KFSMETAL

Hot Dip Galvanizing Plants

Pipe Galvanizing Plants

You can have the following advantages with the high-tech Hot Dip Galvanizing Plant to be produced for you;

.Low labor cost and high production efficiency with an automatic surface preparation and pipe extraction.

.Efficient and easy-to-use facility with the "**Induction Pre-Heating and Drying System**" developed by KFS Metal.

.Obtaining a homogeneous and as thin as possible zinc coating layer on the inner surface of the pipes.

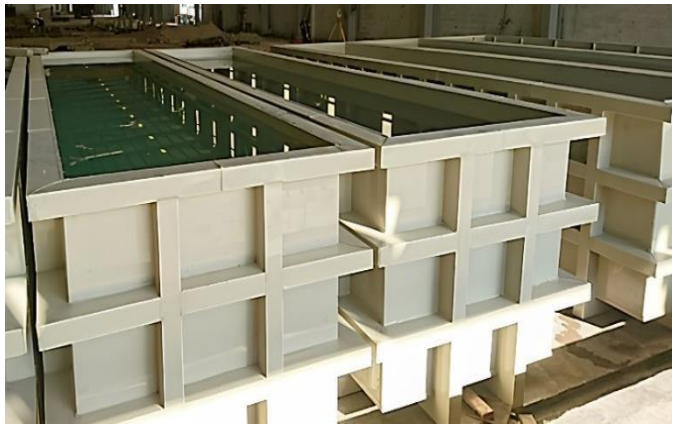
.The "**Zinc Consumption Control System**" developed by KFS Metal allows for the continuous measurement of zinc quantity on the surface of pipes during the process.

.Significant energy savings with high-speed gas-fired burners and ceramic fiber insulation.

Technical Features

Working Style: Fully Automatic
Production Capacity: 35.000 to 50.000 tons per year
Dimensional Range: 1/2" to 6"
Pipe Length: 5,0 to 7,5 m
Fuel Type: NaturalGas/LPG
Quality Standards: EN 10255, DIN 2440, BS 1883, ASTM-A, ISO 65 M, UL6 ANSI C80.1

Pipe Galvanizing Plants



Chemical Treatment Unit

Chemical treatment unit operates automatically with computer control and has easy maintenance and intervention with remote access.

The system, very friendly and safe environment as all working area, is totally enclosed in tight tunnels and equipped with scrubber and filters. In addition, acid fumes from the surface of all tanks are collected, exhausted and cleaned to meet pollution standards. The system also has a waste-water neutralization unit.

Chemical treatment tanks are manufactured from a robust steel frame supported by 20 mm thick PPH plates. These acid proof tanks are equipped with bottom emptying flanges and ball valves, bottom W-shaped saddles and necessary pipe circuit.

Pipe Galvanizing Plants

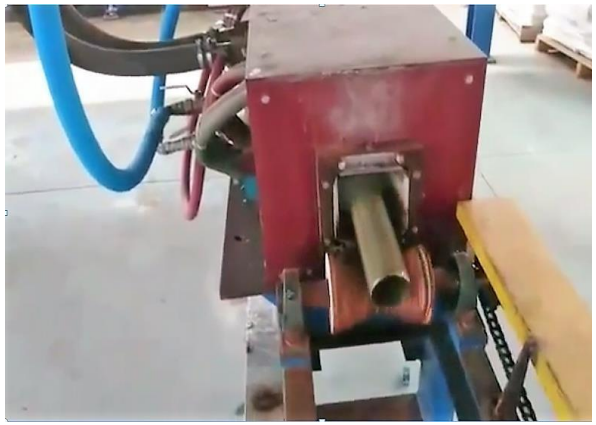
Neutralization Unit

Neutralization consists of coagulation, flocculation, sedimentation and sludge dewatering systems. The fluxing solution and the rinsing water after pickling are kept into a closed-circuit reprocessing unit where the iron [Fe] will be separated as non-hazardous iron-hydroxide [$Fe(OH)_2$] sludge to be easily disposed in any authorized solid waste dump.

Technical Features

Recycling Rate: 5 m^3/h
Chemical Oxygen Demand: COD < 100 mg/L
Total Suspended Solid: TSS < 50 mg/L
Heavy Metal: Fe < 3 mg/L , Zn < 3mg/L
Potential Hydrogen (pH): 6 - 9

Pipe Galvanizing Plants



Drying of steel pipes at a hot-dip galvanizing plant by induction heating

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In the dry galvanizing process, pipes are subjected to chemical treatment and then dried in a continuous drying furnace which is followed by the galvanizing kettle. However, drying furnaces used in a dry galvanizing process, lead to some problems. The impossibility of achieving a uniform temperature distribution along the pipe in conventional drying furnaces and the negative impacts thereof on the product quality make it inevitable to seek new approaches towards pipe drying. In this study, instead of in a drying furnace, the fluxed pipes were dried at the line by means of induction heating. By using an induction heating system, the pipes were heated up much more uniformly than by the conventional drying method. It is observed that the temperature change along the

Induction Drying & Pre-Heating Unit

Conventional drying furnaces are a system in which hot air circulates. However, it is very difficult to achieve homogeneous distribution in this type of furnaces. Temperature differences of up to 20 °C may result in some parts of the pipe surfaces not being dried due to low temperature or burnt flux due to high temperature. In both cases, there is a high risk of encountering a zinc coating defects.

To eliminate the above-mentioned problems, KFS METAL has developed the "**Induction Drying and Pre-Heating Unit**". This system is much more practical and economical than the conventional drying furnaces. In induction heating system, pipes are heated much more homogeneously (temperature variation: ± 5 °C). By using this system, the problem of black spots, which is very common in galvanizing plants, can be eliminated. Our scientific research article about the system was published in the Material Testing journal, in Germany.

Pipe Galvanizing Plants

Galvanizing Furnace	The walls of the combustion chamber are covered with thick ceramic fiber insulated materials resistant to temperatures of 1400°C. Spring support legs are available to limit the swelling of the zinc kettle. Also, some additional protective plates are placed on the zinc pot corners to prevent local overheating.
Zinc Kettle	. Dimension: 8,0 x 1,60 x 2,70 m; thickness: 50 mm for 9,0 t/h 8,0 x 1,30 x 1,60 m; thickness: 50 mm for 6,0 t/h . Automatically electro-slag welded, ultrasonic tested . Chemical Analysis: max. C, 0.015%; Mn, 0.08% P, 0.02%, S, 0.0015%
Fire & Ignition System	. Heating Capacity: 6,0 to 9,0 t/h . Burners: 2 to 4 sets gas-fired high velocity burners & ignition. . Gas Consumption: 110 m^3/h at full load, 28 m^3/h at idle work.

Pipe Galvanizing Plants

Pipe Cleaning System

KFS Metal prefers to use air wiping with movable lancet system in pipes from 2” to 6”. You can have the following advantages by using this system:

. Obtaining homogeneous zinc coating layer on the inner surface of the pipes. Absence of zinc deposits.

. Significant savings in zinc consumption because of returning the excess zinc sprayed from the inner surface of the pipe to the molten zinc bath as metallic zinc.

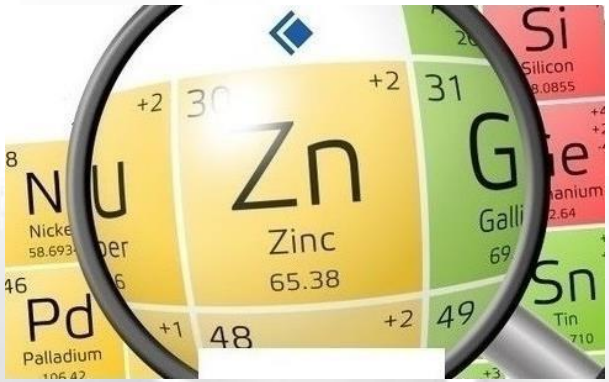
. Significant reduction in the amount of zinc dust quantity.

. A quieter and safer working environment.

Zinc Consumption Control System

The main concern of galvanizers is to keep the zinc coating thickness at the lowest level which should match the requirement of the standards. KFS Metal has made a great innovation that will enable monitoring of zinc consumption during the process.

The advantages of this system is to control zinc usage both retrospectively and instantly how much zinc is used in which size, and in which period. Also, it is possible to keep the zinc coating thickness at the lowest level allowed by the standards.



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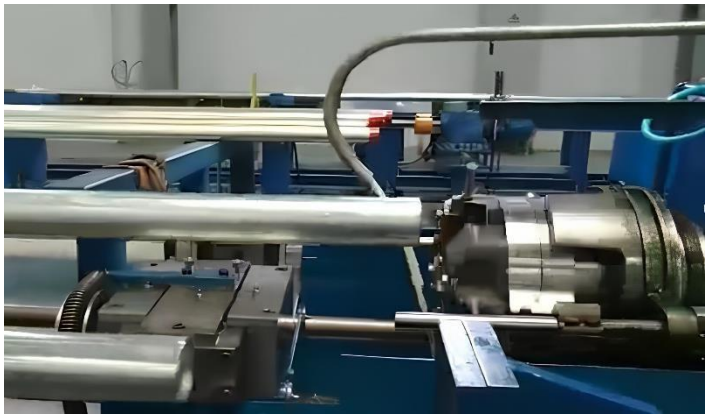
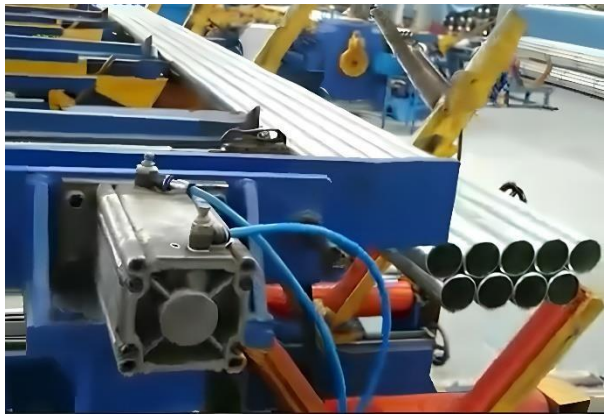


Threading Machine



Packaging Machine

Depending on customer demand, threading&coupling, automatic packaging machines are added to our hot dip galvanizing lines, which have high efficiency and quality levels.

The main concern of the steel pipe galvanizers is to keep the zinc coating thickness on the inner surface of the pipe at a minimum level which should match the requirements of the relevant standards. KFS Metal offers a comprehensive consulting program on the hot-dip galvanizing process. The main objective of our work, which is also supported by on-site applications, is to reduce zinc consumption and increase production efficiency.

Rebar Galvanizing Plants

Reinforcing steel bars is widely used in a variety of applications from bridges to reinforced buildings to enhance the tensile strength of the surrounding concrete. Because of the porous nature of concrete, corrosive elements such as water, chloride ions, oxygen, carbon dioxide and other gases travel into the concrete matrix, eventually reaching the steel reinforcing bar. As the concentration of these corrosive elements increases, steel's corrosion threshold is eventually exceeded and starts to corrode. When steel rebar corrodes, its corrosion products are 2 to 10 times more voluminous than the original steel. This increase in volume around the rebar exerts great disruptive tensile stress on the surrounding concrete. As pressure builds, the concrete will begin to crack and eventual spalling of the concrete. Zinc coating increases corrosion resistance of rebars both by increasing the threshold chloride level and by slowing the rate of corrosion. Galvanized rebars increase the service life of the concrete structure by 4 to 5 times when compared to uncoated reinforcing steels.

Rebar Galvanizing Plants

Hot-Dip Batch Galvanizing and Continuous Galvanizing are two commonly used methods today for coating reinforcing steel with zinc. However, both methods have some disadvantages. For instance, the low production tonnage in batch galvanizing causes operating costs to increase. On the other hand, the corrosion protection of coating is quite insufficient in continuous galvanizing.

To overcome these problems, KFS Metal has developed a "**Continuous Hot-Dip Rebar Galvanizing Plant**". This new system will make it possible to produce galvanized reinforcing bars that are both economic and highly corrosion-resistant.

Technical Features

Working Type: Fully Automatic
Quality Standards: ASTM A 767, EN 10348-2, ISO 14657
Nominal Diameter: 12– 50 mm (European rebar size chart) Material Length: 6,0 – 12,0 m

technical consulting

The zinc coating thickness on the pipe surface is mainly a function of the chemical composition of base metal and zinc bath, dipping time, zinc bath temperature, extraction angle, line speed, inside blowing pressure and the type of mechanism. The main concern of the steel pipe galvanizers is to keep the zinc coating thickness on the surfaces of the pipes at a lowest level which should match the requirements of the standards.

With its high knowledge and experience, KFS Metal offers a comprehensive consulting on the hot-dip pipe galvanizing process. The main objective of our program is to reduce zinc consumption while increasing production efficiency and quality.

KFSMETAL

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