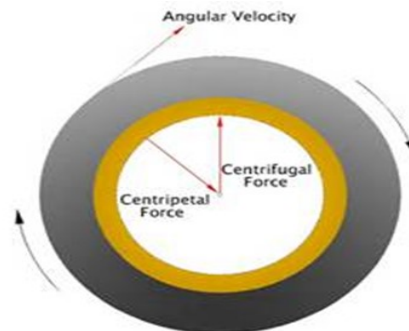


## What is Centrifugal Casting?



$F_c = mv^2/r$ , where  $F_c$   
mass,  $v$  = speed, and  $r$  = radius.

= centrifugal force,  $m$  =

As the name suggest the process involves using a centrifugal force (high velocity spinning action) to exert pressure onto molten metal as it is poured into a Die. The Die can be set to spinning in a horizontal or vertical axis dependent on the structure required. A horizontal axis machine is mostly used for long thin cylinders and vertical axis machines are typically used for rings. The hollow cylindrical Die can generate speed exceeding 100 G's of centrifugal force, this distributes the molten metal and shapes it into tubular/cylindrical forms. This method of casting, also known as liquid forging is used to manufacture high integrity cylindrical components, and is therefore the popular technology of choice for pipes, tube, bearings, rolls, bushes, ball valves and cylinder liners. It is notably used to cast cylinder liners and sleeve valves for piston engines, parts which could not be reliably manufactured otherwise. The wall thickness of the part can be varied to suit needs and is controlled by the amount of alloy that is poured making centrifugal casting system highly flexible to individual requirements.

### Benefits of Centrifugal Casting

The high G forces involved in this casting method means that the less dense materials including impurities are forced into the centre where they can be subsequently removed and gas related defects and shrinkage porosity are reduced thus parts made from centrifugal casting exhibit denser, close grained structure with improved physical quantities such as tensile strength, yield strength, elongation and uniformity. They also have the integrity and durable nature that makes them ideal for use where there is a necessity for corrosion and abrasion resistance.

### *Other advantages of Centrifugal Casting are:*

#### Reduction of Equipment Cost

Centrifugal casting offers a substantial saving on capital equipment when compared to forged products.

#### Reduction of Manufacturing Costs

The uniformity resulting from the centrifugal casting process means that machining time and material waste are significantly reduced. Blowholes, sand residue, hard spots, cavities and porosity are virtually eliminated.

#### Extensive life

Due to the finer grain and denser structure of parts cast with centrifugals there is an increased usage life, greater endurance and impact without fracturing.



### **Fewer Cast offs**

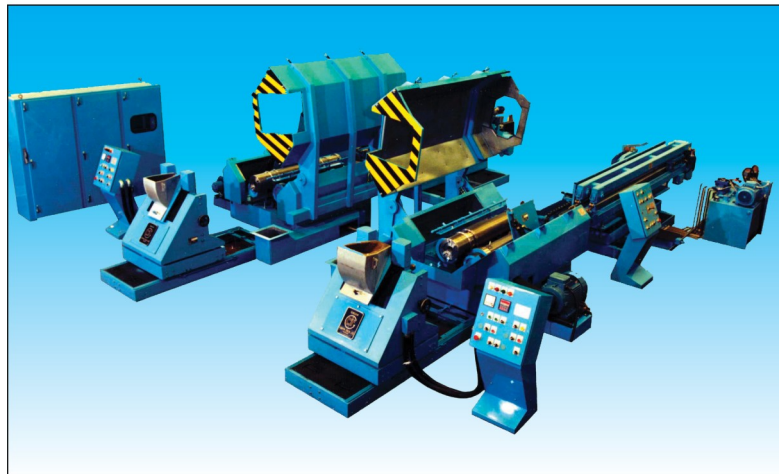
The force used to distribute the molten metal as it is poured is so strong it displaces the lighter oxides and impurities to the centre of the hollow cylinder. It is then easy to remove these impurities during the machining process.

### **Flexibility**

The centrifugal process allows economical production of a wide range of sizes, shapes and quantities.

In short centrifugal casting results in longer life, reduced rejects of manufacturing costs and production flexibility.

**Gibson Centri- Tech Limited** is acknowledged as one of the leading manufactures of Centrifugal Casting Technology. Established in 1980 by Douglas and Martin Gibson, we have remained at the forefront of development in the design and manufacture of Centrifugal Casting Systems.



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