



KFS METAL



KFS Metal, with its high knowledge and experience, produces production lines and machines such as steel pipe galvanizing plants, rebar galvanizing lines, induction heated process annealing furnaces, drift test stations for API 5 CT casing & tubing oil drilling pipes, powder epoxy and water-based painting lines, roll grooving lines. Our company successfully implements solution-oriented and innovative high-tech machine designs with its expert staff and leading business partners. In addition, KFS Metal provides consultancy on industrial investment management to companies operating in the steel pipe industry.

Our Mission: To contribute to the efficiency of steel pipe factories by adding our expertise and knowledge to machine design.

Our Vision: To expand our expertise to the steel pipe industry worldwide.

Our Values: We base our work on knowledge, aim for creative solutions and prioritize building trust.



KFS Metal offers the following turnkey production lines to steel pipe factories and carries out on-site installation and commissioning.

- Hot-Dip Galvanizing Plants
- Induction Heated Annealing Furnaces
- Water-Based Painting Lines
- Powder Epoxy Based Painting Lines
- Automatic Lines for Roll Grooving
- Drift Test Machinery for OCTG Casing&Tubing
- ERW Welding Equipment & Tools

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 facility that includes surface preparation and pipe extraction from the zinc bath.
- . 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 pipe by using a specially designed lancet wiping system.
- . KFS Metal has implemented a system that allows live monitoring of zinc consumption during the process. With the use of the "**Zinc Consumption Tracking System**", it has become now possible for galvanizers to know zinc consumption during the production phase.

Technical Features

Standards: EN 10255, DIN 2440, ASTM-A, ISO65, BS1387
UL 6 ANSI C80.1,

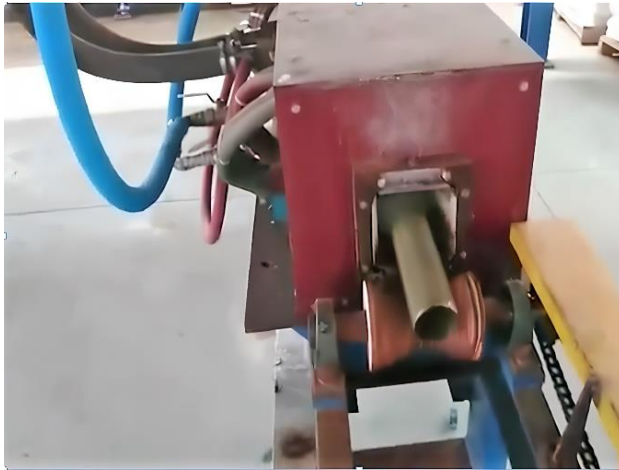
Working Style: Fully Automatic

Production Capacity: 6,0 – 9,0 tons per hour

Dimensional Range: 1/2" to 8"

Pipe Length: 4,0 to 7,5 m

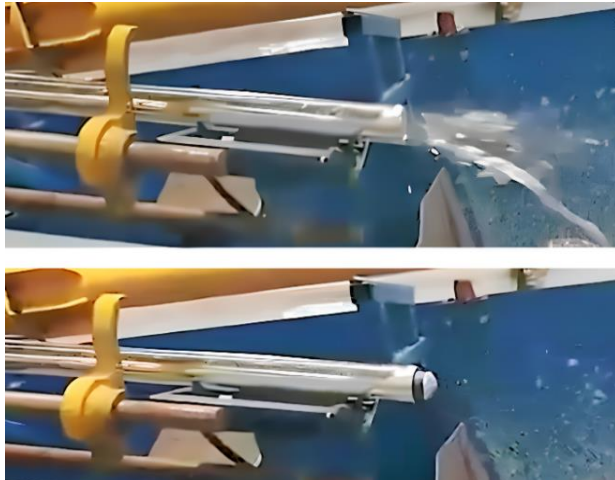




Induction Pre-Heating & Drying Unit

In conventional drying furnace, it is difficult in these type furnaces to get a uniform temperature distribution along the pipe surface. Practical applications demonstrate the temperature differences up to 15 to 20°C along the pipe length. Such temperature differences either lead to some under-dried parts of the pipe due to low temperature, or to a burned flux layer due to high temperature. In both cases, a zinc coating defect called black spot occurs. To eliminate the problems mentioned, KFS Metal has developed an easy-to-use induction drying system. The advantages of this system, whose article was published in the SCI-indexed Material Testing journal in Germany, are as follows;

- . The pipes were heated up much more uniformly than the conventional drying cabinet system. Temperature change along the length of the tube varied within $\pm 5^{\circ}\text{C}$.
- . The problem of black spots that comes from insufficient pre-heating was eliminated by allowing the pipes to enter the zinc bath after having been fully dried.



Inside Blowing System

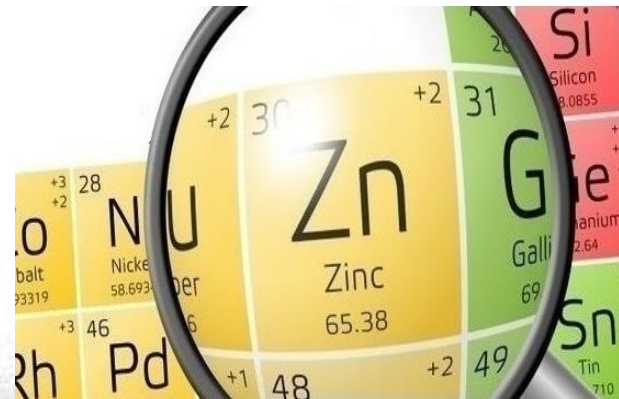
KFS Metal prefers to use air wiping with movable lance system in pipes from 2" to 8". You can have the following advantages by using this system:

- . Obtaining a very homogeneous coating thickness on the inner surface and absence of zinc deposits,
- . A huge saving in zinc consumption due to returning the excess zinc comes from the inner surface of the pipe to the zinc bath as metallic zinc,
- . Absence of noise and steam fumes in the working area. Elimination of risky situation created by excessive humidity in dust collection units.

Zinc Consumption Tracking System

KFS Metal has made a great innovation that will enable monitoring of zinc usage on surface of the pipes during the galvanizing process. By using this system, you can have many advantages as given below.

Keeping zinc consumption at the min. level by continuously measuring the zinc coating thickness during the process. Controlling zinc consumption instantly and retrospectively by monitoring how much zinc was used in which size, in which order and in which period.





Today, Batch Hot-Dip Galvanizing (HDG) and Continuous Galvanizing (CGR) are different methods used for zinc coating of rebars. However, the low efficiency in batch galvanizing causes an increase in product cost. On the other hand, since there is no metallurgical bond between the base metal and the coating layer, corrosion protection is insufficient in the continuous galvanizing.

KFS Metal has successfully developed and implemented the new generation "**Hot Dip Galvanizing Plant (CHDG)**", which is suitable for mass production flow and enables the galvanized rebars with high corrosion resistance.

Technical Features

Working Type: Fully Automatic

Quality Standards: ASTM A 767, EN 10348-2, ISO 14657

Production Capacity: 6,0 to 9,0 tons per hour

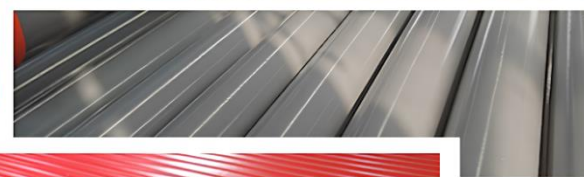
Nominal Diameter: 8 – 50 mm - European rebar size chart

Material Length: 4,0 – 12,0 m

Tube & Pipe Painting Lines

Painting steel pipes & tubes with water-based paint for temporary protection against corrosion is a common practice. Recently, epoxy-based powder painting applied by the electrostatic method has become quite common in especially fire protection systems. Powder epoxy coating is extremely durable, and can protect a surface from chipping, wear and corrosion. In addition, epoxy-based powder painting is much more decorative, and longer lasting than water-based painted steel pipes.

KFS Metal produces water-based and powder epoxy painting lines with high quality. Our facilities are designed as “single-pipe path” or “multi-pipe path” system depending on the amount of output.





You can have the following advantages with the high-tech induction heating process annealing furnaces that will be produced specifically for you;

- . Process annealing is a heat treatment cycle that restores some of the ductility to a product being cold-worked so it can be cold-worked again further without breaking. After the heating cycle, steel pipes are subjected to controlled cooling in still air to prevent non-standard bending.
- . Environmentally friendly induction heating process maximizes efficiency and productivity as it transfers energy directly and instantly to the work-piece.
- . Induction annealing furnaces have low operating costs due to their automatic operation capability, high energy efficiency and rapid size change.

Technical Features

Working Style: Fully Automatic

Size Range: 1/2" - 12"

Pipe Length: 4,0 to 12,0 m

Annealing Temperature: max. 920 °C

Pipe Standards: EN 10255, API 5L, ASTM-A



. KFS Metal manufactures "**Automatic Roll Grooving Lines**", which covers sizes from 3/4" - 10" with a high production capacity.

. **Fully Automatic Drift Test Lines** designed by KFS Metal for inner diameter dimensional control of OCTG Tubing & Casing, covering all sizes from 2 3/8" to 10 3/4", with limited space requirement, designed to be integrated into production lines, and operating without any labor.

. Pipe guiding system for **Eddy Current Test Stations** which is assembled on the pipe production line.

ERW Production Equipment & Tools

KFS Metal manufactures the following equipment and apparatus used in the ERW pipe production and welding process for 3/8"-12" sized pipe and profiles;

- Copper induction coils with epoxy coating & holders,
- Internal deburring equipment,
- Forming, welding&sizing rolls group used in HFI pipe welding machine,
- On-line automatic pipe lubrication system.





KFS Metal, with its high knowledge and experience, offers a comprehensive investment consultancy service to companies that want to enter the steel pipe industry or invest in additional machinery and equipment for their existing lines. Our technical consultancy includes; preparation of feasibility, investment budgeting, layout, determination technical specifications of machines and equipment according to the requested capacity, creation of product range, recommendation of qualified suppliers and determining the investment realization period.

We would be pleased for you to contact us regarding the following investment projects;

- . SAW Spiral Pipe Production Factory Installation
- . ERW Pipe & Profile Production Factory Installation
- . API 5L - API 5CT Gas & Oil Drilling Pipeline Installation
- . Steel Pipe Manufacturing Processes Training Program

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