

TOUGH JOBS

Portable and Powerful Universal Motor in a Complete Pump Package

This OEM is a global manufacturer of high performance fluid power and pump products. Their hydraulic pumps feature heavy-duty construction and time-proven design, and are portable and lightweight—featuring excellent weight to performance ratio.

“The tough part of this application goes beyond the motor to the ‘whole package,” said Arlo Heynen, Regional Account Manager, in describing this fluid power/pump application. “The exceptionally high power-to-weight ratio makes the universal motor, hands down, the best choice. When an application needs portability and high power, the universal motor has about as much as you can get.”

A customized motor with adjustments to the motor stack length and windings turn ratio allowed the design team to get the “sweet spot” of 11,000 RPM in a fairly compact package. “You can design a universal motor with tremendous peak HP ratings,” said Heynen, “but we try not to get into that trap of shooting for a big number, but rather focus on design for the application.”

The design is performance tested for peak power, current draw, speed and motor temperature. With universal motors, we “usually start with a really big fan,” added Heynen. Universal motors are physically smaller and because of their high power density, they don’t have much of a natural heat sink. If the application load can be accurately simulated, the temperature rise of the motor can be estimated and the required cooling vs. motor size is optimized. A fan that is too large can provide adequate cooling, but it can reduce the motor efficiency and cause other issues. “In all honesty, we have to go a lot by ‘feel and experience’ when sizing a fan,” he said. Groschopp has been designing universal motors for 40 years and has strategic partners who are experts in fan design.



The motor was optimized for rugged conditions, including custom windings for the armature, machining the housing and end bells, and assembling, testing and providing quality assurance for the complete assembly. Unique to the application is its rugged removable cast metal motor housing, which is produced by the Groschopp-selected vendor to exacting specifications and includes design, tooling, vendor selection, and production. “Our customer values getting a completely integrated solution that is assembled, tested and ready for installation in their machine. We have a great quality record with this assembly and our delivery is excellent” added Heynen.



FOCUS ON: FLUID POWER

Arlo Heynen
Regional Account Manager,
Groschopp Inc.



The Challenge

This application required not only a motor, but a design and manufacturing partner to assist with specification, production and testing of an integrated solution. Performance specifications called for a high-torque motor, able to withstand the rigors of construction sites and rough handling, as well as being compact and lightweight for portability.

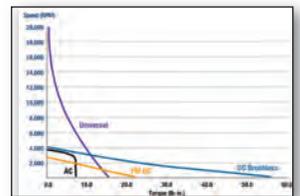
The Solution

- Two-Pole Universal Motor (UM) with custom winding and high torque output
- High power-to-weight ratio inherent to UM motors
- Design optimization for rugged operating environment and portability
- Special cast housing sourced and supplied by Groschopp for completely integrated solution

TOUGH JOB Design Resources

Quick Reference Guides

Our motor and gearmotor quick reference guides and comparison charts allow you to quickly evaluate the best solution for your application. Find them on our website by searching [keywords: Quick Reference Guides](#)



Technical Article

Learn about universal motor characteristics and their use in a wide variety of applications. Go to www.groschopp.com [keywords: Tireless Workhorse](#)

FEATURED PRODUCT

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