

Analysis Of Quick Return Mechanism Using Vector Analysis

Problem Statement

Find the Output torque of the quick return mechanism for one full cycle of motion when force are applied on the piston. The magnitude of the force is a function of the anglr of the driver link. $T = T^*(\sin(\theta))$

Given Data

Length Of each Link in meters.

Angular velocity of the driver link.

Control Buttons

"RUN" button starts the animation.

"STOP" button stops the animation.

"RESET" button resets the animation.

Procedure

Set all the input parameters using sliders. Press reset button and then start button to start the animation.

Concepts used

Free body Diagram.

D'Alembert's Principle.

Displacement analysis.

What to see

Various graphs are plotted.

Graph of the angle of oscillating link vs. angle of the driver link

Graph of the angle of link connected to the piston vs. angle of the driver link

Graph of the output torque vs. angle of the driver link

Free Body Diagrams are displayed.