REPAIR & SERVICES

Case Study

Hydraulic Pressure Unit Redesign for Ore Processing Plants in the Oil & Gas Industry

Motion Repair & Services

Background: Improving Hydraulic Systems for Ore Processing

In the oil and gas industry, ore processing plants rely on mechanical sizers to crush oil sand ore in three stages: primary, secondary and tertiary. These sizers endure extreme service demands, resulting in severe wear and requiring routine rebuild activities.

To facilitate maintenance, the customer originally received four hydraulic pressure units (HPUs) designed to move 125-ton sizer beds from operational locations to maintenance areas. However, the original HPUs were overly large, complicated and unreliable, posing safety risks due to their size, weight and electronic propel design.

Figure 1: Original unit: The separate drivetrain suffered multiple failures, and the operation was not intuitive, described as "overly complicated" by the end user.

The Challenge: Designing a Safer, Simpler, More Reliable HPU

The customer required a replacement HPU design to address these key challenges:

- Meeting hydraulic requirements to perform the necessary functions (fit for purpose).
- Simplifying operation and reducing complexity.
- Replacing the electronic propel system with a hydraulic propel system, including steering capacity.
- Improving reliability and safety for hydraulic and propel functions.

Our Solution: A Custom-Designed Hydraulic Pressure Unit

Our Fluid Power Services Group collaborated closely with the customer to design and construct a new HPU from scratch. The design focused on tackling the key issues of the original units while maintaining fit-for-purpose requirements.

The new design prioritized safety, reliability and ease of operation, ensuring the unit met the customer's operational needs.

Figure 2: The new Motion design unit with integral hydraulic propulsion.

Figure 3: The new design greatly reduced the complexity of operation while also increasing the reliability.

Figure 4: Due to the aggressive nature of the operating environment, we included a cover in the supply of these units.

Results: A Safer, More Efficient and Reliable HPU

The newly designed HPU delivered significant improvements over the original units:

Reduced Size and Weight:

- The new unit is significantly smaller and lighter, making it easier to maneuver.
- The unreliable 24V forward/reverse function was replaced with a hydraulic drive system, which uses the unit's hydraulic power for propulsion and full steering capacity via an operator joystick.

- Only one technician is now required to move the unit, compared to two to three technicians with the old design.

Improved Hose Management:
- The new unit features four 50-foot, ½-inch hoses on retractable reels, replacing the manually manipulated 1-inch hoses of the original design.
- This reduces the risk of strain-related injuries and eliminates tripping hazards from hoses lying around when the unit is not in use.

Simplified Operation:
- The new design significantly reduces operational complexity, making the unit easier to use.
- Hose fittings are configured to support error-proof connection activities.

Enhanced Reliability:
- The transition from an electronic propel system to a hydraulic one has greatly reduced operational failures.

Additional Features for Safety and Organization:
- Mounted gang boxes provide storage for job-related tools, fittings and other equipment.
- Dedicated mounts for hydraulic cylinders on the cart promote proper storage and housekeeping in the work area.

Partner With Us for Custom Hydraulic Solutions

Our team's expertise in hydraulic systems enabled us to deliver a safer, more reliable and user-friendly HPU design that met the customer's specific needs. For more information, visit MiRepairandServices.com or call 1-800-526-9328.