

GURG 2019 Abstract

**Optimization Redesign of Cargo Ship Hopper**

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There are current designs of hoppers that are sitting on the port where cargo ships enter. The ships have large crane buckets that move material from the ship to dump trucks by means of funnel. The top portion of this funnel is a hopper that calls for a redesign. Some main dilemmas with the hopper are that it is easily damaged by the crane bucket, gives off a lot of dust debris, and is difficult to mobilize. Our project redesign looks to add a stronger support hopper that is resistant to damage and a dust ventilation system that reduces dust emission and increases safety. The final portion of our redesign involves a mobile rail system that can easily mobilize the large hoppers in a safe linear direction by means of motor.