



## I. Preface

Shipbuilding industry is usually a sign of the industrial countries. In the field of metal processing, to process rolled steel into shipbuilding steel parts is considered as the most difficult by the production and construction of the hull.

### 1. Metal Forming Process

- a) Casting for a large number of products.
- b) Metal contraction - by heating and cooling (heating lines)
- c) Mechanical tensile and bending (hot or cold forming)

Taking into account the nature of ship construction industry and the limited number of factors, the after two methods are commonly used decided by the economy of technical processes.

### 2. General Condition of World

From Worldwide:

**The Far East Area:** thermal processing technology, the use of heating and then cooling to achieve contraction of the metal (with limited expansion and contraction)

**European Shipyards:** cold process, the use of stretching and bending

### 3. Process Comparation

#### **Cold Process VS Thermal Process:**

Compare from easy operation, quality, production capacity etc. sides. No matter how to balance between the former and the latter, cold roll forming are considered to be desirable (compared them from output or manpower), which is the global promotion, although in some areas a lack of understanding or keep the present status.

## II. The History of Cold Forming

As the name implies, cold roll forming is to change the shape of steel plate at room temperature. To avoid the inconvenience of dealing with hot materials, the change of shape is through external pressure to reach the plastic state. Allow metallic materials to be bent and stretched



## Cold Roll Forming Machine Cold Roll Former Cold Roll Forming Mill

into a designed shape.

Frankly to say that, the Forging Technology is widespread in the world, but [Cold Forming](#) is the first produced in Europe. In ancient Europe, the hull of panel is made out by the human, which has always been a heavy manual labor, until the emergence of the modern hydraulic press.

Along with the design of hydraulic machines and automatic control technology and computer application, the cold-molding technology began rapid developing since 40 years ago, gradually to mature over time, and have a scientific basis. Cold Forming Technology today has become a system of metal forming process.

Rely on the mechanical feature of cold roll forming process, the parameter control of molding process becomes possible, such as stretching and bending volume, products, the use of computer-designed molds, high-quality steel suitable for cold forming production, to meet all the high-precision required by cold roll forming process. Pre-cut groove after welding, steel plate after cold forming can be directly assembly, to avoid the trouble of cutting and groove welding.

Just about the precision of cold roll forming, it becomes the reasons for the choice of cold forming technology made by the European.

### **III. Other Obvious Advantage of Cold Forming**

a) The cold forming does not rely on the experience of worker fully, and hot molding workers are totally dependent on experience. Even today, many people still think that hot-forming is the secret, hot-forming is art, but not science. Otherwise, the Cold Forming is born to learn easy to teach. No more than three months can train a curved plate worker.

b) Cold-forming has no pollution, and heat molding needs to install flame and cooling water in the workshop.

c) The process time of cold roll forming can be measured which help plan and timing.

d) The inherent nature of steel after Cold Forming will not be affected, which in fact to be strengthened, more flexible, and is conducive to the assembly.

Compared with the rigid steel plate heat forming which difficult to bend, is not conducive to the assembly.



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For steel plate bent as the bowl, the softness is conducive to the assembly.

e) Profit for senior decoration of the hull, including the internal and board joints. This is particularly important in the manufacture of the ship.