# EXPERIMENT NO. 2

TITLE

Slider Crank Mechanism

OBJECTIVES
To study the effect of various parameters on the output of a Slidercrank mechanism

PREVIEW OF THEORY

The Slider-crank mechanism is used to transform rotational motion into translational motion by means of a rotating driving beam, a connection rod and a sliding body. In the present example, a flexible body is used for the connection rod. The sliding mass is not allowed to rotate and three revolute joints are used to connect the bodies. While each body has six degrees of freedom in space, the kinematical conditions lead to one degree of freedom for the whole system.
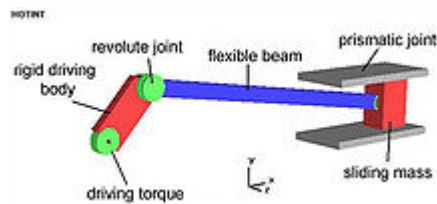
A slider crank mechanism converts circular motion of the crank into linear motion of the slider. In order for the crank to rotate fully the condition L> R+E must be satisfied where R is the crank length,L is the length of the link connecting crank and slider and E is the offset of slider . A slider crank is a RRRP type of mechanism i.e. It has three revolute joints and 1 prismatic joint. The total distance covered by the slider between its two extreme positions is called the path length. Kinematic inversion of slier crank mechanisms produce ordinary an whitework quick return mechanism

The motion of the mechanism can be viewed in the following gif animation :
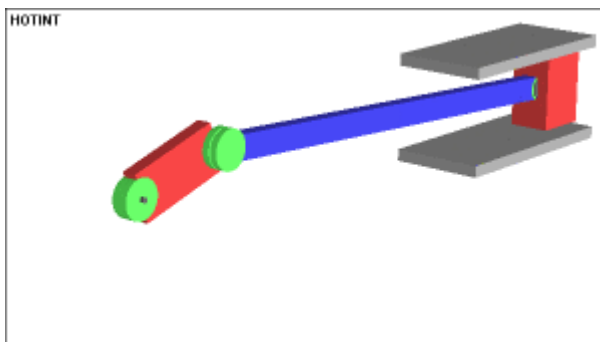
PROCEDURE

- Insert the crank,slider & offset length in the three text boxes.make sure that slider length is larger than the sum of crank length & offset.
- Click the simulation button to run the simulation.
- The left top figure in the output shows the graphical simulation of the slider crank mechanism.
- The other three panes show the variation of both the angles with respect to time and the variation of theta2 vs theta1 respectively.

Below is a picture of the GUI as it would appear on the users screen :
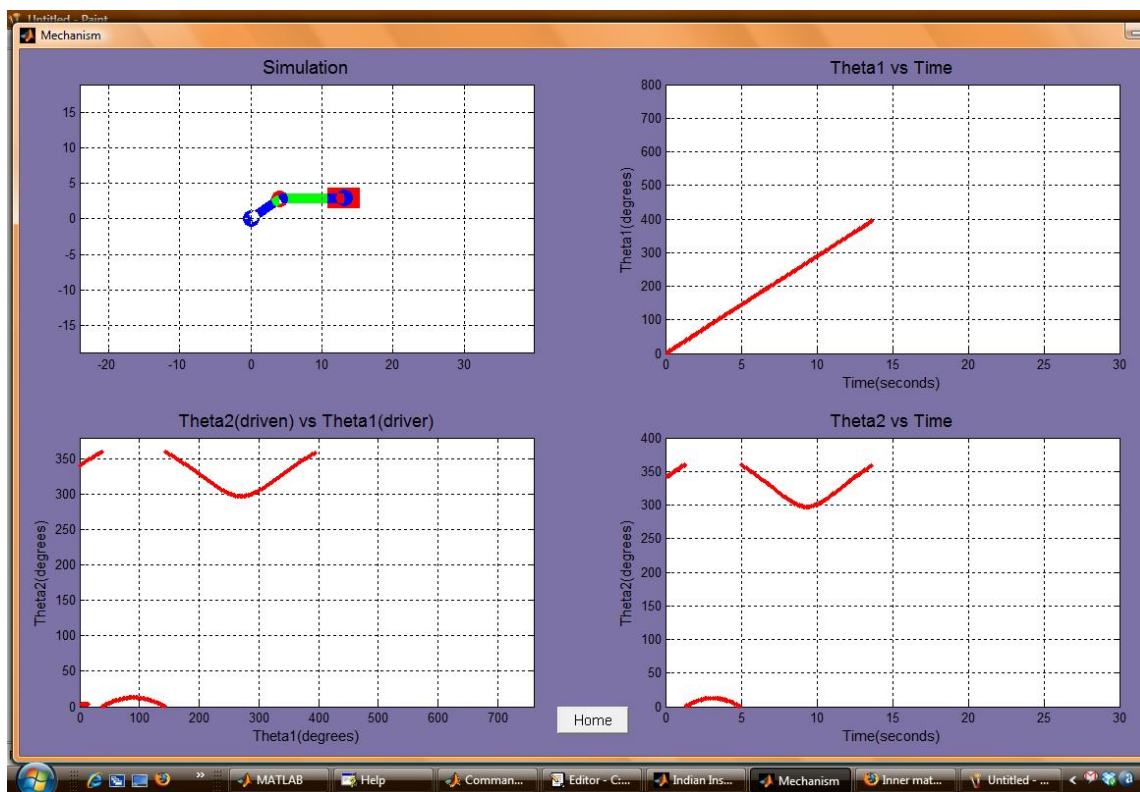
EXPERIMENTAL PHASE :

Results Obtained

To be filled in by the user

> To be filled in by the user

CONCLUSION

> To be filled in by the user

QUESTIONS TO USER :

A slider crank mechanism converts_____ motion into _____ motion.

Circular into Linear.

What do you understand by the term path-length of the slider ?

The total distance covered by the slider between its two extreme positions is called the path length.

What is the condition to rotate the crank fully ?

L> R+E where R is the crank length,L is the length of the link connecting crank and slider and E is the offset of slider.

Name the type of hoints in the slider crank mechanism.

Revolute joint , prismatic joint.