Hydraulic Power Units

Electro-Hydraulic Automation can provide:

- Standard Pre-engineered fixed and pressure compensated power units
- Custom Power units
- Complete systems from actuators to electronic controls.

Nearly all hydraulic systems are run by a hydraulic power unit (HPUs). The main task of a hydraulic power unit is to convert mechanical energy into hydraulic energy in the form of pressure and flow. HPUs power the components that allow the machine to achieve motion. They range from small self-contained units to large turn-key systems. Although some units are designed for multitasking, like a tractor motor, they are most often built for a single task and typically consist of a hydraulic motor, pump, reservoir tank, spin on filter, and pressure port as a basic power unit.

Standard vertical Base-Pak power units from 3 to 30-gallon reservoirs

The engine or motor that drives the pump is called the prime mover. Mobile equipment typically relies on gasoline or diesel-powered engines while electric motors are more common inside industrial plants. Custom-built, pre-engineered packages offer more modularity, features, and services.

Overall cost savings may also be achieved with a custom power unit by gaining more floor space, better serviceability, connectivity, and energy efficiencies. Balancing cost, robustness and longevity is not an easy task. It requires an engineering team with proven design and application experience capable of meeting the necessary application needs. Note, saving money upfront by using a standard package may cause maintenance and down-time costs far in excess of the higher cost of quality components and expertise at the outset.

These are some distinguishing characteristics that separate a standard unit from a truly custom unit. Custom power units don’t start by attempting to fit into any given preconceived product. A custom power unit takes into account specific location and logistics needs of the application. That may include:

- space and layout constraints
- power requirements

- environmental factors
- hazardous location requirements
- PLC integration
- duty cycles & heat loads

Customization generally involves a specific reservoir design and type, filtration system, appropriate pumps and motors, pressure control valves and switches, valve manifolds, and other accessories such as, accumulators, gauges, and heat exchangers.

With a custom power unit, you will collaborate with EHA engineers, designers, or project managers with specialized knowledge of fluid power components and technologies and possible previous experience with your application.

Overall power and force requirements are first assessed. Certain applications may require unique features such as higher pressures, a faster response, or heavy duty and continuous operation. Drive requirements of more than 100 hp are typically beyond the scope of a standard configuration.

The decision to pursue a custom power unit may be driven by performance goals, such as new product processing, packaging requirements, or persistent maintenance issues. Other factors may include environmental issues such as structural and airborne noise, harsh operating conditions, and safety issues.

Maintenance and serviceability are a fundamental consideration sometimes taken for granted. Even the most robust power unit will require service. Components will eventually fail and consumables like filter elements will need to be replaced. Experienced designers will take this into consideration when planning the layout for the power unit. Also, it's important to assure all the piping, tubing, and hoses have the correct bend radius and that they will be properly clamped.

Aa central power system may be considered as the primary source for several independent equipment operations. Some plants have machines which collectively require hundreds of gallons per minute flow at a similar pressure. It is beneficial to have one large central hydraulic power unit rather than numerous smaller distributed units for easier maintenance, a more efficient layout, and system backup.

EHA benefits

Choosing a partner with product sourcing, integration, and manufacturing capabilities is beneficial. It will make the process of specifying, designing, and building a custom power unit less daunting. Consider the following list of attributes when selecting a vendor.

- Industry-Knowledgeable – Has the vendor designed and built previous power units for your industry? Are they familiar with specific certification requirements? Do they have favorable testimonials from other customers?

- *Testing* – Do they provide testing? Is it witnessed or unwitnessed? What documentation do they provide? Do they have test equipment capable of simulating final operating conditions? Are their technicians knowledgeable of fluid power principals?

- *Service* – Are they able to support cost-effective repairs through the life of the warranty and beyond? Are they capable of providing factory-authorized repairs and able to service all component brands? Do they have in-house machining and able to fabricate parts on demand, if needed? What is their rapid response time in the event you need urgent on-site service?

- *Innovation* – Do they demonstrate Industry 4.0 technical capabilities? Can they provide components with the latest technologies to integrate with smart machines?

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