

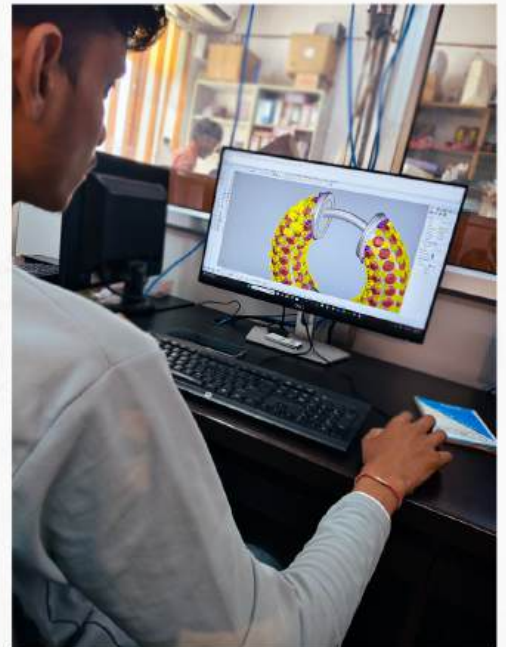


JEWEL SQUARE

Jewelry Manufacturing Process

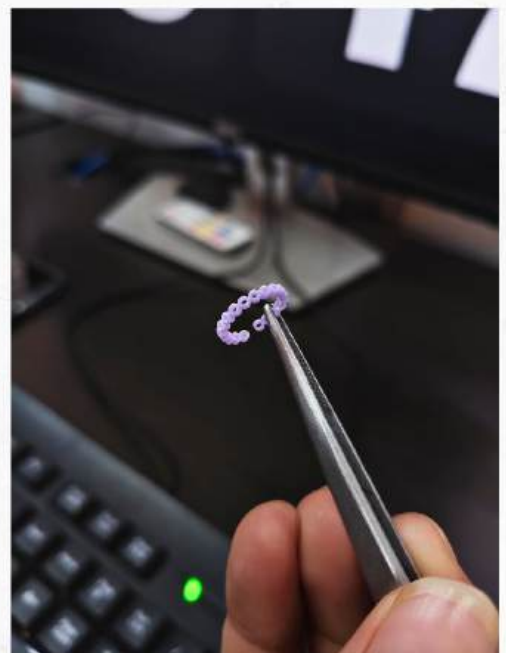
STEP 1- DESIGNING

Jewelry CAD (Computer-Aided Design) designing is a digital process that involves creating precise and detailed 3D models of jewelry using specialized software. The process begins with a designer sketching or conceptualizing a design, which is then transformed into a virtual model using CAD programs such as Rhino, MatrixGold, or ZBrush. These tools allow for intricate detailing, accurate measurements, and visualizations from multiple angles. The digital model can be rendered to simulate real-world materials and lighting, helping clients and designers visualize the final product. Once approved, the CAD file is used to create a wax or resin prototype through 3D printing, which is then cast into metal using traditional jewelry-making techniques. This method enhances efficiency, accuracy, and customization in the jewelry-making process.



STEP 2- CAD/CAM

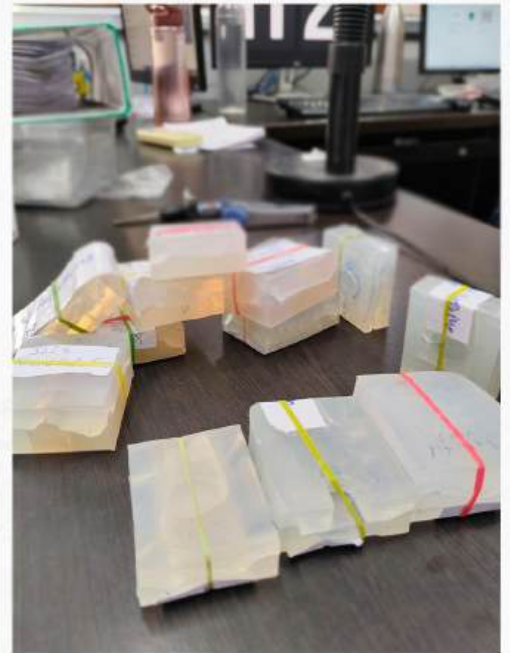
The jewelry manufacturing CAD-CAM (Computer-Aided Manufacturing) process integrates digital technology into the traditional craft of jewelry making, enhancing precision and efficiency. It begins with a designer creating a detailed 3D model of the jewelry piece using CAD software. This model includes exact dimensions and intricate design elements. Once finalized, the file is transferred to CAM software, which prepares it for manufacturing by generating tool paths and instructions for machines. The design is then brought to life using 3D printing or CNC milling to produce a wax or resin model, which is used for casting the piece in metal through the lost-wax casting method. After casting, the jewelry goes through cleaning, polishing, stone setting, and final finishing. The CAD-CAM process allows for high accuracy, repeatability, and customization, making it a vital part of modern jewelry production.



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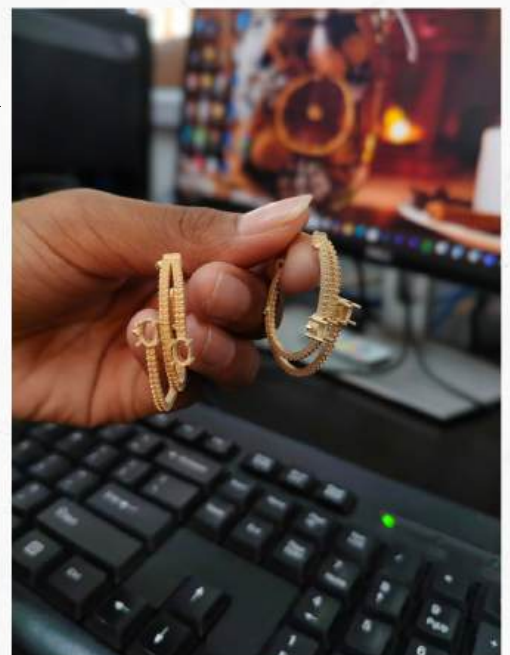
STEP 3- RUBBER MOULD

The rubber mold process in jewelry manufacturing is a traditional yet essential technique used for mass production of jewelry pieces. It begins with a master model of the jewelry item, usually made from metal or wax. This master is carefully placed between layers of natural or synthetic rubber and then subjected to heat and pressure in a vulcanizing press, which creates a durable mold around the model. Once cooled, the mold is cut open with precision to remove the original master, leaving a cavity in the exact shape of the design. Molten wax is then injected into this mold to produce wax replicas, which are used in the lost-wax casting process to create multiple identical pieces. Rubber molding is highly valued for its ability to reproduce fine details and maintain consistency across large quantities of jewelry.



STEP 4- CASTING

The casting process in jewelry manufacturing is a key method used to transform wax models into metal pieces. It begins with the creation of wax replicas, which are attached to a central wax rod, forming what's known as a "tree." This tree is placed inside a metal flask and surrounded by a fine plaster-like material called investment, which hardens to form a mold. The flask is then heated in a kiln to melt away the wax, leaving behind a hollow cavity in the shape of the jewelry designs—this is known as the lost-wax casting method. Molten metal is poured or vacuum-pressured into the cavity, filling the space completely. Once cooled, the mold is broken to reveal the metal jewelry pieces, which are then cut from the tree, cleaned, and polished. Casting allows for precise replication of intricate designs and is ideal for producing multiple identical pieces efficiently.



Jewelry Manufacturing Process

STEP 5- FILING / ASSEMBLY

The filing and assembly process in jewelry manufacturing involves refining and joining individual components to create a complete, polished piece. After casting, jewelry pieces often have rough surfaces, excess metal, or sprues that need to be removed—this is where filing comes in. Using a variety of files and abrasives, artisans smooth out imperfections, define edges, and ensure each part fits together accurately. In the assembly stage, multiple components such as clasps, settings, or chains are carefully soldered or welded together, depending on the design. Precision and attention to detail are crucial during this step to ensure both structural integrity and aesthetic appeal. Once assembled, the piece is inspected for alignment and finish before moving on to polishing and stone setting.



STEP 6- PRE POLISHING

Pre-polishing in jewelry manufacturing is an essential step that prepares a piece for final finishing by smoothing and refining its surface after filing and assembly. During this stage, artisans use various tools such as rotary brushes, rubber wheels, and abrasive compounds to remove fine scratches, file marks, and surface imperfections. The goal of pre-polishing is to create a uniform, clean surface that enhances the final polish and overall appearance of the jewelry. Special attention is given to hard-to-reach areas to ensure that every part of the piece is properly prepared. A well-executed pre-polish not only improves the brilliance of the final finish but also helps highlight intricate design details and ensures better adhesion for any additional processes like plating or stone setting.



Jewelry Manufacturing Process

STEP 5- GEMSTONE SETTING

The gemstone and diamond setting process in jewelry manufacturing is a delicate and highly skilled stage where stones are securely placed into their designated settings. After pre-polishing, the jeweler carefully positions each gemstone or diamond into the metal seat that has been prepared for it, ensuring a perfect fit. Depending on the design, different setting techniques are used, such as prong setting, bezel setting, pave setting, or channel setting. Using specialized tools like gravers, beading tools, and microscopes for precision, the jeweler secures the stones firmly without damaging them. This process requires extreme attention to detail to maintain symmetry, maximize brilliance, and ensure that the stones are tightly held for long-term durability. Proper setting enhances both the beauty and structural integrity of the final jewelry piece.



STEP 6- FINAL POLISHING

Final polishing in jewelry manufacturing is the last step that brings out the full beauty and brilliance of a piece. After setting the gemstones and completing any necessary adjustments, the jewelry is polished using soft brushes, felt wheels, and polishing compounds like rouge to achieve a mirror-like shine. This process smooths out any remaining fine scratches and enhances the metal's luster, giving the jewelry its finished, luxurious appearance. Special care is taken around gemstones and delicate details to avoid damage. Final polishing not only improves the visual appeal but also ensures the piece feels smooth and comfortable to wear, making it ready for presentation or sale.





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STEP 7- FINAL QUALITY CONTROL (QC)

Final Quality Control (QC) in jewelry manufacturing is a critical step where each piece is thoroughly inspected to ensure it meets the highest standards before reaching the customer. During this process, skilled inspectors check for defects such as scratches, loose stones, uneven polishing, structural weaknesses, or design inconsistencies. They also verify that all measurements, weights, and gemstone settings match the original specifications. Any piece that does not meet quality standards is sent back for correction or rejected. Final QC guarantees that every jewelry item is not only beautiful but also durable, secure, and ready for long-term wear, upholding the brand's reputation for excellence.



We're Here for You

WhatsApp : +91 9660361679
Email : sales@jewel-square.com
Website : www.jewel-square.com



@JEWEL.SQUARE