Rolling process is including Erhard rolling pipe, automatic pipe rolling, Diesel rolling tube, three roll tube, hot extrusion tube, continuous tube, cold drawn (rolled) tube, thermal expansion tube 8 kinds of rolling process. Now be introduced.

1. Ehrhardt tube rolling process
Ahmad invented the hydraulic punching process in 1891 to produce a punched cup-shaped billet, and in 1899 he completed the process of pushing the punched billet through a series of rings of decreasing diameter with a mandrel to produce a seamless steel pipe. Also known as pipe jacking process. Today's extra large diameter seamless pipe is still pipe production method, the maximum diameter of up to 1066mm, 1980s, Mannesmann company developed this process for the CPE process, the main production of small diameter seamless steel pipe.

2. Automatic rolling process
Stiefel obtained the patented plate punching machine in 1895. The first automatic pipe rolling machine was put into production in the United States in 1903, and the automatic pipe rolling unit with a complete machine was born in 1905. Automatic pipe mill, also known as Steffel pipe mill. After that, automatic tube rolling mill became a major production unit of seamless steel tubes.

3. Diesel pipe rolling process and Accu Roll pipe rolling process
Sam Diescher first conceived the introduction of a rotating disk into a two-roll slash mill instead of the original guide for stretch-rolling and the birth of the first Diescher tube mill in 1932. Half a century later, the American company AS first introduced the tapered roller into the pipe mill and obtained the patent. In 1989, the world's first Accu Roll pipe rolling mill was put into production in Yantai, China.

4. Three-roll pipe rolling process
This is a three-roll beveling tube process where the tube is rolled and extended between the mandrel and the three rolls, also known as Assel tube rolling mill.

5. Hot extrusion pipe process
As early as the Mansman Brothers invented cross-piercing before, there has been the use of hot-extruded aluminum technology to produce seamless steel pipe patents. However, only after the glass lubricant was successfully applied in the 1950s, the hot extrusion process of the steel pipe got real application and rapid development. Modern hot-extruded steel pipe technology is mainly used for high-alloy hard-deformed pipe and special-shaped pipe production.

6. Continuous tube rolling process
As early as 1891, the United States Kellogg steel plant has been patented continuous tube rolling machine. However, due to numerous technical reasons, this process has not been a real success. It was not until the 1950s that the technology developed tremendously. With its high productivity, high efficiency and high quality, it gradually became the dominant rolling mill for the production of seamless steel tubes.

Throughout the various rolling process, they were born in different periods, by continuous
improvement and development of their own characteristics to meet the market for product specifications, varieties, quality and different batch requirements. And in different periods, one after another to form a variety of seamless steel pipe production. At present, the research and development of three-roll planetary tube rolling mill (PSW) and perforator rolling process (CPS) shows that the world continues to explore new rolling pipe technology.

7. Cold drawn (rolling) tube technology
In order to expand, supplement and improve the varieties and quality of hot-rolled seamless steel tubes, secondary processing technologies of cold drawn (rolled) pipes and thermal expansion pipes have also been developed. As early as before the hot-rolled seamless steel pipe production methods used, the cold drawing process has been used for secondary pipe welding. Cold rolling process by the United States Tabl Reduing company patented in 1931, the use of the same period of deformation of the rolling mill process (rack reciprocating motion, multi-pass deformation), also known as the cold pilger mill.

Cold drawing (rolling) method not only can produce hot-rolled method is difficult to produce (or uneconomical) or can not produce the specifications of varieties and high-quality products, but also can be used instead of hot-rolled blank rolling production of small-scale steel and high-quality Of the special varieties (such as bearing pipe, stainless steel pipe, etc.). At present, China's cold drawn (rolled) products account for about 20% of the total output of seamless steel pipe, much higher than the output of the United States, Japan, Russia and other countries.

8. Thermal expansion process
Thermal expansion process is the production of large-diameter seamless steel pipe the main method, sub-roll (oblique rolling), expansion and expansion of the three kinds of push-type. Roller expansion of up to 1 500 mm diameter, suitable for large-scale production; and push-type expansion device is simple, low investment, low output, only suitable for small batch production.

China's existing hot-rolled seamless steel tubes 36 finished units, and more sets of cold-rolled (pull) pipe unit. Among them, the hot-rolled tube unit includes the continuous tube rolling unit, the automatic tube rolling unit, the periodic tube rolling unit, the precision tube rolling mill (Accu Roll), the circular tube rolling mill (Diescher), the triple- Pipe unit and extrusion pipe unit nine categories. Also conducted three-roll planetary tube mill industrial test. There are more than 100 sets of seamless capillary equipment (mainly piercing machines), more than any other country in the world producing units, it is the world's seamless steel pipe production unit museum.

Today's hot-rolled seamless steel pipe production is the basic process: blank preparation → heating → wear (punch) hole → reheat pipe rolling → sizing → finishing, inspection and testing (cooling, straightening, cutting, testing, water pressure, weight weighing, corrosion, etc.) → packaging storage. The main thermal deformation process is to wear (punch) hole, rolling pipe and set (minus) diameter. Wear (punch) hole is mainly a solid blank tube into a hollow barren tube; rolling pipe is mainly to reduce the wall and wall thickness control, but also the main process of longitudinal deformation; set (minus) diameter reduction and control of the main outside Diameter, but also can adjust the wall thickness (tension reduction). Because the rolling
process is not only the main process of longitudinal deformation of the rolling pipe, but also plays a crucial role in wall thickness control, surface quality, and the entire unit production efficiency. Therefore, people are accustomed to the name of the rolling process called the type of the unit, such as pipe rolling unit, automatic pipe rolling unit, precision pipe rolling unit. Due to the high quality requirements of seamless steel tubes and the rapid and efficient development of hot-rolled steel tube units, the steel tube finishing process and equipment are further developed and modernized. Stepping cooling bed, multi-roll steel tube straightening machine, high-efficient pipe cutting machine and pipe saw, fast milling head chamfering machine, automatic measuring length, weighing, printing and mechanical binding devices have appeared and widely used. The development of related technologies, especially the continuous casting of round billet technology is becoming more sophisticated and on-line testing, automatic control technology to promote the use of more seamless steel pipe production technology. The higher quality requirements of the product and the special pipe need further heat treatment (normalizing, annealing, quenching, etc.) and machining (threading, peeling, polishing, end thickening, etc.).