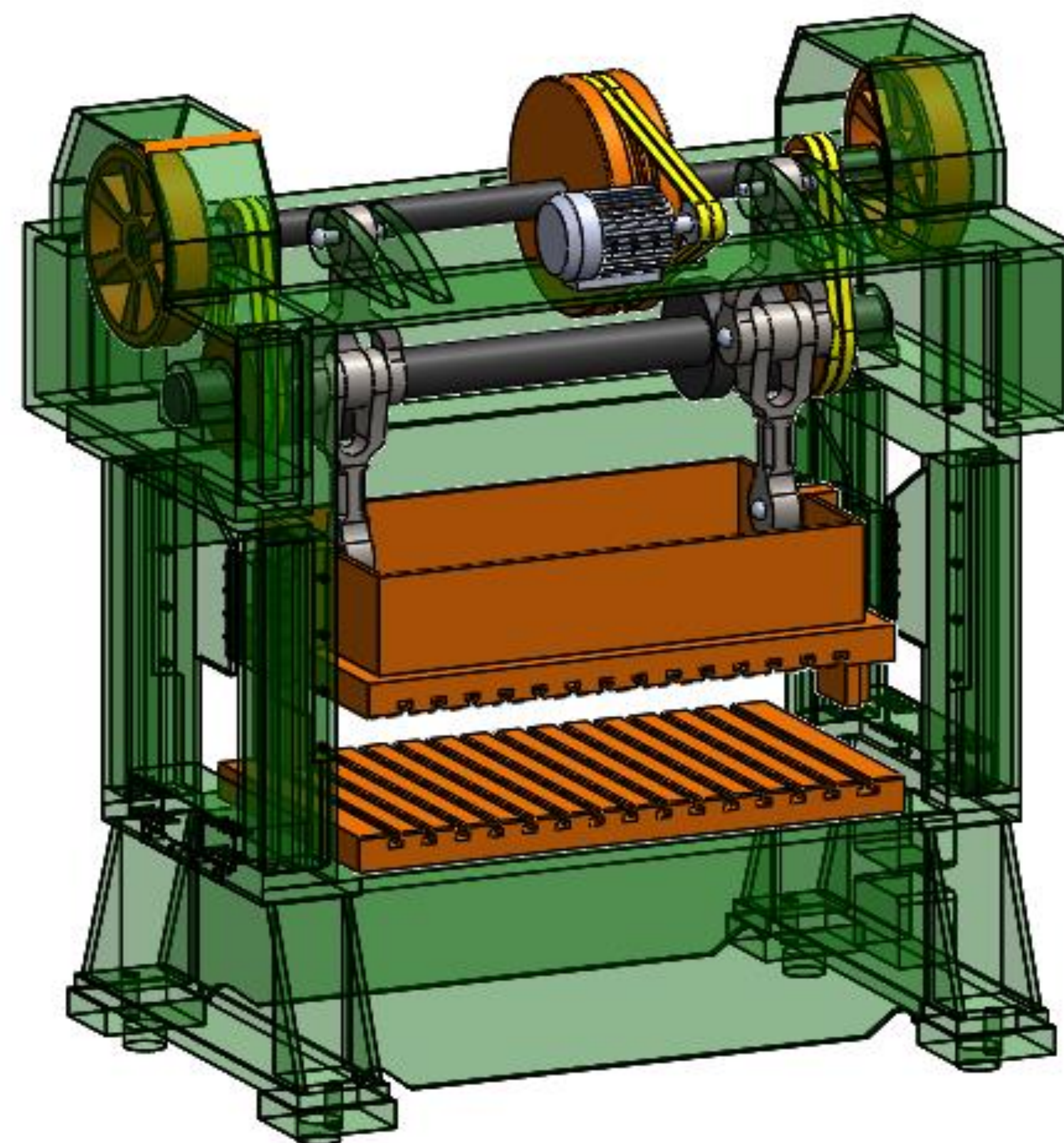


Objective: To determine the feasibility of optimized press designs via CAD solid modeling and animation

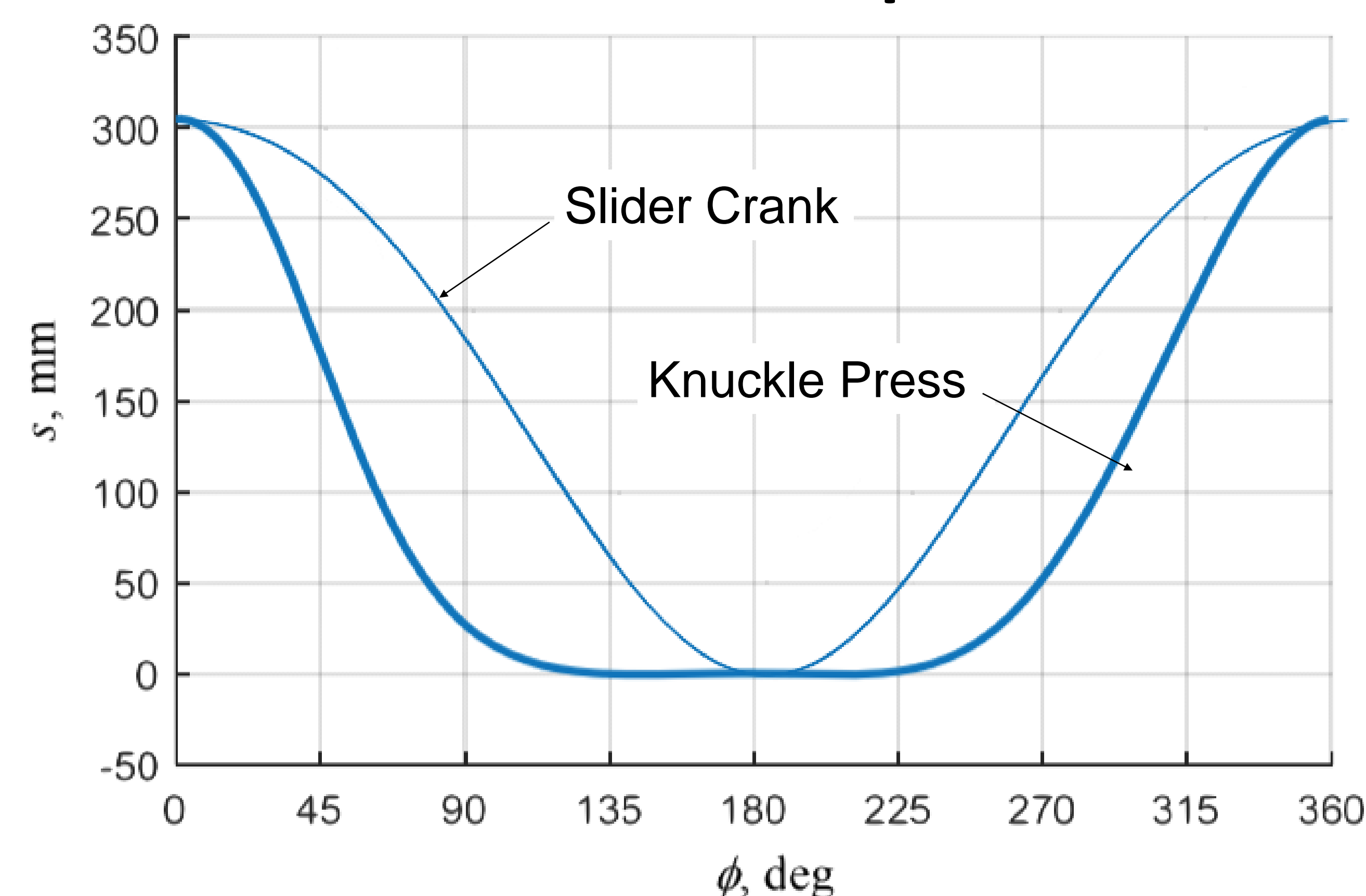
Introduction

A mechanical press is a common manufacturing machine that is used to form and cut sheet metal. The benefit of mechanical presses is the high stroking rate that can be achieved with low energy input while in use. Mechanical presses use a flywheel to store energy and a series of linkages to convert rotational motion into linear motion. This research explores models for different mechanical systems that obtain this desired dwell. The designs presented include variations of a knuckle joint press mechanism and variations of a geared five bar with connecting rod and sliding output.

Press Driven by Knuckle Joint

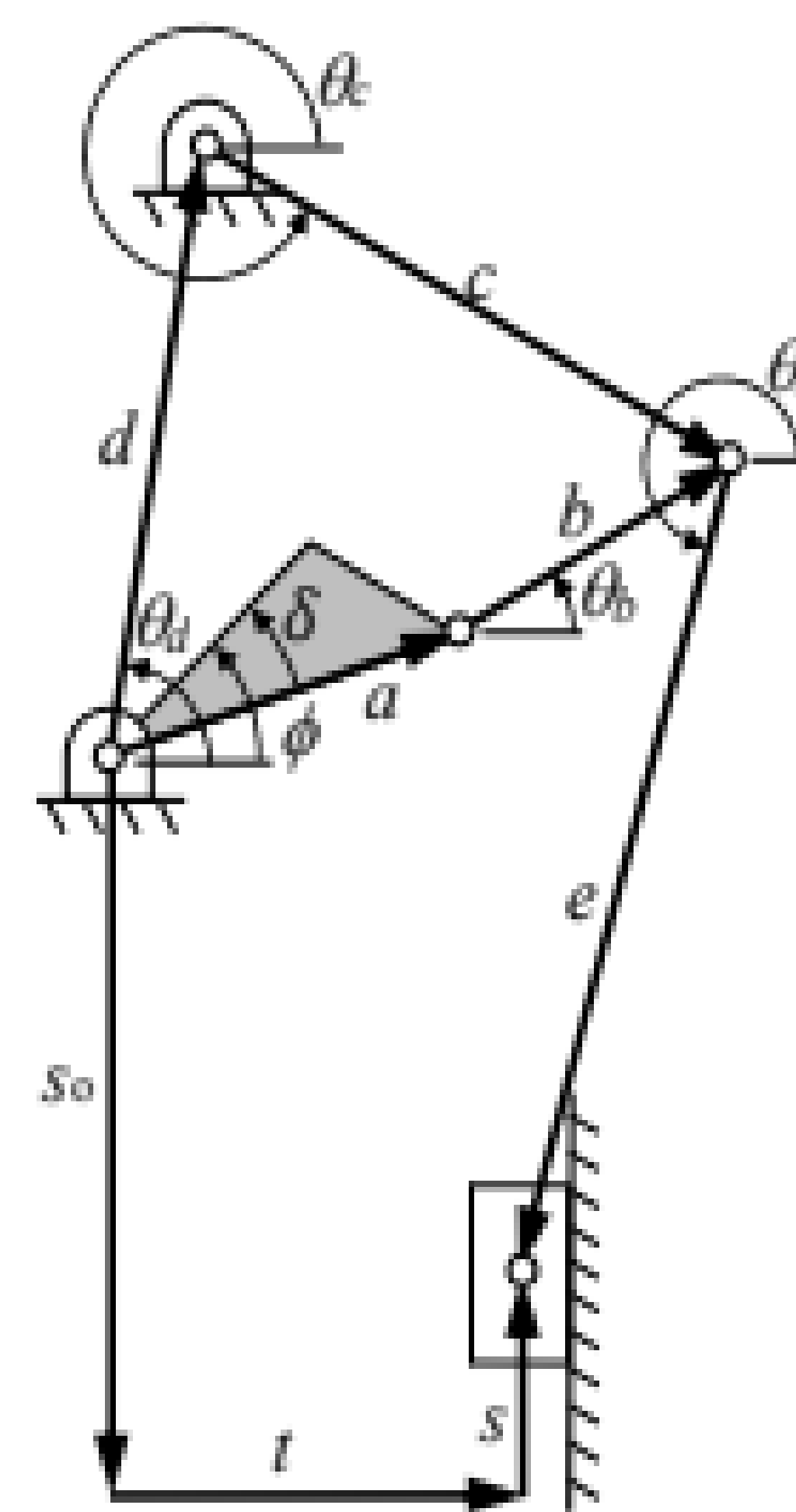


Stroke curve comparison



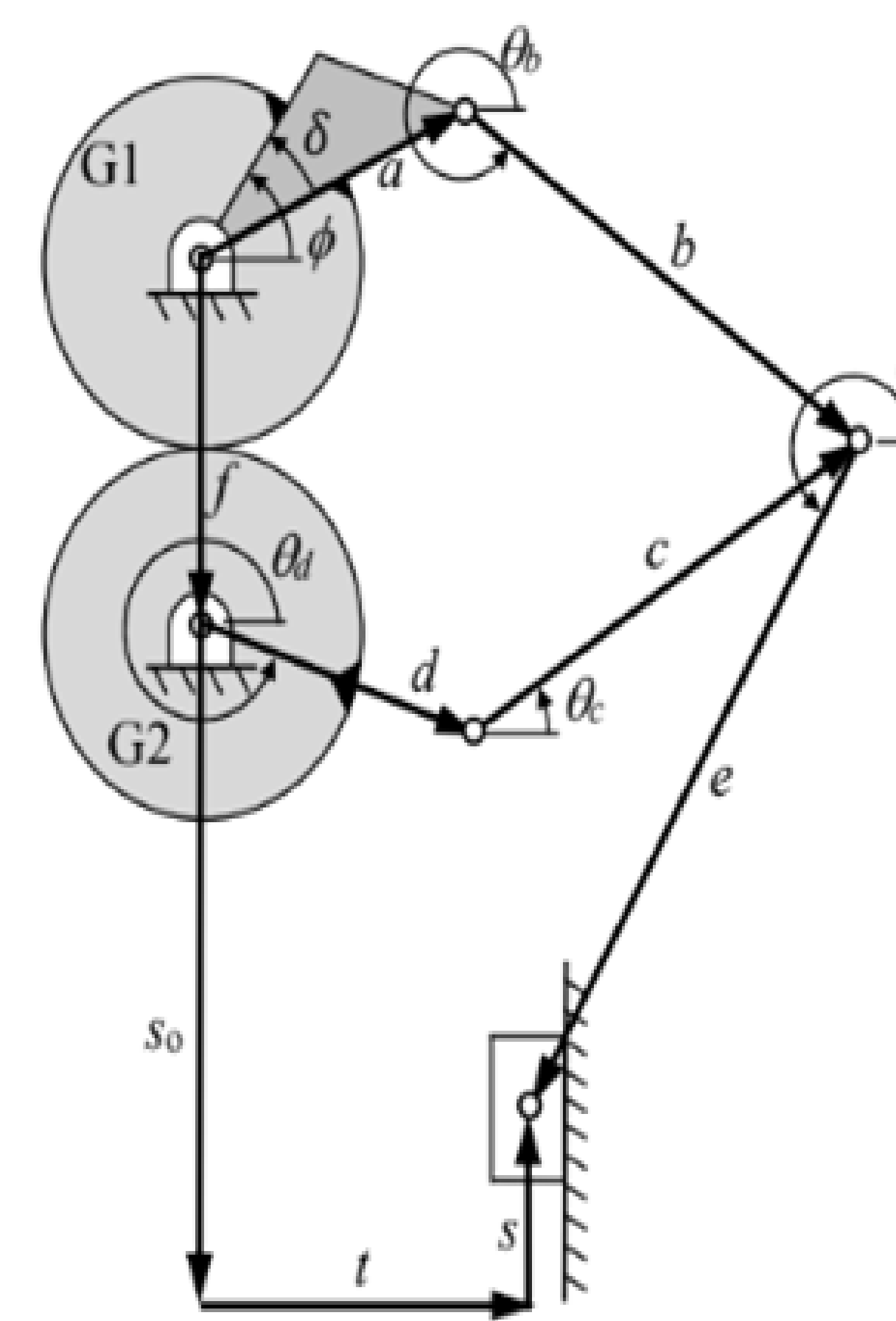
Vector Diagrams

Knuckle Press



Dwell: 129°

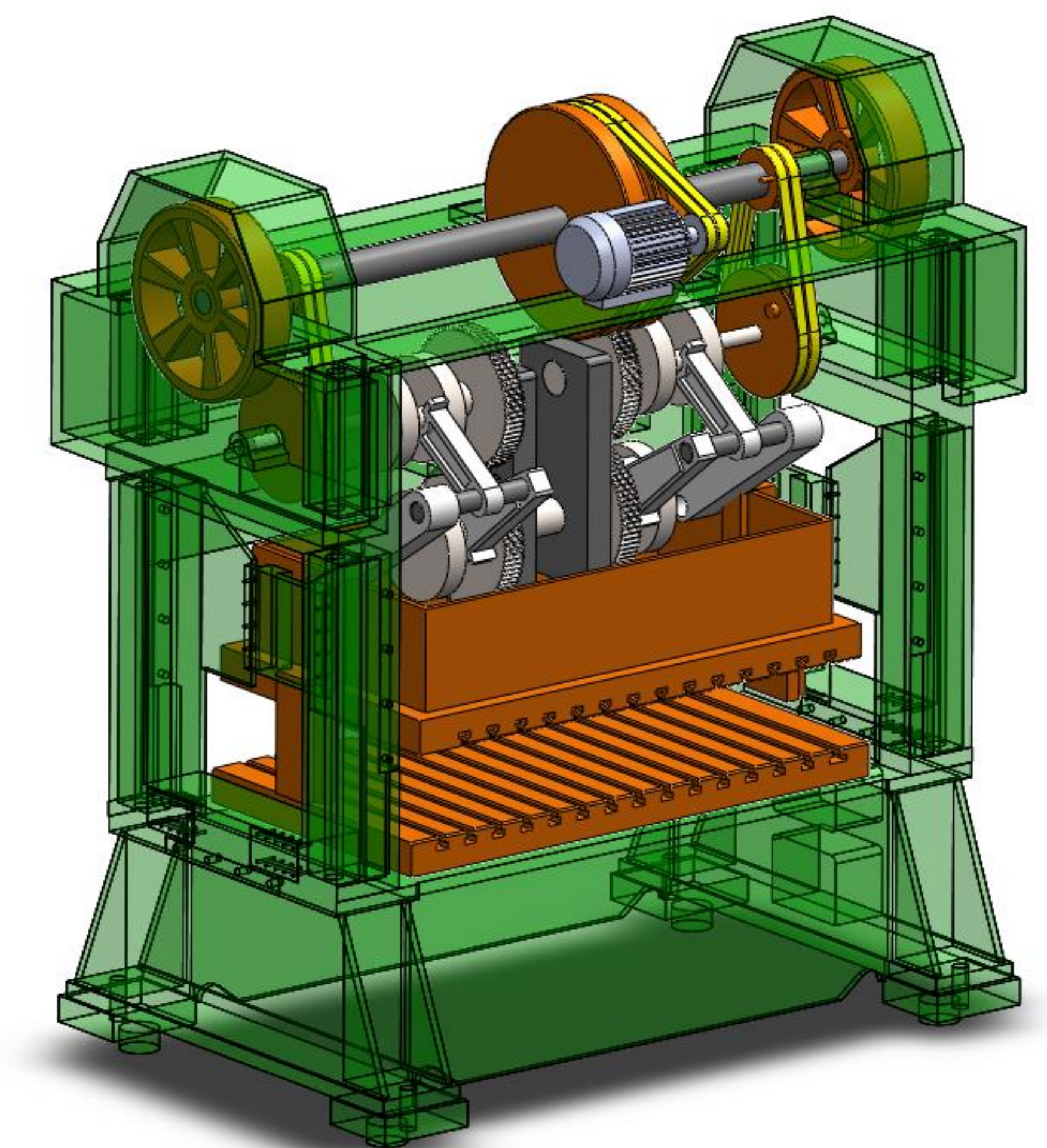
Geared Five Bar



Dwell: 149°

Findings: Both the Knuckle Joint drivetrain as well as the Geared Five Bar drivetrain are able to produce the desired dwell when in use without any critical interference.

Press Driven by Geared Five Bar



Stroke curve comparison

