle sector

For the first time in Europe rail vehicles are painted with the help of paint spraying robots.

Rail vehicle sector goes in for SLF". This was one of the headlines in the last issue of our company newsletter (issue 3/2012). The last two years, in which we had a chance to further expand in this market, have shown us how right we were in claiming this.

Biggest order in the company's history

The facilities for a large-scale project of a new surface treatment centre for company Siemens in Vienna, which we mentioned in our last issue, have already been put into operation in April 2013. In Austria's capital, Siemens has established its worldwide production of metro trains, trams, railway carriages and electric buses. An important part of this factory is the surface treatment centre, in which a whole range of works on steel or aluminium vehicle parts is performed, i. e. blasting, filling, grinding, paint spraying and drying.

High quality in production, ergonomics, flexibility

In an area of about 8,000 m² the newly built production centre accommodates five preparation booths, three filling booths, two automatic coating booths with robots, two manual paint spraying booths, five drying booths and one blastroom for working on the vehicles. With their size ranging between 30.5 x 5.0 x 6.0 m (drying) and 32.5 x 7.5 x 8.3 (blasting) these booths are optimally dimensioned. In addition, all manual workstations are equipped with lifting platforms, which allow for ergonomic and safe working on all parts of the vehicle body. Along with the use of the familiar SLF horizontal scissor-type lifting platforms we developed new lifting platforms especially for this project. They can move 28.6 m in length, have a vertical stroke of 4 m and can be extended by 0.5 m towards the work piece, therefore enabling the operators to easily reach all parts of the vehicles to be treated (27.0 x 3.5 x 5.0 m) and to work comfortably and safely.

Up to four workers at the same time can treat railcar bodies made of steel and aluminium.

First robotized coating unit for rail vehicles in Europe

The manual and automatic paint spraying booths are equipped with a sectional ventilation system, which means that the supply and exhaust air flow is only working in the area where paint spraying works are being performed. This system can be automatically controlled by means of a detection system. Thus, approximately 70 % energy saving can be achieved. Furthermore, all paint spraying units have been especially designed for the particular climate requirements that prevail when water-based paints are used. Notably it's the combination of high-quality, innovative booth technology, a cleverly devised conveying system and the ability to paint rail vehicles using robots, which is unique in Europe, that lets Siemens in Simmering, Vienna hold a leading edge in technology.

New paint spraying units for coating trams

For another project, also in Austria, we have delivered a 42 m long, 6 m wide and 5.3 m high combined paint spraying and drying booth as well as two scissor-type lifting platforms and a 7 m long, 5 m wide and 5 m high paint spraying unit for small work pieces to company "Wiener Linien GmbH & Co. KG". Since commissioning, the paint spraying unit has been used to coat very different vehicles (trams and buses) which are up to 37 m long. Therefore, the booth has been equipped with an automatic personnel detection system, which senses the operators' motions. Again the sectional principle of operation ensures a high level of energy saving.

With the help of our lifting platforms workers can comfortably and safely paint railcar bodies.

Workers can conveniently paint the vehicles from the ground as well as from the

side-wall guided lifting platforms. With their maximum load capacity of 250 kg each, both lifting platforms provide for sufficient capacity for the supply of paint directly on the platform. Thanks to our two-stage paint mist separation system with impact separators, maintenance costs can also be significantly reduced.

In a separate paint spraying unit for small work pieces, these parts can be painted independently of the paint spraying unit for whole vehicles. The booth is also provided with sectional ventilation and its area of 7.0 x 5.0 m is divided into two sections which can be manually selected. In this case, however, the ventilation system has been constructed in a way that allows for ventilation of the whole paint spraying area, if this is necessary.

The heating system for both units is supplied by a heat transfer relay station for remote heating. It provides for the conditioning during paint spraying and for a circulating air temperature of up to 60 °C during drying.

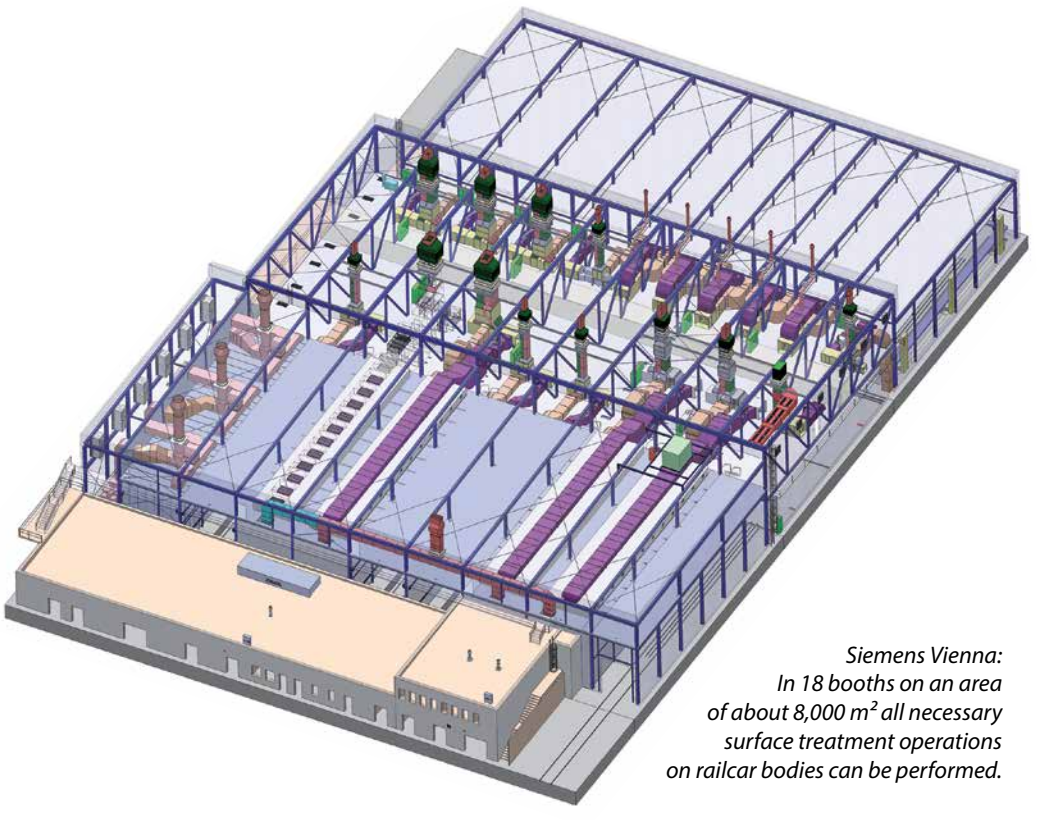
The elaborate concept for the system is completed by frequency-controlled fan motors, an intuitive user interface via touch panel, a fire alarm system and a remote maintenance for our technicians.

New SLF units for two facilities of Deutsche Bahn

Within the last two years Deutsche Bahn (German Railways), which has been our customer for many years now and is already operating different plants in several of its facilities in Germany, has also placed two new orders with SLF. At their factory in Krefeld we have as a general contractor installed a complete coating line with seven treatment stations in a row and several lifting platforms for the preparation, coating and post-processing of rail vehicles. Thanks to the implementation of the innovative SLF technique in the listed historic buildings, German Railways is now well prepared for the future.

For the Dessau factory of Deutsche Bahn Fahrzeuginstandhaltungs GmbH we have delivered a large combined paint spraying and drying booth for coating and drying of rail vehicles as well as a paint spraying unit for small work pieces, in which rail vehicles components can be treated.

Tramcar in a combined paint spraying and drying booth before paint spraying.



Siemens Vienna: In 18 booths on an area of about 8,000 m² all necessary surface treatment operations on railcar bodies can be performed.

Rail business is also expanding abroad

Within the last few years we have altogether delivered 7 blastrooms for the treatment of railcar bodies to the Chinese State Railway Corporation (CNR). The booths are almost identically constructed and are approximately 32 x 6.5 x 7 m. All blastrooms are additionally equipped with wear-protected lifting platforms, which make sure that the railcar bodies can be easily reached. All projects have been carried out in cooperation with our representative SLF Blasting and Painting Technology in China, which has, to a large extent, been responsible for parts to be purchased or produced locally as well as for the installation work and commissioning.

We are also increasingly noted as one of the leading providers of innovative, flexible and easy to maintain machine technique for the surface treatment of rail vehicles and their components in other European markets and all over the world. This can be seen in the growing number of enquiries for major rail vehicle projects in Brazil, India, Russia, South Africa and other countries, received during the last few months.

Over the past years we have successfully delivered more than 40 projects for happy customers working in the rail vehicle industry.

Quality increase in powder coating and simultaneous considerable reduction of curing times

View of the DARC®-type demonstration furnace developed and operated by us.

Our DARC® technology has already been introduced in our last company newspaper, however, at that time it was presented as a new method in order to speed-up enamel powder coatings with much higher quality.

DARC® technology is not only suitable for powder coating

Since then we have not been idle: Originally it was developed in a small-scale test furnace in our factory in Greven. Meanwhile it has advanced to a practical process. In a considerably enlarged and structurally improved DARC®-type oven, we have the opportunity to introduce customers and prospects to the advantages of the method during extensive tests on real work pieces. These advantages no longer exclusively refer to enamelling or curing of powder coatings – but also cataphoretic paints and wet paints as well as drying standing water. All can be quicker enamelled or dried with a higher quality compared with conventional methods. Furthermore, it is possible to use a DARC®-type furnace for tempering work pieces or as booster (connected upstream of an existing furnace). Depending on the application several programs can be developed and selected.

Fields of application

- Enamelling of powder coatings
- Enamelling of cataphoretic paints
- Drying of water-based paints
- Drying of standing water
- Tempering
- Booster in front of existing systems in order to increase the throughput

Advantages of DARC® technology

- Higher energy transmission compared with circulating air
- Considerably reduced heating up times of work pieces
- Space-savings due to elimination of large holding areas
- Lower energy losses compared with circulating air ovens
- Considerably reduced amount of defective products
- Positive influence on the colour fastness of the coating
- Simultaneous drying or enamelling of different colours

Steelwind: Blast cleaning and painting giants

For their newly established production of offshore base structures we provided Steelwind Nordenham GmbH, a subsidiary company of AG der Dillinger Hüttenwerke, with two sets of equipment for XXL-dimensioned blasting and paint spraying booths each as well as with other machines such as zinc spraying equipment for one of the blastrooms and two suction units for abrasive.

In their positions the monopiles produced in Nordenham can have a diameter of up to 10 m as well as a total length of up to 100 m and they weigh 1,500 t. The length of single components may be as much as 30 m. The so-called transition pieces between the monopile and the wind turbine itself have diameters up to 7 m, are up to 30 m long and weigh as much as 300 t.

In order to cope with the huge work piece dimensions we have planned, delivered and installed systems of similar sizes. The dimensions of all four blasting and paint spraying halls, which have been erected by the customer and in which our technology has been integrated, are 38.2 m in length, 16.4 m in width and 15.3 m in height.

On a rail-mounted dolly, work sections are conveyed from the neighbouring production area into the blastroom, the air supply system of which is able to heat the inlet air by means of a gas burner. Then, up to four operators can manually treat the work pieces using blasting equipment. The abrasive is supplied from a 20,000 litre media silo. Having a suction power of 80,000 m^3/h the filter units are also generously dimensioned. By means of auxiliary devices on an area of 16 x 1.2 m the used abrasive can be pushed through gratings, having a bearing load of 5 tonne, on to a conveyor belt running underneath. From there the abrasive is transported via the bucket elevator to an abrasive reclamation system, which is equipped with a round screen drum separator for sieving out coarse particles and a cascade wind sifting unit for collecting fine dust. Afterwards, the abrasive is conveyed back into the silo.

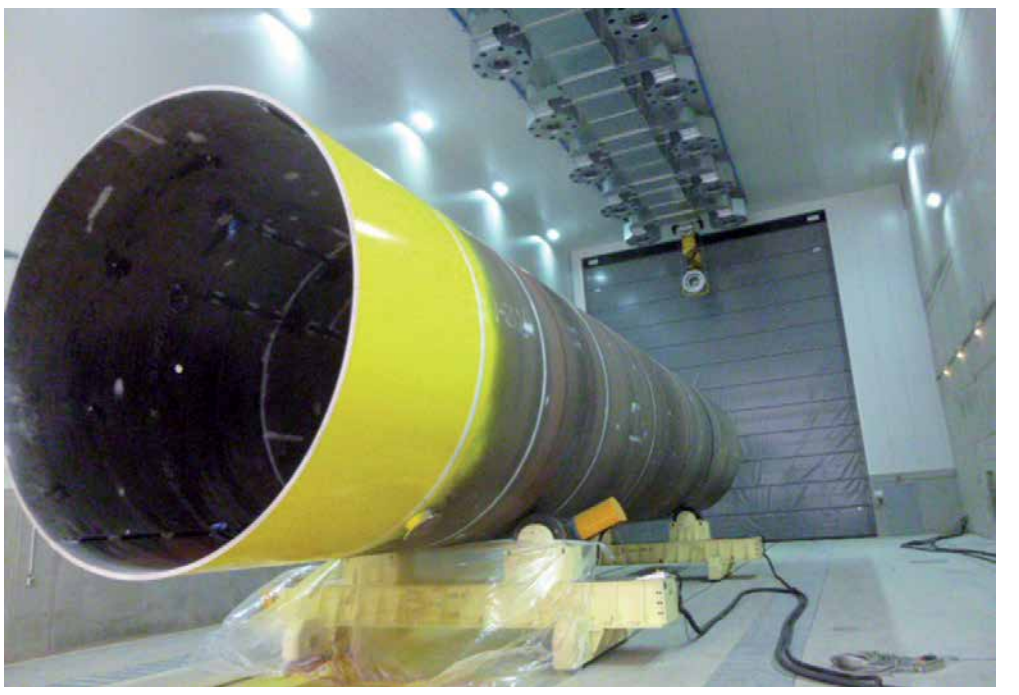
Abrasive reclamation using a suction unit

Due to the enormous dimensions of the blastrooms, abrasive recovery over the whole area in this case was not an economically reasonable solution. This is why both blastrooms have an abrasive suction unit with 75 kW drive capacity each. The used abrasive can be extracted from the blastroom with the help of two suction hoses, which are connected to a cyclone separator that conveys the reusable abrasive to the bucket elevator and afterwards back into the silo.

In one of the blastrooms it is also possible to carry out metal improvement of work pieces. For this purpose we delivered the complete technical equipment, consisting of a movable suction unit, a displaceable nozzle for the internal ventilation, a downstream filter unit and a CO_2 extinguishing system.

After blasting and zinc spraying the work pieces are painted in both open-space paint spraying units, which are also fed by a rail-bound conveying system. The units both have an inlet and exhaust air volume of 100,000 m^3/h and a floor-fitted extraction system in three lines.

Together with the downstream paint mist separation cassette system, the impact separators located in the floor channels achieve a separation degree of 98 %. As it is the case in many of our systems the sectional circuit of the supply and exhaust air devices is carried out by an optical personnel detection system working with cameras, which allows for a selective ventilation of the working area and at the same time provides for enormous amount of energy saving. The energy balance is further enhanced by the heat recovery systems (plate heat exchanger type).



A monopile designated for an offshore wind power plant is painted in a booth with long-range nozzles.

Upside-down world at Enercon "The paint spraying booth comes to the work piece!"

Enercon, a long standing customer, has entrusted us with the delivery of a combined paint spraying and drying booth for the coating of rotors and stators for wind power plants with diameters of more than 5 m.

In this case a multitude of special requirements had to be fulfilled which considerably distinguish the paint spraying system from a standard product. Primarily the system should be able to be dismantled at the current place of installation at any time and reassembled at a different location without significant effort. Therefore, the complete system had to be designed without foundations. The system is loaded with work pieces by using a crane – a rail-mounted dolly or other alternatives are not used. Furthermore, Enercon required the concept to be as energy-saving as possible.

Depending on the requirement, the combined paint spraying and drying booth delivered by us is used in order to clean, fill, grind and mask the work pieces before they are painted and forced dried. Afterwards, de-masking is carried out in the booth.

The requirements have been met by us to Enercon's entire satisfaction and within the shortest time. The installed system can be described as follows:

After the coating process the work pieces remain in the same place and the booth moves to a new working position.

A moveable booth with a length of 9.5 m, width of 9.5 m and height of 5.5 m has been designed and delivered. Over a distance of ten metres each booth can independently dock at three different stations of the supply air and exhaust air system. The total travel distance amounts to 20 m providing three working positions. The booth is equipped with two roll-up doors with clear opening dimensions of 8.5 m in width and 5.5 m in height. These roll-up doors are opened when the booth is travelling over the stationary work piece and are closed afterwards.

The booth is provided with our system for sectional ventilation allowing the air volumes required for the paint spraying process to be limited from 100,000 m^3/h to only 50,000 m^3/h. The result is an energy-saving of 50 %. The supply air is blown into the booth by means of a complete supply air ceiling whereas the exhaust air is sucked out of the booth via a side wall extraction system. During the drying process inside the booth a circulating air temperature of 80 °C is reached.

This system has also been equipped with our paint mist separation system with impact separators and downstream filter cassettes ensuring a long service life of the filter cassettes as well as quick and simple maintenance.

For the additional energy saving a heat recovery system and a gas surface burner have been installed.

+ + + + SLF delivers lifting platforms to Dürr + + + + + + + +

At the end of 2012 Dürr Systems GmbH entrusted us with the delivery of 14 lifting platforms with extensive special equipment.

+ + Active participation in first DARC® workshop + + + + +

In May the first one-day workshop for the DARC® technology took place in our factory in Greven. Customers and potential users as well as the specialized press were invited. Due to the positive response another workshop is planned for autumn 2014.

+ + + ReCo-Blaster® at the Hanover fair 2013 + + + + + + + +

At our exhibition stand at the Hanover fair we exhibited the ReCo-Blaster® in its original size. Many visitors to the fair were very interested in the exhibit.

+ + Agency meeting of SLF and AGTOS +

In November 2013 another meeting of SLF and AGTOS had been arranged for their distribution partners. Approx. 30 partners representing both companies in Germany and the rest of Europe responded to our call. This led to an active exchange of new products and further product developments as well as the expansion of the factories in Emsdetten (SLF) and Konin, Poland (AGTOS).

+ + SLF expands its factory in Mühlau +

During the past months we have considerably increased our production capacities in our factory in Mühlau due the erection of new halls and systems. Henceforth, a production area of more than 4,500 m^2 is available to us.

Range of products

Airblast and pre-treatment systems

- Blastrooms
- Blasting robot ReCo-Blaster®
- Blast cabinets with direct pressure systems / Automatic blasting machines
- (Telescopic) High-pressure cleaning cabins

Paint spraying systems

- Open-space paint spraying systems
- (Telescopic) Paint spraying cabins
- (Telescopic) Dryers
- Powder coating systems

Conveyor technique

- Lifting platforms
- Hanger-type conveyor systems
- Roller conveyor systems
- Rail cars

Service & Spare Parts

IMPRINT

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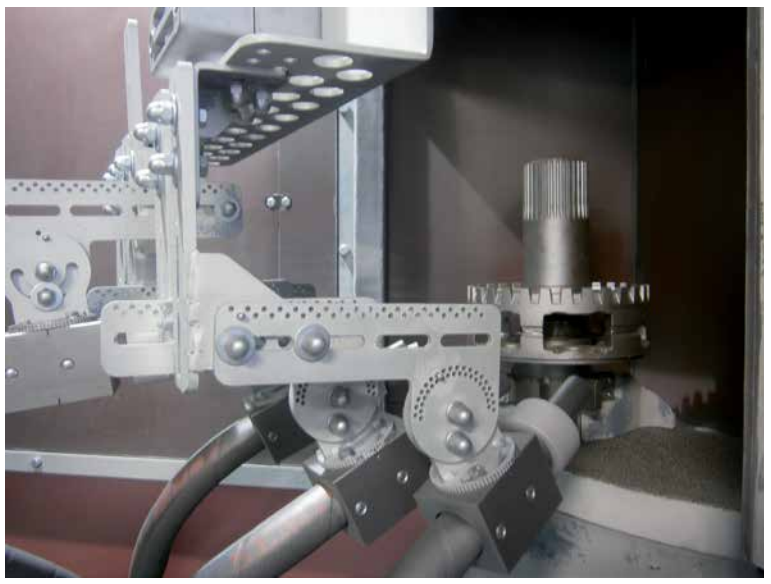
Two identical shot peening units for an automobile manufacturer

During the last few months we have delivered and commissioned two fully automated identical systems for surface hardening of planetary gear carriers to the Mercedes-Benz factory in Rastatt. Both units basically consist of a blast cabinet 1.75 x 1.75 x 2.00 m in size, incorporating an indexing table with six satellites, a five-nozzle direct pressure blast system with integrated blow-off function, media transport system and a media reclamation system, another separate blower, a special water-wash-type filter unit as well as feeding and removal of work pieces by means of a robot.



Work pieces are treated by five blast nozzles in strict compliance with several blasting parameters.

Automatic control of blasting parameters

A handling robot puts the work pieces to be blasted on the single component holders and provides them with the individual covers. Before that both the work piece and its cover are exactly positioned using photoelectric guards. After placement of the work piece, the indexing table moves into the blasting zone and the gates on the cabinet front close automatically. Then shot peening with five nozzles and a vertical nozzle oscillation starts. The upper part of the planetary carrier is blasted using cut wire shot, strictly adhering to blasting parameters like blast pressure and media flow volume, which are tightly controlled.

At the end of the blasting the process stops and the work pieces are first subjected to cleaning within the cabinet housing, where they are blown off. In the next cycle of the indexing table more work pieces are treated the same way until the work piece that has been blasted in the first place leaves the cycle through the second gate. Afterwards, the handling robot removes the cover and then the work piece itself from the load/unloading area of the system. The work piece is then conveyed to the separate blower where it is finally cleaned.

Along with the usual components like a bucket elevator and wind sifting unit the media transport system and reclamation system consists of a grader and a tumbler screening machine. In the screening machine the under- and oversized particles are filtered out of the process, while the grader separates abrasive out of specification.

SLF supplies large Brazilian steelwork company Codeme

Codeme Engenharia S/A in Brazil, a large steel company with a yearly output of about 24,000 tonnes, has been supplied by us with a blastroom and three open-space paint spraying areas completed by a movable telescopic dryer. This is one of several orders which we received from the South American steel industry.

The dimensions of the blastroom are 20 x 6 x 4 m (L x W x H). The three open-space paint spraying areas, each having a size of 18 x 6 m, are arranged in line behind the blastroom. Having been blasted the work pieces can be painted in one of the three painting areas while the movable telescopic dryer carries out forced drying on one of the other painting areas. Work pieces are transported by a rail-mounted dolly positioned on the floor or with the help of a hall crane. Special features of the blastroom are, for example, the collection and recirculation of the used abrasive over the whole area and the recirculating air conduction. All paint spraying areas are provided with heat recovery systems.

Due to the long range nozzles there is no need to have an enclosure of the paint spraying area within the building.

News from our sister company: AGTOS® erects new preservation line

AGTOS roller conveyor blast machine with downstream paint spraying system and dryer.

Recently, AGTOS has commissioned the first preservation line that has been erected on customer's behalf. Due to this system plates and profiles can directly be primed after the blasting process, thus being protected against weather conditions. The line is offered in different sizes and can be delivered including the required transport process if desired. Customers benefit from the fully developed and economical blasting technique of AGTOS roller conveyor blast machines. By means of sensors the position and the height of work pieces are sensed such that the paint spraying process – with airless high-pressure nozzles – is automatically adapted to the work piece geometry. A downstream dryer provides for quick final processing of the work pieces.

You are welcome to visit our website www.slf.eu

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