Difference between continuous galvanizing and general galvanizing.

Introduction :

Zinc coatings can be applied to steel in two different ways: hot-dip galvanizing or electrolytic galvanizing. Hot-dip galvanizing is the deposition of a hot, liquid metallic coating. Electrolytic galvanizing is the deposition of a metallic coating by an electrolytic process.

The term continuous galvanizing is used for the coating of steel sheet in a process by which coils of steel are welded end-to-end and fed continuously through the coating facility. Continuous galvanizing may be either hot-dipped or electrolytic. The term general galvanizing is used for an intermittent batch process in which steel elements are dipped in a molten bath of zinc. Electrolytic general galvanizing is feasible and is done on small parts such as fasteners.

Continuous Galvanizing :

Continuous galvanizing is a capital-intensive, precise, factory-controlled process. The steel for coating is always in coil form and can be either hot-rolled or cold-rolled. Cold-rolling is an additional steel manufacturing process by which a hot-rolled coil is re-rolled cold to enhance its dimensional accuracy, its surface finish and its strength.

Continuous coating lines do more than add a zinc coating to steel. In the continuous hot-dip process, coils of steel are continuously unwound and fed through cleaning and annealing sections before entering a molten zinc bath at speeds up to 200 metres per minute (650 feet per minute). As the steel exits the molten zinc bath, gas jets ("knives") control coating thickness by "wiping" excess zinc from the steel surface. Once cooled, the zinc surface undergoes a series of mechanical and chemical treatments to satisfy individual customer requirements. These include surface passivation, oil coatings, corrosion inhibitors, slitting, cutting to length and packaging.

The continuous electrolytic process is similar, the difference being the use of electrolytic cells rather than a molten zinc bath to apply the coating. Since the transfer of zinc from the anodes to the steel is a function of time and electrical energy, coating thickness can be controlled precisely.

Typical continuously coated products (either by the hot-dip or electrolytic process) include automotive body steels, roofing, light-gauge structural framing, corrugated culvert, steel decking for buildings and bridges, appliances and containers.

General Galvanizing :

General galvanizing is also known by many other names: hot-dip galvanizing, after-fabrication galvanizing or batch galvanizing.

Items to be zinc coated are chemically cleaned, coated with a flux that inhibits in-process oxidation and dipped into a bath of molten zinc. The combination of temperature (both zinc and steel) and time of immersion determine the coating thickness. Small items are placed on trays or in baskets; large items are dipped individually. The range of steel items galvanized in this way covers small fasteners through bridge girders.

Compared to continuous galvanizing, the zinc coating thickness from general galvanizing is much heavier. Coating thickness is determined by the variables mentioned above and there is no way to remove extra zinc other than by runoff of molten metal back into the bath.

Typical general galvanized products include electric transmission towers and poles, highway sign bridges and guard rail, structures requiring minimal maintenance in harsh environments, marine hardware and containers for severe service.

Environmental Issues :

Specifying zinc is an environmentally responsible choice. Zinc itself and all types of zinc-coated steel products are fully recyclable. When determining the environmental impact of zinc coatings, local impact as well as macro, long-term effects need to be considered. Zinc is a natural element that is essential to all forms of life, including humans, animals, plants and micro-organisms. While small quantities of zinc will wash off from coatings exposed to outdoor environments, this zinc is usually not bioavailable and has little or no impact on the surrounding ecosystem. On a macro scale, the excellent corrosion protection provided by zinc coatings contributes significantly to the durability and life expectancy of steel products – this in turn helps to conserve natural resources and reduces the cost of maintenance, repair and

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