

Blowing Past Limits: A Joint Effort in Low-Loss Air Bed Innovation

Introduction

At Bison we are proud designers and manufacturers of high-quality blowers, motors, and control boards used in a variety of industries including medical. Airflow design has been our specialty for over 100 years, and we have engineers with a combined 625+ years of experience to back that up! Air displacement, pressure, voltage, and current are the key characteristics of each project. The Bison engineering team co-creates the desired application together with our customers according to individual application requirements. Through simulated flow in our laboratory, the operating point is determined in conjunction with the customer. During prototyping, performance and noise benchmarks are set and achieved. Blowers are tested in our acoustics lab to understand and optimize sound performance. A combination of Bison and customer experience goes into perfecting each design and application instance.

In order to meet the needs of this industry we offer a [range of products](#). These products can be used as designed for the market or customized to suit your specific requirements. A recent project in the medical field for a low-loss air bed is detailed below.

Problem

A new air bed manufacturer came to us with a need for a reliable, high-performing, low-noise mattress inflating blower enabling low air loss and a fast rate of inflation. The point of a low air loss system is to redistribute patient weight over the largest area possible, immerse the patient in the air bed (not bottoming out), and wicking away moisture to keep the patient cool and dry. The cost of such bed systems puts a premium on durability where systems can be in use for ten years or more and warranties can extend to five years.

Solution

Bison's reputation for domestically produced products helped influence the decision to trial our [5.7" Windjammer Thruflow blower](#) due to its power, size, and quietness. Compared to conventional compressors that just provide air pressure, Windjammer blowers address air flow requirements as well as pressure; compressors on low-cost mattresses just blow up the topper as if it were a conventional air mattress. Compressors also use brushed motor technology which wears out and does not support the durability requirements of low-loss air beds. For [Windjammer products](#), during manufacturing, all bearing bores are machine to tight tolerances, so fan alignment is better than on less expensive, competing units. Plus, rotor balancing makes for a quiet and long-life blower.

The electronic controls on Windjammer blowers allow fine tuning of operating parameters. Engineers from Bison and the customer worked together to optimize blower operation. The application engineering team tuned the software to the exact performance and response necessary. The task was to match the operating parameters of the system, find the right signal level, and minimize noise on the system.

Result

Our customer was pleased with their resulting product and appreciated our close collaboration and communication throughout the prototyping, trialing, and production process. This new bed was commercialized this year.

Bison®

Motors and blowers for medical applications

Medical care depends on high-quality equipment. The success of this equipment depends on durable components built for performance, safety, and low noise. To make sure equipment is functioning optimally high-quality motor and blower technology is required. At Bison we're proud of our decade's long experience offering industry-leading motors and blowers specifically designed for the medical industry's full range of requirements.

Medical applications served

- Air Sampling Devices
- Breathe & Cough Assist Devices
- Centralized Vacuum Systems
- Lifts
- Low Loss Air Beds
- Negative & Positive Pressure Chambers
- Sterilization Equipment
- Smoke Evacuation Systems
- Ventilators



Bison® Medical Overview

Whether you're designing medical devices or equipment needing precise airflow or smooth vertical lift, Bison® is here to support you. Our reliable medical motors, blowers and gear motors have assisted engineers in developing high-quality, life-improving products for decades. Discover the diverse medical applications where our solutions excel and let us help you bring your designs to life.

Our trusted brands - Bison® Gearmotors, Lamb® Vacuum Motors, Prestolite Motors, ROTRON® Regenerative Blowers, and Windjammer® Brushless Blowers - are synonymous with the benefits crucial in medical environments. Expect high quality, long life, quiet operation, compact designs, low vibration, and more.

Our custom-engineered blowers and motors are designed for next-generation medical technologies. Trusted by industry leaders for performance, reliability, and precision.

[Connect with our engineering team](#) to explore tailored solutions.