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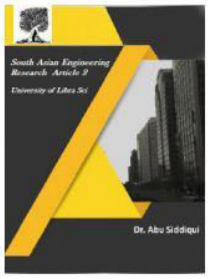

FABRICATION OF MINI BELT CONVEYOR

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ABSTRACT

This Journal deals with Belt conveyor which is the transports materials from one location to another. Belt conveyor has high load carrying capacity, large length of conveying path, simple design, easy maintenance and high reliability of operation. Belt Conveyor system is also used in material transport in foundry shop like supply and distribution of molding sand, molds and removal of waste. For instance, belt conveyor system can be employed for easy handling of materials beyond human capacity in terms of weight and height. A number of troughed belt conveyors have now exceeded 15 km in a single flight. Still there is an on going desire to further extend their length, capacity, speed and strength, while minimizing power and improving cost efficiencies. In this paper, we present techniques to meet the challenge of achieving the highest tonnes/kW/km at the lowest Total Life Cycle Cost using available, proven technology. Modern belt cover rubber and core gum influences are shown to have a major impact on this formulation. Belt safety factor and life expectancy is discussed

Keywords: Conveyor, Foundry, speed

1.INTRODUCTION

Conveyors are durable and reliable components used in automated distribution and warehousing, as well as manufacturing and production facilities. In combination with computer-controlled pallet handling equipment this allows for more efficient retail, wholesale, and manufacturing distribution. It is considered a labour saving system that allows large volumes to move rapidly through a process, allowing companies to ship or receive higher volumes with smaller storage space and with less labour expense.

Belt conveyors are the most commonly used powered conveyors because they are the most versatile and the least expensive.

Products are conveyed directly on the belt so both regular and irregular shaped objects, large or small, light and heavy, can be transported successfully. Belt conveyors are also manufactured with curved sections which use tapered rollers and curved belting to convey products around a corner. These conveyor systems are commonly used in postal sorting offices and airport baggage handling systems. Belt conveyors are generally fairly similar in construction consisting of a metal frame with rollers at either end of a flat metal bed. Rubber conveyor belts are commonly used to convey items with irregular bottom surfaces, small items that would fall in between

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rollers or bags of product that would sag between rollers. The belt is looped around each of the rollers and when one of the rollers is powered (by an electrical motor) the belting slides across the solid metal frame bed, moving the product. In heavy use applications the beds which the belting is pulled over are replaced with rollers. The rollers allow weight to be conveyed as they reduce the amount of friction generated from the heavier loading on the belting. Belt conveyors can be used to transport product in a straight line or through changes in elevation or direction. For conveying Bulk Materials like Grains, Ore, Coal, Sand etc., over gentleslopesor
gentle curvatures. In certain applications Belt Conveyors can also be used for static accumulation or cartons.

2.BUILDING OF MINIBELTCONVEYOR

Step-1:-DESIGN

The first step is to design a complex but clear structure which represents the clear and visual model of a miniaturized version of a belt conveyor.This design was made through CATIA (Computer Aided Three dimensional interface) software, V5 version.

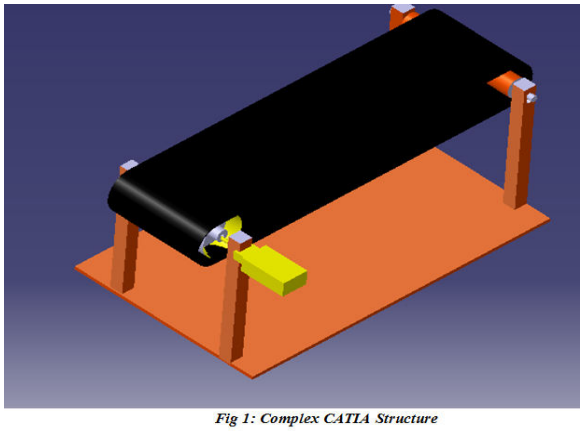

Fig 1: Complex CATIA Structure

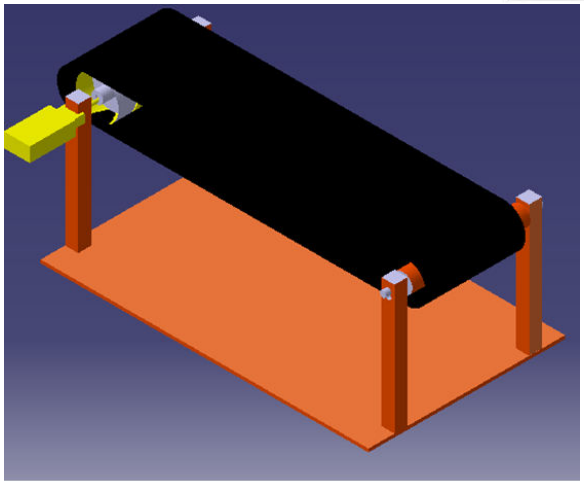

Fig 2: CATIA Structure (2)

Step-2:- Building materials

For making a simple belt conveyor, a very few amount of materials are required, such as a functioning motor, a power supply preferably an electrical connection through a power adapter and for a miniaturized version a couple of 9V batteries, two pulleys or two rollers, a rubber belt (butyl rubber). These are the few major components which are required. Other materials require a support structure preferably in the form of pillars and finally a base support.

Fig 3:butyl rubber belt

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Step-3:- Setup

The setup of a mini belt conveyor is a simple process.

 First, the base part is setup at the bottom to upholdtheconveyor.

 Second, the support structures are placed above the base at a certain position near the border lines to extend the range of the belt of thebeltconveyor.

 Third, the pulleys or the rollers are placed in between the support structures to uphold the belt of theconveyorsystem.

 Next, the rubber belt preferably the butyl rubber belt is placed upon the rollers or wrapped upon the rollers and the length of the belt is less the distance between both the rollers so that the belt can be completely attached totherollers.

 Then, the motor is attached to the one of the pulley which is in between the support structure and,

 Finally, the motor is powered by the electric connection preferably a power adapter. This rotates the pulley which in turns moves the belt and the materia
list transported.

Step-4:- Preview

Fig 4:-Fabricated mini belt conveyor

3. RESULTSANDDISCUSSION

This fabrication represents a simple and miniaturized version of the belt conveyor system, in which a gear motor is used for movement and power adapter is attached for a power supply. The entire system is operated by the gear motor with 6V DC and a power adapter with a range of AC 100-240V which supplies the power to the gear motor for functioning.

Fig 5:-Side view of the fabrication

4.CONCLUSION

This work represents a simple, elegant and miniaturized representation of the working of a belt conveyor. This version of the belt conveyor holds the capability to uphold a maximum of one hundred kilogramofweightandcantransportalmost 250centimetresofdistancewiththesamemassu ponthebutyl rubber belt in the belt conveyor. The conveyor runs with the help of a geared motor which provides high torque with low horse power and it operates with the help of a power adapter supplying the current. The minibeltconveyortransportslightweightedobj ectsfromacertainpointtoalimiteddistance.

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