

# SAWBROOK STEEL

CASTINGS MANUFACTURING  
PROCESS



# PATTERN MANUFACTURING

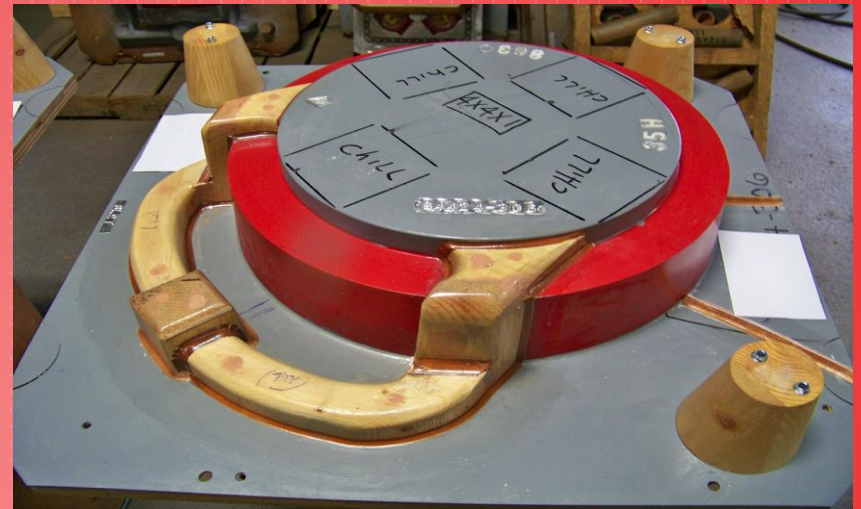
- ▶ The pattern can be made from wood, metal, foam, or urethane and is normally mounted on a board or plate. Once completed, the pattern has a gating and rising system installed.

# FINISHED GATED COPE AND DRAG PATTERNS

COPE



DRAG



# PATTERN MANUFACTURING

WOOD



FOAM



Urethane



METAL



# MOLD MANUFACTURED

- ▶ A mold consists of two halves called the cope (top) and the drag (bottom). Sand is compacted around the pattern halves. This produces a mold cavity. The mold cavity is designed to locate cores, gating and risers to produce a sound casting.



# HERE AT SAWBROOK

- ▶ We make pattern molds in two areas of our plant. Our large floor molds are made with phenolic urethane sand. Molds produced on our jolt machines are made with the green sand process.

# LARGE FLOOR MOLDINGS

For this molding we use phenolic urethane sand



# JOLT MACHINE MOLDING

For this molding we use the green sand process.

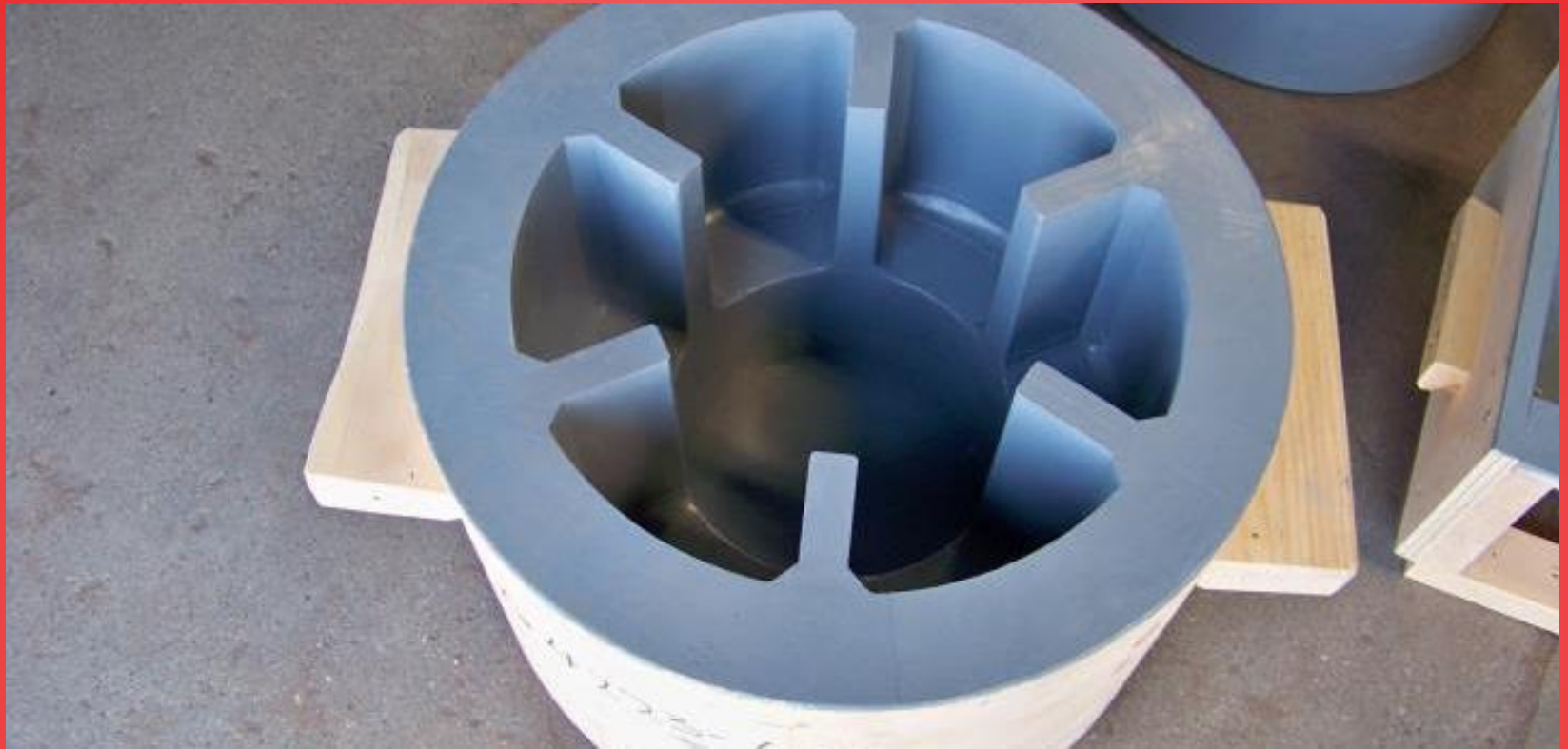




# CORE MANUFACTURING

- ▶ When a core is required, a core box will be made during the pattern making process. A core box can be made from wood or metal and sometimes styrofoam. A core is a sand insert used to shape features that cannot be formed by the two halves of the mold.

# AN EXAMPLE OF A CORE BOX



# MAKING CORES





# FINISHED CORES





# MELTING



Steel is melted in our electric arc furnace. Heat sizes range from 7,500 pounds to 15,000 pounds. The melted and refined steel is then tapped into ladles.



# POURING

- ▶ The ladles of melted steel are then moved to our pouring floor where the molds are filled with steel.



Bottom Pour

Small Pot Pour



# SHAKEOUT

After the casting is cooled, the casting is shaken out of the sand before going to our finishing department.



# CLEANING ROOM

- ▶ The casting is pulled out of the sand and sent to the cleaning room. The casting's gate system and risers are removed by torch cutting and then processed by grinding, air arc, and shot blasting. Any necessary welding is done in the cleaning room.



## CUTOFF



## GRINDING



## AIR ARC

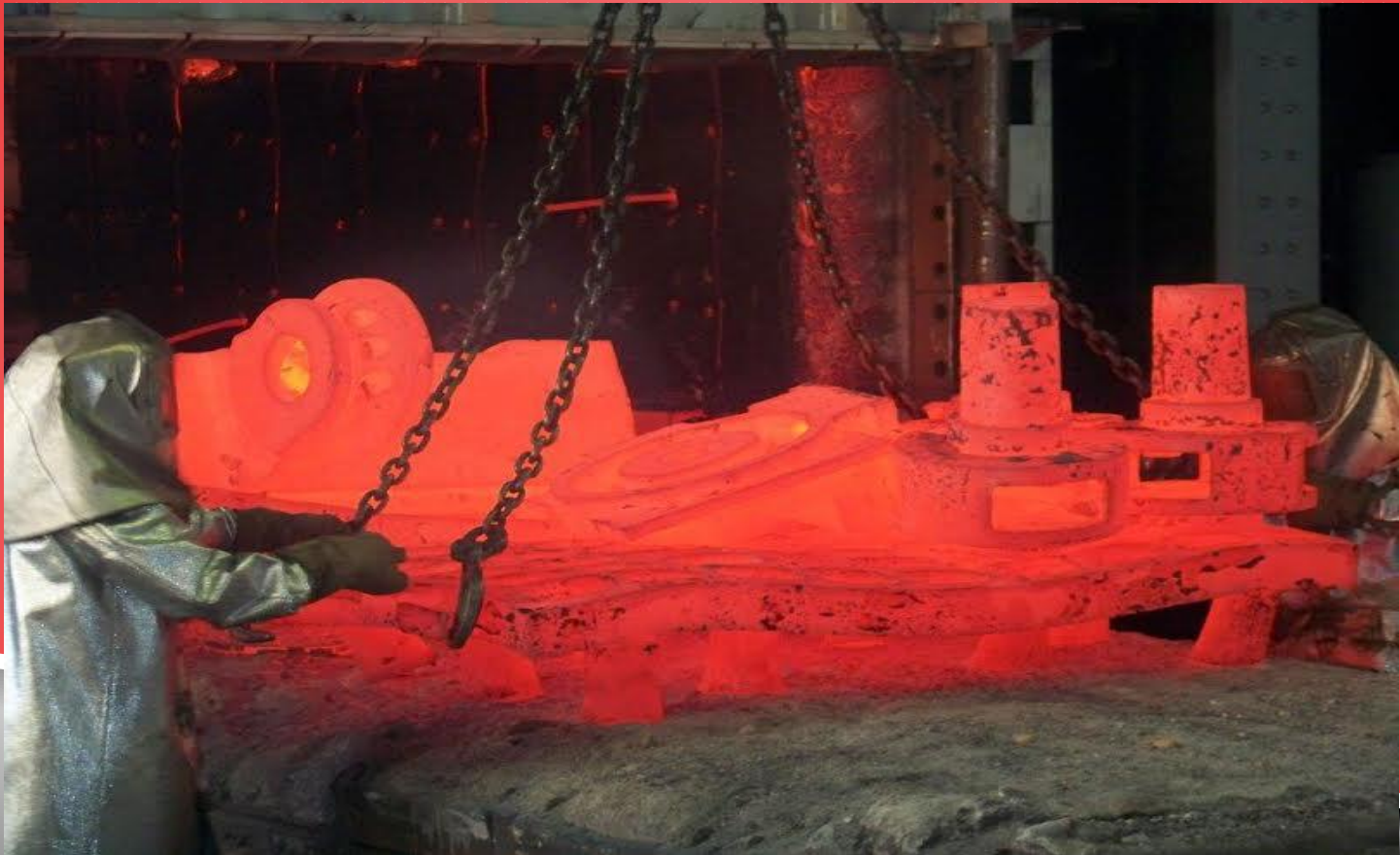


## BLASTING



# HEAT TREATMENT

- ▶ Castings are then heat treated to meet the customers material specifications.





# INSPECTION





# SHIPPING

- ▶ Castings are shipped by truck to the requested destination.

