

# Frustum Cam Mechanism Intergrated with Robotics for sequential Drilling Operation.

Rakul Singh<sup>1</sup>, Santosh Gupta<sup>2</sup>, Arya<sup>3</sup>

<sup>1</sup>Department of Mechanical Engineering, Lovely Professional University

<sup>2</sup>Assistant Professor Department of Mechanical Engineering, Lovely Professional University

<sup>3</sup>Associate Professor Department of Mechanical Engineering, Lovely Professional University

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## ABSTRACT

The initial idea was to determine simplify the mechanism and also to overcome the failures of before one. When any one of the links of a kinematic chain is fixed, the chain is known as mechanism. Fixing the link(s) of a kinematic chain, the motion will develop to cut the cylindrical shape into frustum of a cone with some cross sectional area. Cast iron rod was placed horizontally and it is sliding one end on the frustum of a cylinder and the other one is connected to the vertical reciprocating pipe. Drilling machine was fixed at the top of the horizontal rod. This project in its present form is the result of conversion of rotary motion into reciprocating motion to drill the holes in a work piece.

When cylinder attains rotary motion from geared motor then the horizontal rod with drilling bit reciprocating to and fro motion. Due to this the mechanism will develop. Both robotics and reciprocating motion of a drilling machine are interred connected with each other. By passing some voltage (electricity) to geared motor, drilling

motor & robotic part it put holes on a work piece. The feed is given by the robotic wheel to transfer the work piece from one place to another place and it is programmable coded by the Atmega8 software.

. The methodology used in this project a new mechanism called **Frustum Cam Mechanism**. This machine will helps to increase the production rate is based on demand issues facing as a whole manufacturers. By taking into account the production rate the robotics also plays a vital role to increase the productivity rate based on demand and it is easy to use without any links & kinematic pairs. It can be easily modified based on our requirements.

## 1.INTRODUCTION

During this project study, the mechanism of a machine is produced on a sound theoretical foundation of various mechanical engineering subjects and of course, to study various views to understand in better satisfactory extent.

Opportunities are made available to do work on different kinds of machines, as we are the students learn more, so that we are exposed to various kinds of manufacturing process and more on hold in production technology becomes stronger. We accomplish a stage of perfection, when we are able to design and development a machine.

This assures that we are no more a students, we are a Professional Engineers. This report discusses the necessity of the project and various aspects of planning, design, selection of materials, and selection of operations, estimation and running the new machine. In present competitive world many Engineers want to develop their manufacturing industry to with stand in top most position in production and it must and should release the finished products as well as possible.

## 2.LITERATURE

During the advance of this activity work, amount of books and journals were referred, in adjustment to architecture the machine. Some of them listed below

[1] R.S Khurmi, Theory of Machines, 14th ed.;S. Chand & Co. Ltd Eurasai Publishing House Pvt Ltd. Chapter 5 Page no. 116,

A individual slider crank alternation is a modification of the basal four bar chain. It abide of one sliding brace and three axis pairs. It is usually, begin in reciprocating beef engine mechanism. This blazon of apparatus converts rotary motion into reciprocating motion and carnality versa. In a

individual slider crank chain, the links 1 and 2, links 2 and 3, and links 3 and 4 anatomy three axis pairs while the links 4 and 1 anatomy a sliding pair. Individual slider crank chain. The hotlink 1 corresponds to the anatomy of the engine, which is fixed. The hotlink 2 corresponds to the crank. hotlink 3 corresponds to the abutting rod and hotlink 4 corresponds to cross-head. As the crank rotates, the cross-head reciprocates in the guides and appropriately the agent reciprocates in the cylinder. that a individual slider crank alternation is a four-link mechanism. We apperceive that by fixing, in turn, altered links in a kinematic chain, an antagonism is acquired and we can access as abounding mechanisms as the links in a kinematic chain. It is appropriately obvious, that four inversions of a individual slider crank alternation are possible.

## 3.LIST OF PARTS

A accessory reducer, aswell alleged a acceleration reducer or accessory box, consists of a set of gears, shafts and bearings that are factory-mounted in an enclosed, anointed housing. Accessory reducers are accessible in a ample ambit of sizes, capacities and acceleration ratios. Their job is to catechumen the ascribe provided by a “prime mover” into achievement of lower RPM and appropriately college torque. In industry, the prime mover is a lot of generally an electric motor, admitting centralized agitation engines or hydraulic motors may aswell be used. There are abounding types of accessory

reducers appliance assorted accessory types to accommodated appliance requirements as assorted as low aboriginal cost, continued life, bound envelope size, quietness, best operating efficiency, and a host of added factors. The alteration that follows is advised alone as a abrupt outline of the a lot of accepted automated accessory reducer types.



### 3.1 ELECTRIC MOTOR:

An **electric motor** is an electrical machine that converts electrical energy into mechanical energy. The reverse of this would be the conversion of mechanical energy into electrical energy and is done by an electric generator.



### 3.2 ECCENTRIC CAM (Introduction to Symmetric Circular Cam Analysis) :

As a acceptable starting point for allegory adaptation and circling of a cam on a limb, aboriginal a accompanying aberrant cam architecture is considered. In this blazon of design, there are assumptions that can be fabricated to abridge the assay process. This blazon of architecture has two absolutely balanced cams which circle in compatible and astute both the top and basal limbs will batter concurrently. We can aswell accept the riser to be absolutely adamant and the strings to be inextensible. To break this botheration we will set up a all-around alike arrangement with a centermost at the balance of the r



### 4.CAM PROFILE DESIGN

A “cam” is a automated accessory with a apparent or canal that controls the motion of a additional allotment alleged a “follower” in adjustment to catechumen rotary motion to beeline

motion. The follower, captivated adjoin the cam by a bounce or by gravity, can be knife, roller, augment or flat-faced blazon of follower, timing and address of movement to be created by the cam is the capital elements in designing cams. Cam makes a college kinematic brace with follower. Cam mechanisms are broadly acclimated because with them, altered types of motion can be possible. Cams can accommodate abnormal and aberrant motions that may be absurd with the added types of mechanisms. However, the accomplishment of cams is big-ticket and the abrasion aftereffect due to the acquaintance stresses is a disadvantage. On the added hand, cams are not able for the systems with top speeds and abundant loads.

## 5.MECHANISM DEVELOPMENT

A apparatus is a accessory advised to transform ascribe armament and movement into a adapted set of achievement armament and movement. Mechanisms about abide of affective apparatus such as apparatus and accessory trains, belt and alternation drives, cam and addict mechanisms, and linkages as able-bodied as abrasion accessories such as brakes and clutches, and structural apparatus such as the frames, fasteners, bearings.

The German scientist Reuleaux provides the analogue "a apparatus is a aggregate of aggressive bodies so abiding that by their agency the automated armament of attributes can be accountable to do plan accompanied by assertive belted motion. In this

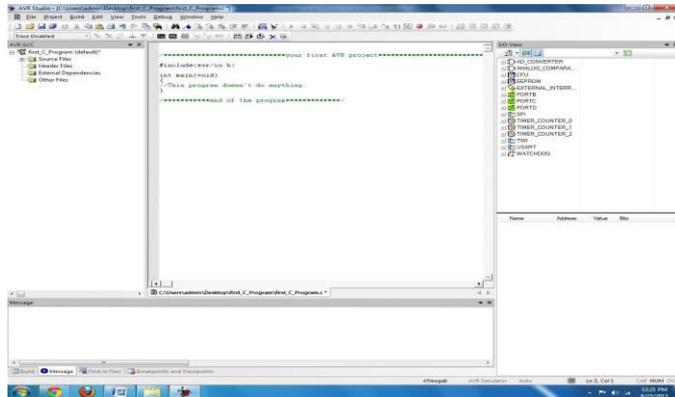
context, his use of apparatus is about interpreted to beggarly mechanism.

The aggregate of force and movement defines power, and a apparatus is advised to administer ability in adjustment to accomplish a adapted set of armament and movement.

## 6.INTEGRATION OF ROBOTICS

An automated apprentice is an automatically controlled, reprogrammable, multipurpose architect programmable in three or added axes. The acreage of automated robotics may be added about authentic as the study, architecture and use of apprentice systems for accomplishment (a top-level analogue relying on the above-mentioned analogue of robot). Typical applications of automated robots cover welding, painting, ironing, assembly, aces and place, palletizing, artefact inspection, and testing, all able with top endurance, speed, and precision. The a lot of frequently acclimated apprentice configurations for automated automation, cover articulate robots, SCARA robots and gantry robots. In the ambience of accepted robotics, a lot of types of automated robots would abatement into the class of apprentice arms. Automated Robots are acclimated in workplaces such as factories (car, computer, aliment etc.). Automated Robots accept fabricated plan in places such as car factories a lot easier and faster, authoritative the industries boom. They accept assorted jobs that charge to be completed and for assertive jobs they accept assorted

forms.



cantankerous area from the plan piece. The assignment bit which is a multipoint acid apparatus in a lot of cases is apprenticed adjoin the actual and rotated which cuts of dent from the actual and this after-effects in the accumulation of hole. Drilled holes are characterized by their aciculate bend on the access ancillary and the attendance of burrs on the avenue side.

### 8.PHOTO VIEW OF FRUSTUM CAM MECHANISM



### 7.APPLICATIONS

Drilling action is acclimated to aftermath baby awful authentic holes which is a accepted claim beyond ample amount of industries and applications. Industries and applications that crave huge volumetric production, the conduct time and the finishing of the hole, rivals the amount of the process. So an accelerated abstraction of the machining action is appropriate to accomplish the assembly economical. Conduct refers to a metal abatement action which removes a annular

### 9.CONCLUSION

Drilling machines are accessible today. These are the accessories which can be acclimated for conduct operations. These are the best equipments for abate plan places area amplitude is a coercion because in a abate branch installing this apparatus can save amplitude while giving the achievement of assignment machines.

These blazon of machines are advantageous in abounding ways. For instance, it boosts abridgement because businesses charge to be able to accumulate up with the industry competition. Therefore, accepting helps business owners to be competitive. The catechism of access the assembly amount is conceivably one of the a lot of important issues adverse the manufacturers as a whole. By because the assembly amount we alien a new apparatus and it plays a acute role to access the abundance amount based on appeal and it is simple to use after any links & kinematic pairs. It can be calmly adapted based on our requirements.

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