Objective:

Work with Hesston engineers, Beck's hybrids personnel, and our technical advisor Dr. Dennis Buckmaster to identify the correct motor that would run the baler operation the most efficiently and design the baler to motor connection.

Deliverables

- Size up the motor to achieve optimum efficiency.
- Create a motor to PTO connection.
- Build a stand for the motor and the baler's tongue.

Baler Demands

We first started this project by gathering information from the Hesston engineers: Torque specifications, baler weight, and horsepower requirements.

- Torque-325 ft/lbs
- Weight empty-3000 Lbs
- Horsepower- 50-60HP estimated

After receiving this information we were able to shop for a motor which met these requirements.

- 100 HP 3 phase Marathon motor with VFD and Soft start
VFD

VFD - Variable Frequency Drive

- Allows you to program different torque peaks and start up torque.
- We were able to use a direct connection to the baler since we can program the RPM and Torque of the motor.

Soft Start

Why use Soft Start

- Reduce the torque delivered to the power train at start up.
- Reduce the mechanical stress on the motor and shaft, extending the lifespan of the system.

Shaft Connection

Direct shaft connection

- A direct shaft connection was used because of the simplicity.
- No gearboxes were needed which saved maintenance and money.
- Less weight on the stand.
Stand Construction

Basic Table Design

• By using a basic table design we were able to support the motor and the baler on this stand. We also needed to have a width of 4 feet to compensate for the 3 foot conveyor that delivers the material.
• For feet we used 6” and 8” channel iron, the 6” rides in the 8” with a 1” piece of UHMW plastic for the wear surface.
• Two levels
  • One for the motor to sit
  • One for the baler tongue to sit

Use of AutoCAD

• By using AutoCAD we were able to have precise measurements and dimensions.
• Build day and communication with Beck’s personnel was made easier with these drawings.

Table Dimensions

• Length-4’8”
• Width-4’8”
• Height-3’1.25”

Table Materials

• Legs-4”x4”x 3’ .25”
• Top-1” plate steel
• Feet-6” channel iron

Thanks to Our Sponsor Beck’s Hybrids

Jason Morehouse—Production Manager
T.J. Stewart—Operations Engineer &
Dennis Buckmaster—Technical Advisor