BODINE ELECTRIC COMPANY

engineered solutions

from Bodine Electric Company

Solar-Powered Injection Pumps

Solar-Powered Injection Pump / Oil & Gas Production

Efficient 12 VDC gearmotors keep natural gas flowing

The United States has an abundant supply of natural gas, but it is frequently located in remote areas which can have very severe winter weather.

During the winter glycol is often injected into natural gas pipelines to keep the natural gas flowing. Originally, the natural gas in the pipeline was used to drive pneumatic pumps for injecting the glycol. However, the industry phased out this practice due to increasingly stringent EPA regulations. Pump manufacturers turned to solar powered electric pumps (**click here** for more about Bodine low voltage products). While solar power is in abundant supply on sunny days, it is scarce on cloudy days. The injection pumps needed to operate reliably despite this fluctuating power source.

Bodine worked with a pump manufacturer to improve the system efficiency. To eliminate some sources of power loss we started with a brushless DC motor. We optimized its 12 Volt winding so that the maximum efficiency point coincided with the typical load point of the application. We then provided a parallel shaft gearhead with spur and helical gearing, with a low number of stages to improve efficiency.

Our customer observed that the batteries drained fastest when the outdoor temperature was extremely low. Bodine engineers provided a gearhead that utilized low-viscosity synthetic lubricant. This lubricant was specifically designed for use in environments with a wide temperature range. The new gearmotor used less power, which enabled the injection pumps to provide many more hours of uninterrupted service.

Bodine brings over 115 years of problem solving experience to a wide range of applications in industries as diverse as energy production, medical, packaging, industrial automation, and solar powered outdoors equipment. We look forward to working with you on your next fractional-horsepower gearmotor design challenge.

application insights

The Design Requirement

A solar powered injection pump used in remote gas pipelines required maximum efficiency for continuous operation in a very harsh environment.

The Solution

- **Brushless DC motor**
- **Optimized 12 Volt winding efficiency point coincided with the typical load point of the application**
- **Efficient parallel shaft gearhead with spur and helical gearing**
- **Fewer gear stages for improved gearing efficiency**
- **Synthetic low-viscosity lubricant, to reduce the resistance on the motor**

Bodine type 22B-Z3 brushless DC parallel shaft gearmotor (click here for more information)

Bodine type 34B/SR-WX brushless DC parallel shaft gearmotor, rated Class I, Div 2 with integrated control (click here for more information)