

Electric Powered, Implement Test Run Module

Mechanical Engineering

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Abstract

The purpose of this project was to design, build, and test a stand-alone, electric powered "harvester test run module" providing power functions according to machine specifications including: PTO output shaft, hydraulic functions with quick connect fittings, electric functions with trailer plugs, and rear view camera system connection. The Test Run Module is designed specifically for Flory Industries' PTO and hydraulic powered agricultural equipment, but the design could be modified slightly to accommodate other PTO and hydraulic implements. It provides a safe, quiet, and emission free alternative to the diesel tractor currently used during the equipment test run procedure at Flory Industries' manufacturing facilities.

Figure 1: Final Design



Figure 2: Frame Weldment



Figure 3: Test Run Module Connected to PTO/Hydraulic Powered Harvester



Specifications

- Electrical Requirements: 480 V, 200 amp
- PTO Power Source: 100 hp. Toshiba Motor
- PTO Speed: 0-540 rpm.
- Hydraulic Power Source: 30 hp. Baldor Motor
- Hydraulic Oil Capacity: 40 gal.
- Hydraulic Flow: 0-22 GPM
- Weight: 3400 lbs.
- Dimensions: 48"H x 59"L x 54"W
- Safety Features: E-Stops at each corner, low oil shut off, indicator stack-lights

Parts Index for Figure 4


- | | |
|------------------------------|---------------------------------|
| 1. Frame Weldment | 8. NEMA 3R Electrical Enclosure |
| 2. PTO Guard | 9. Stack-Lights |
| 3. PTO Adapter | 10. Control Panel Assembly |
| 4. 3:1 Reducer Gearbox | 11. Three-Section Valve |
| 5. Flexible Shaft Coupling | 12. Camera Monitor |
| 6. 100 hp Motor | 13. Hydraulic Tank Assembly |
| 7. 30 hp Motor/Pump Assembly | |

Figure 4: Exploded View



Conclusion/Sponsors

Upon completion of the design and prototype phases, extensive testing was conducted to ensure the development of a safe and efficient product. The Test Module performed well through the testing process and met all design requirements.

Sponsor:  **FLORY INDUSTRIES**