

**Centrifugal Casting Machine Company, Inc.**

The world leader in centrifugal casting  
and permanent mold technology

# Est. 1940



## The Centrifugal Casting Machine Company, Inc.

(CCMCO) is the established world leader in centrifugal casting and permanent mold technology.

Founded by Nathan Janco, widely described as the "Father of Centrifugal Casting", in 1940, CCMCO has supplied equipment to customers in over 65 countries worldwide.

We are dedicated to providing the foundry and allied industries with practical solutions to casting problems through development of superior service, machinery and technology.



**The Centrifugal Casting Company, Inc.**

P.O. Box 947

Tulsa, Oklahoma 74101

(918) 835-7323

Fax: (918) 835-9643

[www.centrifugalcastingmachineco.com](http://www.centrifugalcastingmachineco.com)

[info@ccmcotulsa.com](mailto:info@ccmcotulsa.com)

# the Art of Centrifugal Casting

The centrifugal casting method was developed after the turn of the 20th century to meet the need for higher casting yields and better physical properties from cast metal products.

Spinning molds generate centrifugal force on molten metal to position the metal within a mold. As the molten metal solidifies from the outside in, a casting with dense, close grain structure is created. As a result of close grain structure, the centrifugal process offers products with better physical properties than castings made using the static casting method. Other advantages of products made by the centrifugal process are:

- Uniform wall thickness
- Smoother surface finish
- Thinner Walls

Combining proper mold design, mold coatings, mold spinning speeds, pouring speeds, cooling rates and metal chemistry results in castings with higher yields, fewer impurities and greater strength.



## Service & Support

By combining a quality system with rugged designs, CCMCO produces machinery that satisfies the demands of the foundry industry. From quotation to machine shipment, through start-up and all of its years in operation, CCMCO's service oriented engineering staff will be available to you.

### Technical Support

We offer technical assistance for the complete life of our machines. This assistance includes troubleshooting equipment or machine specific process problems. CCMCO's "works manuals" offer special instructions beyond common craft skills for each individual machine.

### Equipment Maintenance

In order to help our customers maintain peak efficiency, CCMCO offers an extensive line of spare parts available for timely shipment.

### Operator Training

CCMCO offers operator training designed specifically for the individual needs of our customers. Training can take place on-site at the customer's facility or at CCMCO. Whatever your knowledge level of centrifugal casting, we can develop a program especially for you.



### Complete Plants

CCMCO welcomes the opportunity to design, construct, and start-up your complete centrifugal casting or permanent mold casting facility.



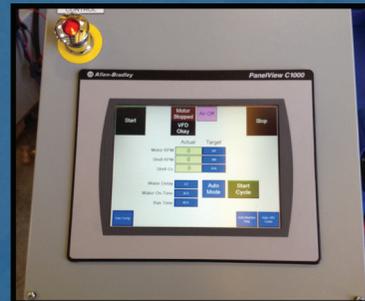
# Technology

Advances in technology continue to demand that equipment manufacturers listen to their customers and customize solutions with increased production and ease of operation and maintenance in mind.

Having been in business since 1940, CCMCO has a wealth of experience to draw on, combining tried and true methods with new technology.

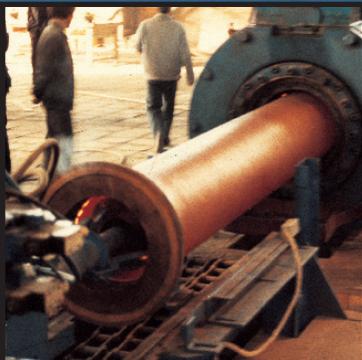
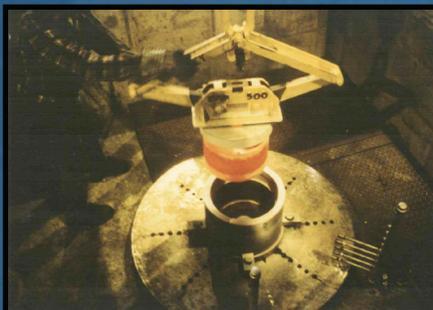
# Automation

CCMCO designs machines with varying levels of automation. Machines can include programmable logic controllers (PLC), touchscreen and industrial PC human machine interfaces (HMI), and ethernet communications.



This level of automation allows machine operators to check real time machine status, adjust process parameters, and be alerted to machine fault indication.

CCMCO electrical specialists can interface our equipment with automated material handling and inspection equipment including robotic handlers, vision inspection and digital weighing systems.



# Horizontal

## Casting Machines and Applications

CCMCO's horizontal centrifugal casting machines are used to cast ferrous and non-ferrous castings that are longer in length than they are wide in diameter. Horizontal centrifugal casting machines are equipped standard with water cooling and variable speed drives. Horizontal machines are available in a wide variety of sizes and configurations that are well suited to a diverse range of applications including the following:

- **Brake Drums**

- **Steel Rolls**

- Bi-Metal*
- Steel Mill*
- Paper Mill*

- **Alloy Steel Tubes**

- Radiant Tubes*
- Retort Tubes*
- Reformer Tubes*

- **Cylinder Liners**

- Engine Sleeves*
- Piston Rings*

- **Pipe**

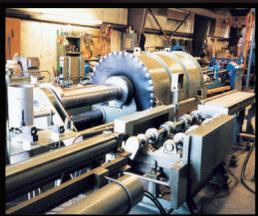
- Ductile Iron Water Pipe*
- Cast Iron Soil Pipe*

- **Bearings**

- Babbitt Bearings (OEM & Repair)*
- Turbine Bearings*
- Diesel Engine Bearings*

- **Non-Ferrous Castings**

- Bushings*



## Horizontal-Trunnion Type

- These machines are used in the production of castings that are longer in length than they are wide in diameter.
- These machines are used to produce straight cylindrical tube shapes from 12" (305 mm) to 240" (6000 mm) in length.

Model	Wt. Limit-Lbs.	Wt. Limit-Kgs
M	5,000	2,270
K	10,000	4,535
H15	33,075	15,000
H20	44,100	20,000
H30	66,150	30,000
H120	120,000	54,000
HS	100,000	45,350
HT	200,000	90,700

## Horizontal-Dual Face Plate

- These machines utilize a mold clamped between two faceplates for the production of castings up to 36" (914 mm) in length and 60" (1,524 mm) in diameter.

Model	Wt. Limit-Lbs.	Wt. Limit-Kgs
AM	1000	454
CM	3000	1,361
DM	5000	2,270

## Horizontal-Single Face Plate (Cantilever Style)

Model	Wt. Limit-Lbs.	Wt. Limit-Kgs
A-FP	1,000	454
C-FP	3,000	1,361
D-FP	10,000	4535
V-FP	40,000	18,140

## Horizontal Special Series Machines

### Dual Face Plate Machinery for Lining of Babbitt Bearings

- Machinery can accommodate shells from 5" (127 mm) diameter and 5" (127 mm) in length to 72" (1,829 mm) diameter x 72" (1,829 mm) in length.

Model	Wt. Limit-Lbs.	Wt. Limit-Kgs
CB-16-16-WC	500	227
CB-24-24-WC	2,000	907
CB-30-30-WC	2,000	907
CB-36-36-WC	3,000	1,361
CB-45-45-WC	4,000	1,814
DFP	10,000	4,535

### Dual Face Plate Machinery for Production of Cylinder Liners

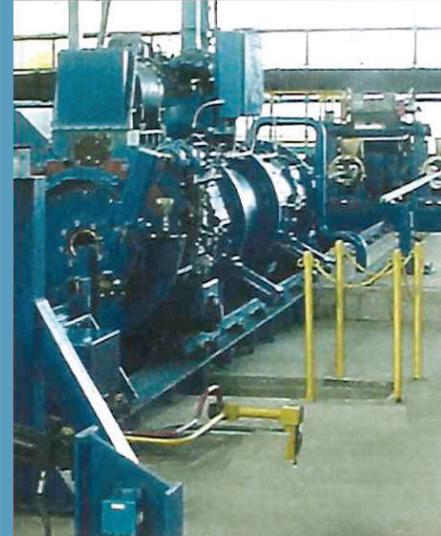
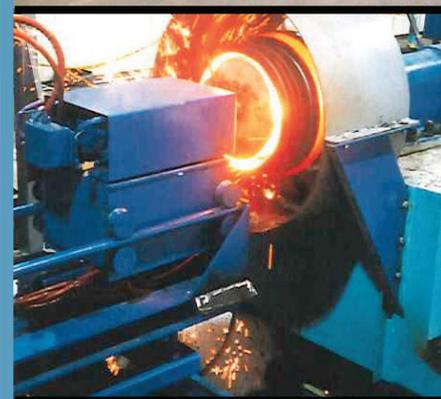
CCMCO's RC-8 machine is a multi-station "Ferris Wheel" type machine for the high production of cylinder liners and engine sleeves. It offers high production with a small footprint requirement. This machine is fully automatic, requiring limited operator input.

### DeLavaud Type Casting Machine for Production of Ductile Iron Water Pipe

- Cast Pipe up to 240" (6,000 mm) in length.
- Fully automatic, requiring limited operator input.
- Full finishing line equipment available.
- One hour size to size mold changes and three hour mold size changes.

### Trunnion Type Casting Machine for the production of Cast Iron Soil Pipe

- European Standard and American Standard pipe can be produced.
- Machines available in single, double, or triple formations to meet differing production needs.
- Fully automatic, requiring limited operator input.
- Complete finishing line equipment available.



# Vertical



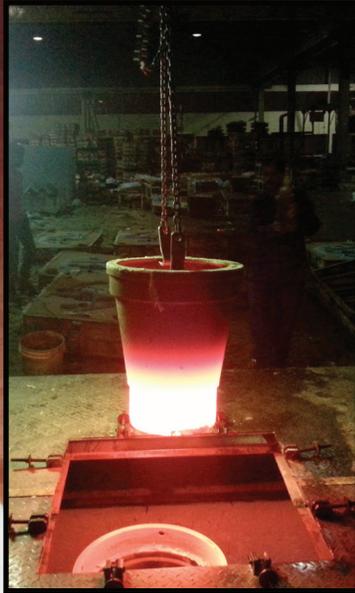
## Casting Machines and Applications

Vertical centrifugal casting machines can be used to cast both ferrous and non-ferrous materials, and come equipped standard with water cooled shafts and variable speed drives. Vertical machines are often chosen to produce castings that are wider in diameter than they are taller in height.

The vertical process is also used for the semi-centrifugal process in which castings are not purely cylindrical in shape. These include castings that require a taper, are flanged on both ends or have other special features to take into consideration.

*Vertical Centrifugal Casting is well suited to the following applications:*

- Ball Valve Balls
- Electric Motor Rotors
- Welding Rods
- Gear Blanks
- Gears
- Flanges
- Bearings
- Bushings
- Sheaves
- Rolls
  - Crusher/Pulverizer Rolls*
  - Steel Mill Rolls*
  - Forming Rolls*
  - Bi-Metal Steel Rolls*



### Vertical-Portable Machines

- These machines do not require a special foundation and can be easily moved in and out of position.
- These machines are capable of spinning permanent steel molds, graphite molds and sand-lined flasks

Model	Wt. Limit-Lbs.	Wt. Limit-Kgs
JA	800	363
AVB	1,200	544
CVB	2,000	909

### Vertical-Pit Mounted Machines

- These machines come standard with a water cooled shaft.
- These machines require a foundation pit to be built. They are mounted below floor level.

Model	Wt. Limit-Lbs.	Wt. Limit-Kgs
C	5,000	2,270
D	10,000	4,535
VSC	30,000	13,605
VF	50,000	22,676
VH	75,000	34,014
VRM	200,000	90,700

## Mold Coating Equipment

### Rolance Automatic Mold Coating Machine

CCMCO's patented rolance technology offers customers a highly adjustable and effective mold wash application device. CCMCO's Rolance solutions can coat molds up to 240" (6000 mm) in length.



#### Automatic coating offers:

- *Highly consistent mold coating application, with more uniform thickness than manual spraying.*
- *Increased machine productivity by efficient and repeatable mold coating application.*

Other spray products include lances, adapters, discs and tanks.

### Mold Coating

CCMCO offers mold coating materials for use in protecting the mold, forming proper metallurgical structures and aiding extraction.

- *CCMCO mold coating can achieve varied surface finishes to meet customer requirements.*
- *Coatings available in raw material form or concentrated premixed solution in 55 gallon drums.*

## Ancillary Equipment

At CCMCO we recognize that the casting of a part is one operation in the whole process to produce a quality end product. Therefore, CCMCO offers a full line of ancillary equipment for down stream processes.



#### Process Options Include:

- *Automatic Pouring*
- *Permanent Steel Molds*
- *Temperature Control*
- *Bitumen Coating*
- *Hydrostatic Pressure Testing*
- *Ovality Correction*
- *Zinc Coating*
- *Pipe Cut Off*
- *Pipe Weighing*
- *Pipe Annealing*
- *Internal/end Grinding*
- *Cement Lining*
- *Mold Maintenance Equipment*
- *Flux Application*
- *Material Handling*

# Centrifugal Casting Applications



## Cylinder Liner and Ring Stock

Depending on production and size requirements, customers can use CCMCO's Model M, RC, or XI machines to produce Cylinder Liner and Ring Stock. Both flanged and unflanged liners can be produced. These machines offer production capabilities from 10 to 100 castings per hour.

CCMCO's RC Series machinery is utilized by customers in Austria, Brazil, South Korea, Poland, Turkey and the United States for the high production of cylinder liners and engine sleeves.



## Alloy Steel Tubes

Retort, Reformer and Radiant Tubes serve in multiple industries. CCMCO's horizontal machines, M, K and H series are ideal for tube production. These machines are designed to accommodate permanent steel molds.

Considered a "high tech" application, the production of alloy steel tubes requires knowledge of process parameters. CCMCO offers process expertise for fasting tubes above and below 8 mm thick.



## Rolls and Sleeves

A host of roll products can be cast on CCMCO's horizontal and vertical centrifugal casting machines.

Bi-metal Steel Rolls can be cast on CCMCO's Model H series machines which offer superior vibration dampening characteristics and superior process monitoring systems. Considered a "high tech" application, Bi-Metal Steel Roll production requires detailed process technology, which CCMCO can supply.



## Ductile Iron Water Pipe

CCMCO offers traditional water box style DISP machines as well as trunnion type and pipe technology.

CCMCO can complete turnkey green field projects as well as providing single machines to existing plants. CCMCO also supplies ancillary equipment to its Ductile Iron Water Pipe machines.



## Electric Motor Rotors

CCMCO has performed research and development on electric motor rotors and has concluded that rotors produced one at a time using the centrifugal casting process offer better conductivity than those produced using other processes. CCMCO offers machinery that can be used for research and development and also automated machine systems for high production of rotors.



### **Babbitt Bearings**

CCMCO's CB and DFP machine series utilize dual faceplate technology to clamp a bearing shell between two faces.

Additionally, CCMCO provides Babbitt process information and ancillary equipment to its Babbitt machines.



### **Brake Drums**

CCMCO provides equipment for the lining of steel drum shells with cast iron. CCMCO has supplied machinery and technical know-how to the American leaders in the industry.

Considered a "high-tech" application, the lining of Brake Drums requires not only quality machinery but also, knowledge about auxiliary processes such as cleaning, heating and coating the shell.



### **Non-Ferrous Castings**

This category includes a diverse array of castings made by such materials as copper, bronze, aluminum bronze and others.

These castings can be made on horizontal or vertical centrifugal casting machines, depending on part dimensions.

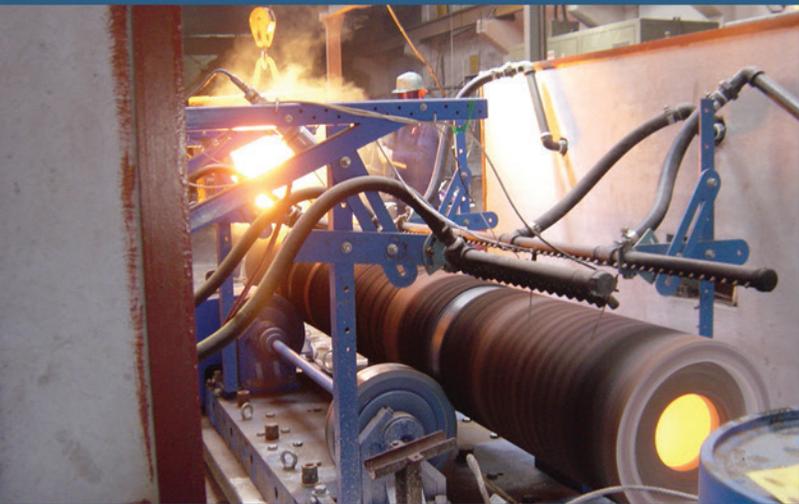


### **Cast Iron Soil Pipe**

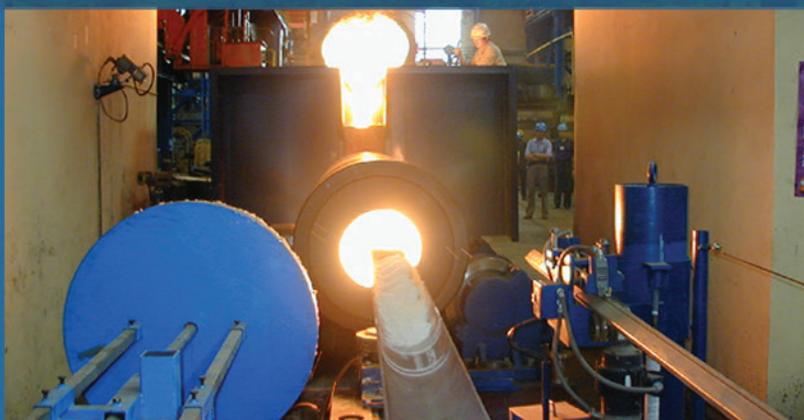
CCMCO's Model SPK machine series is ideal for the production of 10' (3000 mm) long Cast Iron Soil Pipe. Model SPK machines can be supplied in single, double or triple spinner configurations depending on production requirements. CCMCO also supplies ancillary equipment to its Cast Iron Soil Pipe machines. Pipe can be produced to the American or European standard.

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