

Design and Development of Three-way Trailer

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Abstract: *This project presents the design and development of an automated three-way tipping trailer using an electro- mechanical system for efficient material unloading. Unlike conventional trailers with rear-only tipping, this model can tip in left, right, and rear directions using a combination of spur gears, worm gears, a motor, and an Arduino-based control system. The worm gear ensures self-locking and controlled tipping, while the spur gear aids directional alignment. A motorized mechanism, programmed through Arduino, enables user-defined operation. The system was modeled using CAD software and analyzed for load distribution and stability. This design improves versatility, reduces manual effort, and enhances safety in agricultural and industrial applications*

Keywords: Spur Gear, Worm Gear, Electromechanical system

