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DESIGN, DEVELOPMENT, MOTION SIMULATION AND ANALYSIS OF ROLLER WITH COIL LIFTER FOR HEAVY COIL WRAPPING MACHINE

Sharath G S ⁽¹⁾ Manjunatha G ⁽²⁾ Srinivas S ⁽³⁾

⁽¹⁾ Assistant Professor, School of Mechanical Engineering, REVA University, Bengaluru, India.

⁽²⁾ Research Scholar, Bangalore University, Bengaluru, India.

⁽³⁾ Assistant Professor, School of Mechanical Engineering, REVA University, Bangalore, India.

Abstract

Aluminum sheet is rolled into heavy coils in the Rolling Mill which is also called as Eye end coils. In order to protect these Aluminum coils from dust, moisture and damages which may occur while transportation, loading and unloading. It can be prevented by wrapping with proper wrapper material like HDPE and Polyethylene film over the surface circumferentially; this preserves the same surface finish and quality obtained after rolling the coil. The present work is to Design and Develop a Roller with Coil Lifter for Heavy Coil Wrapping Machine to rotate the coil at a desired speed to wrap a desired wrapper material over the coil surface circumferentially and one the completion of wrapping process the lifter lift the coil and transfer it to roller conveyor. 2D drawings of roller with coil lifter which consists of General Assembly (G.A.), Sub-assembly and Part Drawings with detailing are prepared using AutoCAD 2012 tool and 3D modelling of roller with coil lifter are done using Solid Works 2013 tool. Motion Simulation is carried out on assembly which shows the operation of the machine using Solid-works 2013 tool. The load of the coil is directly acting on the rollers of the roller assembly and while lifting the coil load will be acting on the lifter. Analysis is carried out to check for safer design which should withstand the applied loads on the parts. The results will be compared with the values obtained from Numerical method.

Author Keywords

Aluminum, HDPE, AutoCAD 2012

Index Keywords

Coil Lifter, Coil Wrapping Machine, HDPE, Polythene film

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