

CONTAINER TIPPER AND BULK LOADER

BACKGROUND:

In 2004 Motovated Design & Analysis was approached by NZ Express Transport Christchurch Limited to help in the development of an innovative idea for loading grain and bulk products into containers. NZ Express was a freight distribution company, covering shipping, rail, road transport and warehousing until October 2005, and is now represented by Bedrock Trading Ltd.

The design specifications to be met were:

- Meet on road transport standards for size and weight
- Incorporate a weigh bridge using load cells
- Self sufficient operation
- Allow access to container door when vertical
- One hour container fill cycle
- Open and close container doors in any orientation

SOLUTION:

The Container Tipper and Bulk Loader (Figure 1) allows a standard 20 foot container to be stood vertically, and grain to be fed from the hopper into the container by the conveyor. The built-in weigh bridge measures when the desired transport load is reached, and filling is stopped.

Design features were added to allow the loader to be collapsed and loaded onto a truck for transport (Figure 2). Key features include:

- Single person operation, moving over 23 tonnes of grain in half an hour
- The generator, power pack and load cells are housed on board the main base, allowing independent on site operation
- A simple hydraulic lever system to open and close the container doors
- Strength verification of the design using Finite Element Analysis (FEA)
- Optimal location and size of the tipping hydraulic cylinders

RESULT:

The loader is entirely multi-functional, and may be used with a variety of filling methods, from silo tubulators and augers to direct filling from a truck or bucket loader.

The weigh bridge removes guess work and ensures that over-weight pay loads are no longer a worry. With a significant increase in gross turnover, the initial investment in design and fabrication was exceeded many times over. Motovated provided:

- Profile, weldment and assembly drawings for manufacture
- Specifications for electrical and mechanical control features for the correct and safe operation of the equipment
- Onsite reviews and technical assistance

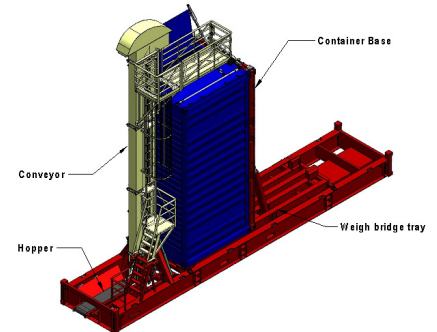


Figure 1: Container Tipper and Bulk Loader, in filling position

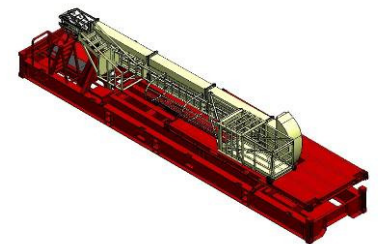


Figure 2: Container Tipper and Bulk Loader, collapsed for transport

“Rarely can anyone claim to have achieved with total satisfaction their initial expectations. The team at Motovated fulfilled their commitment to NZE and more.”

R. Riley, General Manager

Taking the stress out of engineering your vision!