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Design of hydraulic braking system to control the rotation of cooling drum

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Abstract

A dust collecting hood for use in conjunction with a sand cooling, blending, reclaiming of other rotary drum, within the casting industry, the hood incorporates an upper and lower section, either of unitary or separate construction, the upper section including a discharge opening which cooperates with a vacuum pump to draw air through the hood, and the proximate discharge end of the rotary drum, while the lower section of the hood provides a discharge opening for removal of the mold sand from the drum, the hood, at this collection location, while further incorporating ports through which air may pass for forming the air curtain across the associated hood and drum, for removal of said fines, dust, and other deleterious particles from the ambient air.

INTRODUCTION

A hydraulic unit for wheel slips control, which is located between a master cylinder and wheel brake cylinders. Reflection damping devices are installed in main brake lines located between the hydraulic unit and the master cylinder which damp pressure waves that originate at control valves of the hydraulic unit. When the control valves are triggered in the wheel slip control mode the pressure waves are largely kept away from the master cylinder. By the means of length adaptation of the main brake lines, the brake lines can also contribute to the damping.

LITERATURE REVIEW

Delijaicov et al: applied multiple regression and neural network to synthesize a model for peen work forming process.

Y. Chang et al: (2001) investigated the properties of green molding sand and new model is developed to evaluate the flowability of molding sand compact in this study experimental results are presented to show how the flowability of silica sand is affected by water content, bentonite and sea coal content.

J. Jakubski et al: (2012) suggested applying neural network for controlling a quality of bentonite molding sand.

Jun Wang et al: (2010) investigated the compactability and uniformity of green molding sand by gamma ray attenuation.

INTRODUCTION:

Cooling drum is the main component used in foundry. The size of the cooling drum will be 12 feet long, 3000mm diameter. It is attached to the hood which helps to prevent the smoke emitting from the cooling drum. There are two sides in which the job enters through the drum and leaves through other side. The workpiece which is entering through the cooling drum is covered with the molding sand. At an medium temperature the workpiece covered with the molding sand enters into the cooling drum. Inside the cooling the molding sand and the workpiece is separated with the help of coolant inside the cooling drum. When the workpiece falls on the outside it falls as only workpiece. The molding sand is collected through the other chamber for the reuse process.the coolant drum is rotated with the help of the motor.

COMPONENT USED

A. Servobooster

A pneumatically operated servo booster has a housing divided by a diaphragm assembly into front and rear chamber respectively. A hub movable with the partition carries a vaccum valve seat and a plunger slidable within the hub carries an atmospheric valve seat, the seat cooperating with a spring urged poppet valve to control fluid flow to the chamber.

B. Pump

The pump is used to connect with the other components. The pumps are used for the flow of the oil to the required components.

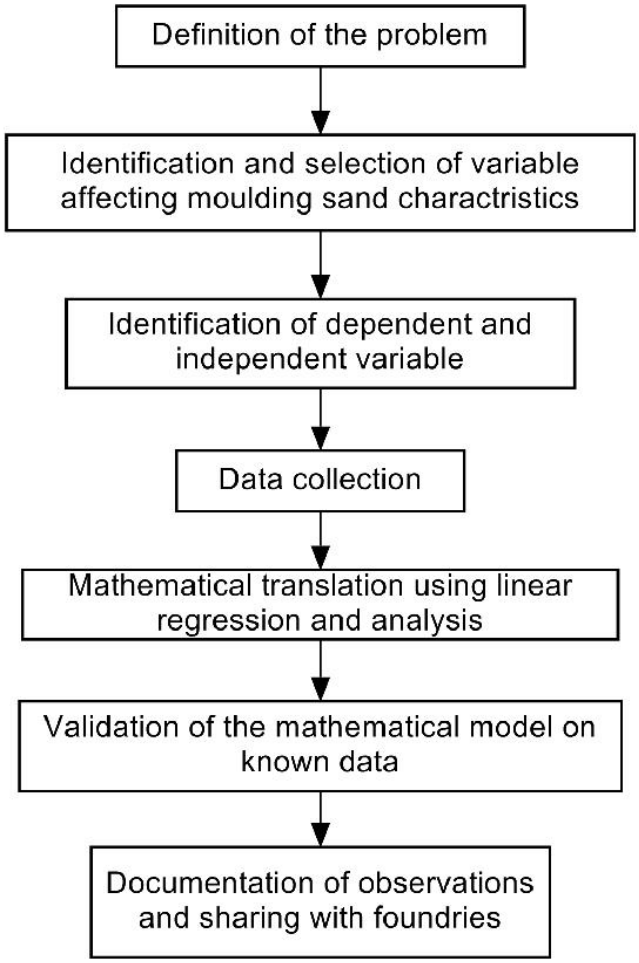
C. Reservior

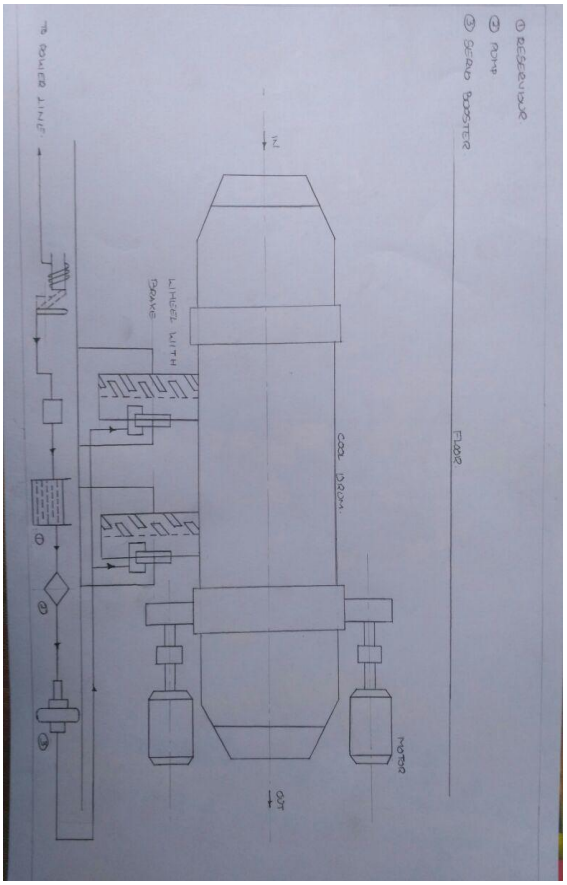
It is the storage area which is used store the oil for the process.

D. Braking System

The braking system used in this project is hydraulic braking system. The hydraulic brake works with the oil or any other liquid particles. When the piston gets the pressure the piston is made to move the oil to the braking disc which gives pressure to lock the brake.

VI. CHARACTERISTICS OF MOLDING SAND





VII. CALCULATION

\ T= r sinα

F= (T)/(r sin α)

r → perpendicular distance.

T → Torque.

F → Force.

α → Angle.

T= F*D

F= m*a a=g=9.81

m → mass

a → acceleration due to gravity.

VII. UNITS

Torque → N-m

Distance → meter (m)

Force → N

VIII. ADVANTAGES

- Quick process
- Quality increase
- Reduce scrap
- Reduce leadtime

IX. DISADVANTAGES

- High heat loss
- Rotates opposite direction during the power shutdown
- High maintenance cost
- High space required for installation

X. REFERENCE

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