

# What is the Machining Process of CNC EDM Machines?

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Driven by the continuous development of science and technology, the industry has entered a stage of rapid development, and higher requirements are placed on the precision of work pieces.

Under this change, traditional cutting equipment can no longer meet the needs of the industry.

Consequently, CNC EDM Machines emerged in accordance with the development trend of the times, and can meet the needs of major manufacturers for high-precision work pieces.



## What is an CNC EDM machine?

Electrical Discharge Machining (EDM) is a controlled metal-removal process that is used to remove metal by means of electric spark erosion. ... The metal-removal process is performed by applying a pulsating (ON/OFF) electrical charge of high-frequency current through the electrode to the workpiece. CNC Wire EDM utilizes a fine, electrically charged metal wire usually made of brass, to cut through the work piece while submerged in a tank of deionized water. The moving wire erodes any conductive material that is within .0005" of its path, while the deionized water cools and flushes away debris from the cut. EDM is a thermal process for removing unwanted material by applying cycled discharging sparks in the gap between an electrode and a conductive workpiece. This method is typically used for machining refractory metals and hard materials, which are difficult to machine with conventional machining techniques.

The use of CNC EDM for cutting has higher processing accuracy and processing efficiency, and has become an indispensable industrial equipment in modern industry.

## What is the Machining Process of CNC EDM Machines?

1. Ionization and breakdown of the inter-electrode medium, forming a discharge channel: When the tool electrode and the workpiece are connected to the two poles of the pulse power supply and put into the working fluid, after changing the distance, a spark and discharge will be generated, so that the electrode and the workpiece Discharge channels are formed between the workpieces.
2. The melting and gasification thermal expansion of the electrode material: When the electric spark machine is discharging, the temperature will reach a high temperature of 10,000 degrees. The high temperature will instantly melt the surface of the workpiece, and the substance melted from the surface of the workpiece will enter into the working fluid.
3. Throwing of electrode material: The melted material on the surface of the workpiece will quickly

cool and solidify after entering the working fluid, thereby forming some metal particles, and will be taken away with the flow of the working fluid.

4. Deionization of the inter-electrode medium: In order to make the processing more smooth, the electro-corrosion products need to be discharged in time, otherwise the heat cannot be transmitted in time, which will cause the local high temperature and cause the working fluid to decompose at the high temperature. It may cause difficulties in processing and even burn out the electrodes. Therefore, during the machining process, it is necessary to ensure that there is sufficient time between the two discharges for the discharge of the electrolytic corrosion products, so as to restore the insulation of the discharge channel.

The machining process of the CNC EDM machine determines that it has very superior performance. It can process some work pieces that cannot be processed by traditional cutting equipment, such as complex work-pieces and high-precision work-pieces. It has made outstanding contributions to the development of the industry.



### **What are the Main Purposes of CNS EDM Machines?**

Nowadays, CNC EDM machine tools are widely used in automobile manufacturing, motorcycle manufacturing, aerospace, medical equipment, medical supplies, energy industry, leisure sports industry and education industry, etc., with a wide range of uses.

Especially for some complex workpieces and workpieces that require ultra-high precision, CNC EDM Machines can provide the best cutting method and is an outstanding equipment in industrial development.

Electrical discharge machining (EDM) is one of the most cost-effective and efficient ways to machine hard and electrically conductive materials. Wire EDM offers the additional benefit of accuracy in creating part shapes. Machining with a hard and challenging material that also happens to be electrically conductive, EDM is a machining method you should consider for higher accuracy and cost-effectiveness.