



FLOW CHART

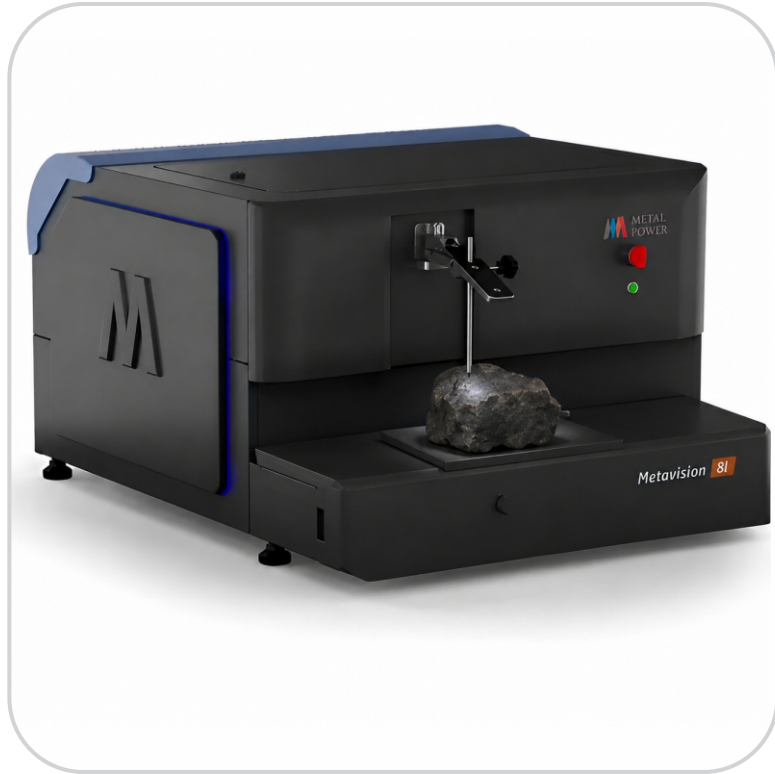


Raw Material

The manufacturing process begins with the selection of high-quality steel raw materials. Proper chemical composition and strength are checked to ensure durability, consistency, and compliance with industrial standards.

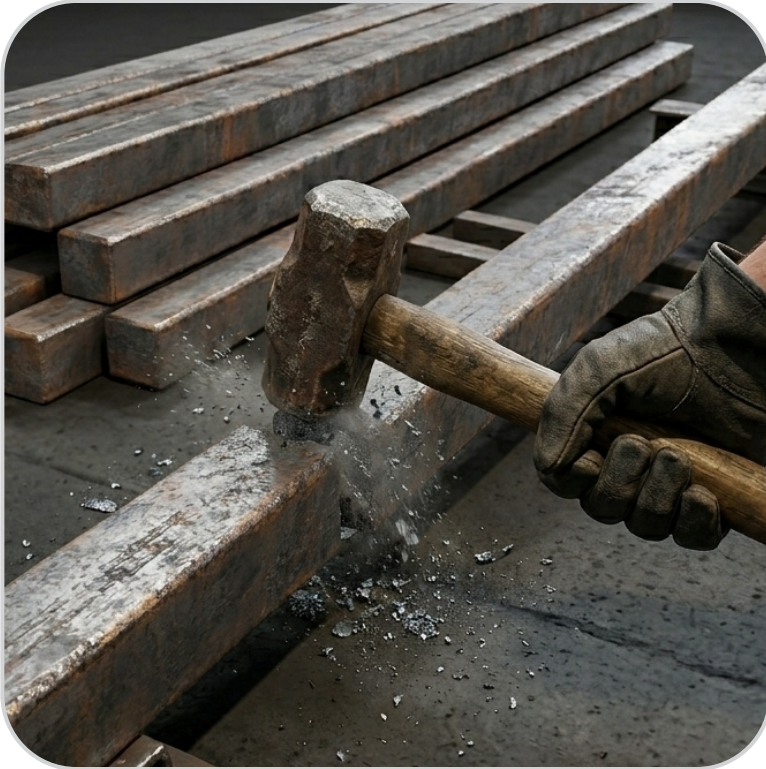
Billet

Steel billets are semi-finished steel products used as the primary input material for pipe and tube manufacturing. These billets provide the required strength and structural integrity for further processing.



Billet Inspection

Before processing, each billet undergoes a detailed inspection process to verify dimensions, surface quality, chemical composition, and structural integrity. This step ensures that only defect-free billets move forward in production.



Shearing

The inspected billets are processed through precision shearing operations where the material is accurately cut into predetermined lengths and sizes as per production requirements. High-performance shearing machines ensure clean and accurate cuts with minimal material wastage. This process enhances production efficiency and prepares the material for smooth handling and uniform heating during subsequent manufacturing stages.



Re-Heating Furnace

The cut billets are transferred to a re-heating furnace where they are heated uniformly at controlled temperatures suitable for rolling operations. The heating process improves the ductility and workability of the steel, enabling efficient deformation during rolling without compromising the metallurgical properties of the material. Proper temperature control inside the furnace is essential to achieve uniform grain structure, improved mechanical properties, and defect-free rolling performance.



Hot Rolling Mill

The heated billets are passed through a series of rolling mills where the material undergoes gradual reduction and shaping to achieve the desired thickness, width, and sectional dimensions. The rolling process enhances the structural properties of the steel through controlled deformation and grain refinement. Precision rolling ensures dimensional accuracy, improved surface finish, enhanced tensile strength, and consistency in the finished steel strips or sections used for pipe manufacturing.



Coil Build-Up (Straightening & Leveling)

Following the rolling process, the steel material undergoes straightening and leveling operations to eliminate bends, twists, waves, and surface irregularities generated during rolling. Advanced leveling equipment ensures uniform flatness and proper alignment of the material before coil formation. This stage is essential for achieving dimensional precision, smooth surface quality, and efficient downstream processing in slitting and tube formation operations.



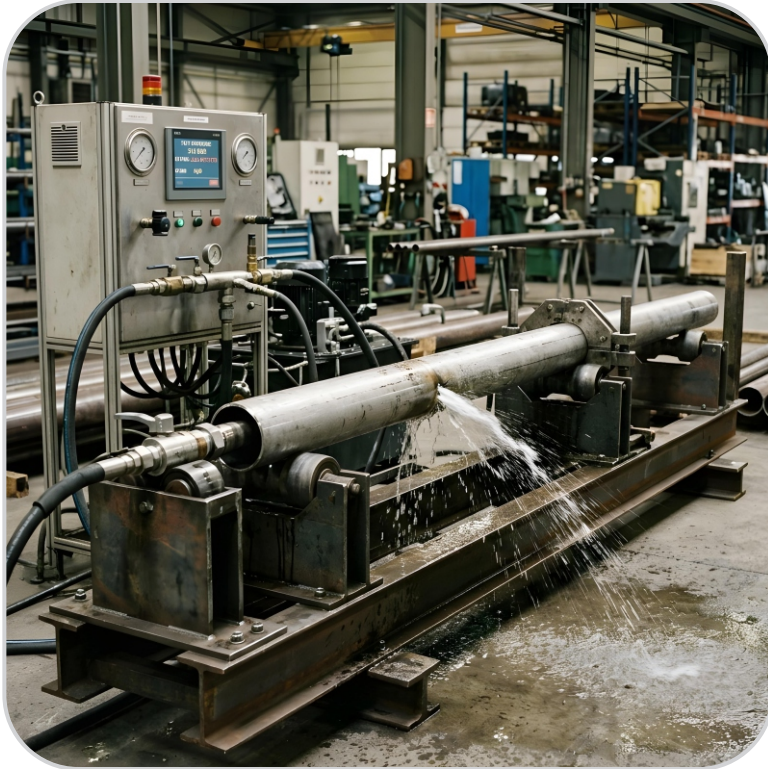
Slitting

The leveled steel coils are processed through high-precision slitting machines where they are cut longitudinally into specific widths according to the required pipe and tube dimensions. The slitting process is carried out with strict dimensional tolerances to ensure uniform strip width and edge quality. Accurate slitting contributes significantly to proper tube formation, welding consistency, and overall product quality in subsequent manufacturing stages.



Tube Mill

In the tube mill section, slit steel strips are gradually formed into round, square, or rectangular tubular shapes using advanced forming rolls and automated machinery. The open edges of the formed sections are welded continuously using the Electric Resistance Welding (ERW) process, which produces strong, uniform, and reliable weld joints. The tube mill operation is carefully controlled to maintain dimensional accuracy, structural integrity, smooth weld finish, and superior mechanical performance of the finished pipes and tubes.



Hydro Testing

After tube formation, the manufactured pipes undergo hydrostatic pressure testing to verify their strength, leak-proof performance, and pressure-bearing capability. During this process, the tubes are filled with water under controlled high pressure to detect any leakage, weakness, or manufacturing defects. Hydro testing ensures compliance with industrial safety standards and guarantees reliable product performance under operating conditions.



Degreasing

The tubes are subjected to a degreasing process to remove oil, grease, dirt, lubricants, and other surface contaminants accumulated during manufacturing operations. Specialized cleaning solutions and surface treatment methods are used to achieve a clean and contamination-free surface. Proper degreasing is essential for ensuring effective chemical treatment and coating adhesion in subsequent pickling and galvanizing processes.



Pickling

In the pickling stage, the tubes are immersed in controlled acidic solutions to remove rust, mill scale, oxidation, and other impurities from the steel surface. This chemical cleaning process produces a clean metallic surface that enhances coating adhesion and improves the overall quality of galvanizing. Proper pickling also helps in achieving uniform surface finish and long-term corrosion resistance.



Fluxing

Following pickling, the tubes undergo a fluxing process where a specialized flux solution is applied to the cleaned steel surface. The flux coating prevents oxidation before galvanizing and promotes proper bonding between the steel substrate and molten zinc during the galvanizing process. This stage plays a vital role in ensuring uniform zinc coating thickness and improved corrosion protection.



Hot Dip Galvanizing

The prepared tubes are immersed in a bath of molten zinc during the hot dip galvanizing process, forming a protective metallurgical bond on the steel surface. The zinc coating provides excellent resistance against corrosion, moisture, oxidation, and harsh environmental conditions. Hot dip galvanizing significantly enhances the durability, service life, and maintenance performance of the pipes and tubes used in industrial, structural, agricultural, and infrastructure applications.



Quenching and Inspection

After galvanizing, the tubes are rapidly cooled through quenching to stabilize the zinc coating and improve surface finish. The galvanized products then undergo detailed inspection and quality verification processes, including coating thickness measurement, dimensional inspection, surface finish evaluation, and visual quality checks. This ensures that every product complies with defined quality standards and customer specifications before dispatch.



Threading

Depending on customer requirements and application standards, threading operations are performed on pipe ends using precision threading machines. Accurate threading ensures proper fitment, leak-proof jointing, and easy installation in plumbing, industrial, firefighting, construction, and engineering applications. The threading process is carried out with strict dimensional control to maintain compatibility and operational reliability.



Finishing & Packaging

The finished pipes and tubes are carefully bundled, packed, labeled, and secured using suitable packaging methods to prevent physical damage, moisture exposure, and handling defects during storage and transportation. Proper packaging ensures safe delivery, efficient inventory management, and product protection throughout the supply chain until final dispatch to customers.