Blackmer
A DOVER COMPANY




Experts in

MISSION CRITICAL

Flow Solutions

Process | Energy | Transport | Military & Marine

www.blackmer.com

Blackmer: A Pump Solutions Group Company

Formed in April 2008, the Pump Solutions Group (PSG™) is a leading provider of high-quality, innovative pumping technologies that are engaged in the business of fluid transfer.

Featuring the world's premiere pump brands—Wilden®, Blackmer®, Mouvex®, Neptune™, Almatec® and Griswold™—PSG is a pump-technology solutions provider, and a fully integrated company with worldwide scale and considerable financial strength. PSG resides in the Dover Corporation's Fluid Solution platform, which is found within Dover's Fluid Management market segment. Dover Corporation is a multi-billion-dollar global producer of innovative equipment, specialty systems and value-added services for the industrial products, fluid-management, engineered systems and electronic-technology markets.

In its short life, PSG has already earned a reputation as the company that provides solutions for the world's toughest pumping applications. PSG is also a global citizen with a localized presence in five strategic areas. Its world-class manufacturing facilities are located in the United States, Germany, China, India and France.

The companies of PSG are passionately committed to the development of innovative technologies, relentless in their pursuit of excellence and confident in the market knowledge and expertise that they bring to each and every project to which their customers entrust them.

As a global industry leader, PSG not only responds to the needs of its customers, but also creates opportunities for them.

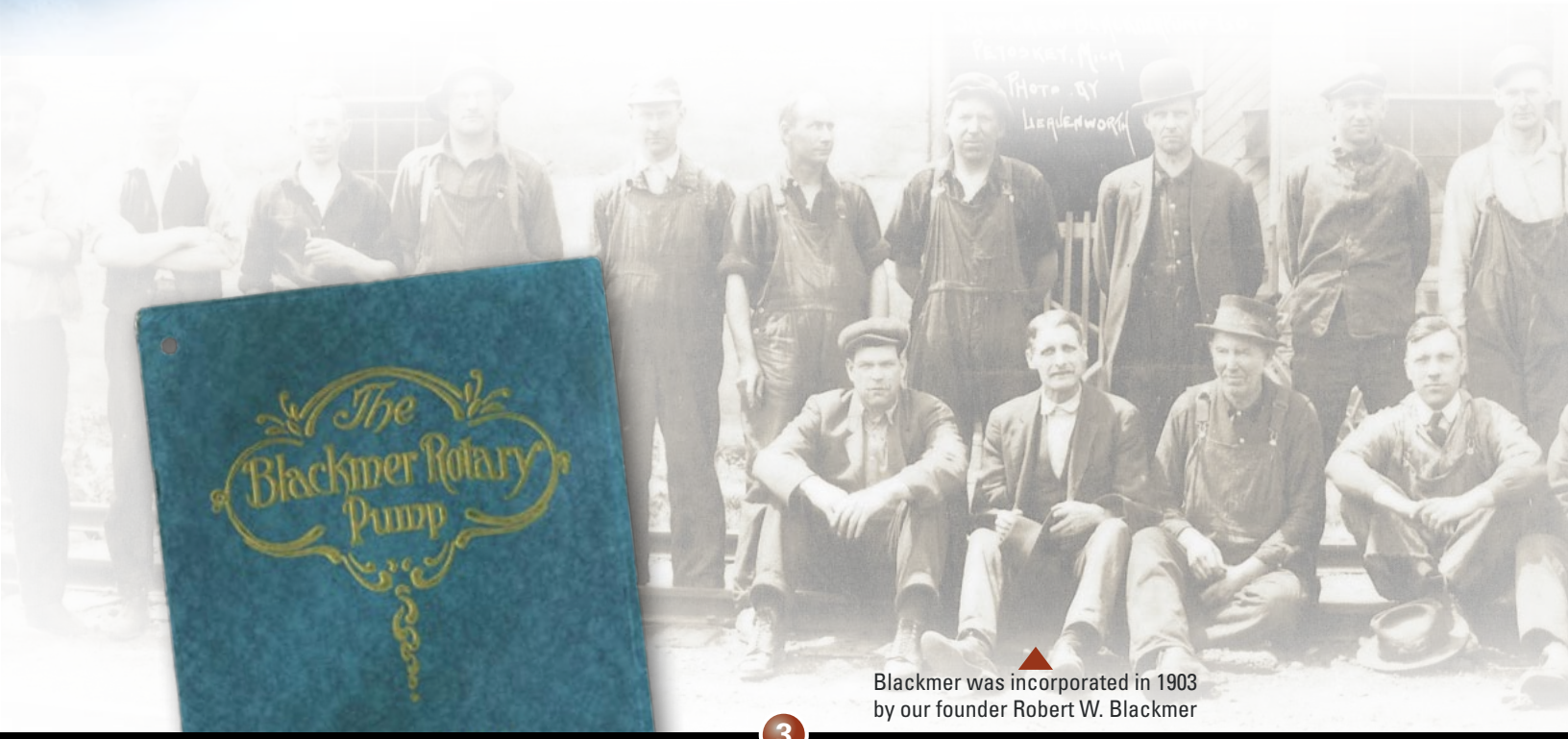
Blackmer Mission

We deliver exceptional value to customers by helping them optimize productivity and profitability, and improve safety and environmental protection. We do this by delivering on our value proposition of providing superior:

- Application Expertise
- Technical Assistance
- Equipment Selection
- Customer Care
- Responsiveness
- Product Quality & Value
- Total Life-Cycle Support

Blackmer Vision Statement

Our goal at Blackmer is to provide another century of the highest quality solutions and world-class customer service, always demonstrating we have— No limitations.



Blackmer was incorporated in 1903 by our founder Robert W. Blackmer

Process

Chemical and industrial companies around the world require the constant movement of fluids within the production process to get things done. These companies rely on Blackmer systems and services throughout the fluid-movement process, from the transfer of raw products from storage containers to the loading of the end-product onto the transport vehicle.

Typical Products Handled:

- Acids
- Solvents
- General Chemicals
- Refrigerants
- Carbon Dioxide (CO_2)
- Soap & Detergents
- Paints, Inks & Coatings
- Liquid Foods

Energy

Blackmer pumps and reciprocating compressors move raw products from storage into the plant or refinery, from process to process within the operation, to storage tanks and onto transport vehicles.

Typical Products Handled:

- LPG/Propane
- Natural Gas/Methane
- Butane
- Gasoline
- Jet Fuels
- Kerosene
- Diesel & Biodiesel
- Ethanol
- Lube Oils
- Fuel Oil

Transport

Blackmer pumps and rotary vane compressors are widely used to load, transport, unload, and meter petroleum, chemicals and gases. In addition, Blackmer is a leader in locomotive and commercial/ private aircraft refueling equipment.

Typical Products Handled:

- Petroleum
- Crude Oil
- Jet & Diesel Fuels
- Gasoline
- Lube Oils
- Heating Oil
- LPG/Propane
- Anhydrous Ammonia
- Carbon Dioxide (CO_2)
- Chemicals

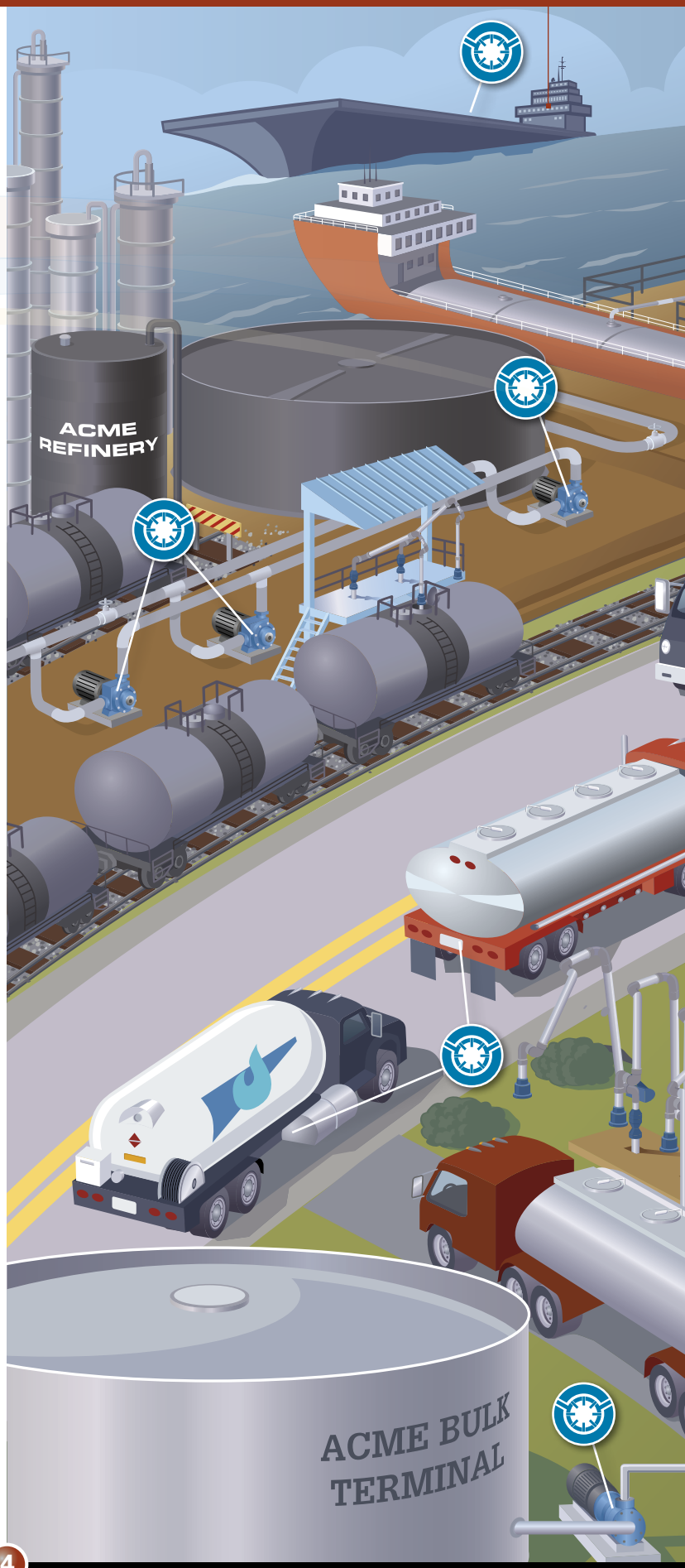
Military & Marine

Blackmer pumps are used onboard both military and commercial marine vessels around the world. For land forces, Blackmer has developed skid-mounted and trailer-mounted refueling units for jet and ground equipment refueling. Our vane pumps handle transfer, circulation, stripping, loading and unloading of a variety of fluids.

Typical Products Handled:

- Fuel Oil
- Bilge Water
- Lube Oil
- AFFF Concentrate
- JP-5
- Wastewater

Sliding Vane Pumps | **Reciprocating Gas Compressors** | **Peristaltic (Hose) Pumps**



Proudly Supplying the U.S. Military Since 1914

And for the past 50-plus years, Blackmer has provided mission-critical flow solutions for the United States Navy, and has supplied pumping units to every combat vessel currently in the U. S. Navy's fleet. Recognized as one of the true industry specialists, today Blackmer is the standard for ship service worldwide, and is a key strategic supplier not only to the U.S. Military but also to NATO Services and the French Military/Marine Services.

Engineering and Product Development

Blackmer® is the leading global provider of innovative, high-quality sliding-vane pump and reciprocating compressor technologies for the transfer of liquids and gases. Since 1903, the Blackmer brand has stood for unparalleled product performance, superior service and support, well-timed innovation and a commitment to total customer satisfaction. Our pumps and compressors are used in a multitude of applications in the process, energy, transport, and military and marine markets. Every pump, every compressor, is supported by a worldwide network of distributors and original equipment manufacturers.

Finding the right solutions for our customers is a key aspect of our customer-centric focus, and is the sole objective of our design and engineering teams. Experienced and talented, our engineers combine years of expertise with leading-edge design tools, advanced materials and processes to bring new product ideas to life, as well as enhance existing products, to deliver unprecedented levels of performance and reliability.

We make substantial investments in continually training our engineers and product-development specialists in the very latest engineering principles and equipping them with the most advanced technology available, including:

- Concurrent Engineering
- Computer-Aided Design (CAD)
- Rapid Prototypoing
- Computerized Data Acquisition
- Finite Element Analysis (FEA)
- On-Site Testing Facilities

Today, Blackmer regularly sets new flow-technology standards by leveraging the combined knowledge, expertise and unique skills of our engineering groups in our Grand Rapids, MI, headquarters. The synergy created by these design and engineering teams results in the sharing of ideas and solutions, as well as the transfer of technical breakthroughs across numerous market segments.

"The pump is the heart of the system, and with Blackmer, we don't worry about heart attacks. Blackmer has been the pump of choice here for more than 20 years."

Gary Eaton
Managing Director, Ely Energy
Tulsa, OK,

Manufacturing

Delivering exceptional product quality and supporting these products through the total life-cycle process requires a world-class manufacturing commitment, capability and capacity. Blackmer's manufacturing operations apply continuous-quality improvement processes that ensure every product consistently adheres to the same rigid quality standards.

Throughout the manufacturing process, Blackmer utilizes virgin metal, its own casting foundry, and a state-of-the-art metallurgical testing laboratory, which is why it has the highest quality standards in the industry. Utilizing lean manufacturing and a cell-based structure, master craftsmen take personal pride in their work and carefully hand-assemble and test each and every Blackmer product.

Some of the systems put in place to ensure product-manufacturing quality include:

- Captive Casting Foundry—Cast and Ductile Iron
- Computer-Aided Manufacturing (CAM)
- Automated Machining Centers
- Cell-Based Manufacturing
- JIT and Kanban Inventory Control
- Continuous Quality Improvement Practices
- ISO 9001-Registered Quality System
- Supply Chain Management

"We're doing twice as much work in volume, but our electric rate has stayed the same, even with the increase in electric rates. That's a tribute to the Blackmer pumps and their efficiency."

Glenn Gibisch

Vice President and COO
Seeler Industries' 3 Rivers Terminal
Joliet, IL

Core Technologies/Innovations

In 1899, four years before the incorporation of Blackmer Pump, Robert Blackmer invented the world's first rotary-vane pump. Their unique ability to self-adjust helped these pumps maintain optimal flow rates, something the popular gear pumps of the time could not do. And thus was born the spirit and tradition of Blackmer innovation.

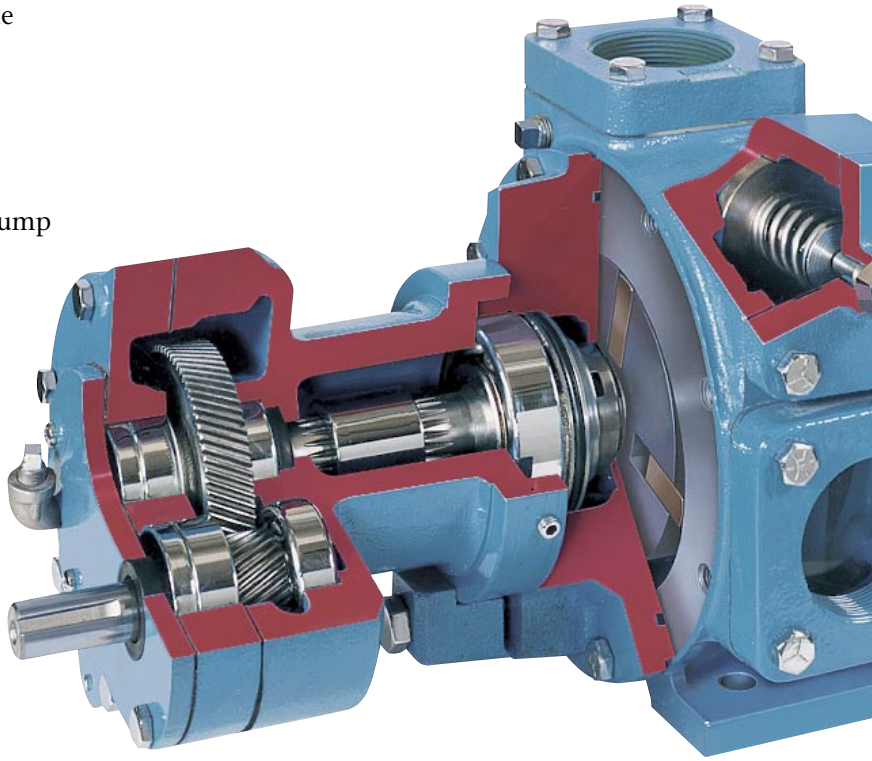
For more than a century, Blackmer has been at the forefront of flow technology problem-solving with such innovations as its patented cavitation/noise suppression system.

By leveraging its design, engineering and applications resources, along with its extensive research and testing capabilities, Blackmer is today's new product development powerhouse. Among its landmark innovations, ones that to this day continue to set the standard in fluid-handling operations, are:

- First Rotary Vane Pump
- Pump with Integral Mechanical Seal
- First Positive Displacement LPG/Liquified Gas Pump
- SMVP, SNP, SX and STX Stainless-Steel, Non-Galling Pumps
- ProVane® Motor-Speed Vane Pump
- Patented Cavitation/Noise-Suppression Technology

"Having the right equipment for the job is critical to our mission. So, anytime I need to install pumps or troubleshoot flow issues, I take no chances. I call in the experts – Blackmer."

Mike Doll
Plant Manager
Peter Cremer, North America, LP



Customer Care/Technical Support/Applications Engineering

When it comes to flow solutions, uptime, output, reliability and profitability are critical to every operation's mission. To this end, Blackmer knows that reliable, proven flow technologies are critically important, but we also know that this represents only one part of the overall equation.

The other, equally important, part involves having a trained, knowledgeable and customer-focused staff, which is why we make substantial investments in our people. It is through their collaborative effort with customers that the greatest achievements are realized.

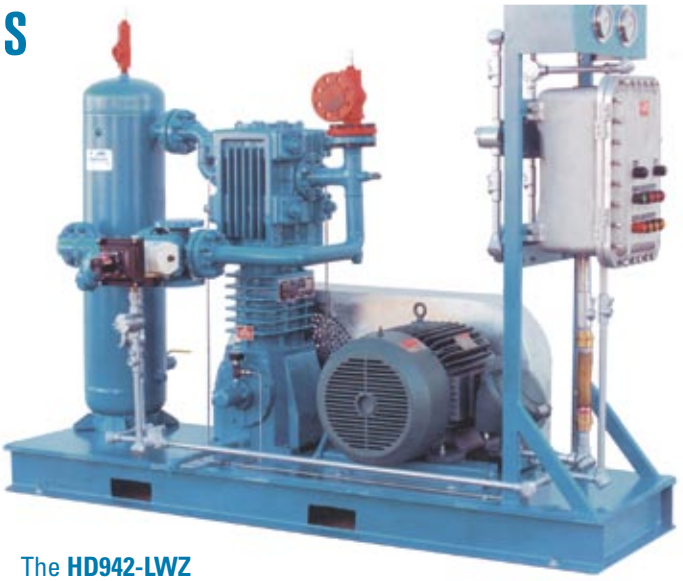
Among the areas where Blackmer professionals set the pace in customer-centric service are:

- **Applications Engineers:** Experts in peace-of-mind assurance, making sure your equipment is always right for the job
- **Market & Product Specialists:** Unparalleled technical knowledge, on-site product training, troubleshooting, installation and product-selection consultation, and total life-cycle attention
- **Regional Sales Management:** Proven technicians with an "above and beyond" commitment to every customer's mission
- **Customer Care Specialists:** Action-oriented specialists committed to making sure every order receives immediate attention, is accurately processed and followed up, to keep your process flowing smoothly

"That's the nice thing about Blackmer. They keep up with the products that we haul and they're compatible with them. We don't have to switch to another vendor; when we need Blackmer, they're there for us."

Pete Kane
Vice President, Twin Cities Operation
Kane Transport

Engineered Package Solutions



The **HD942-LWZ**
Liquefied Gas Transfer Compressor Package

Blackmer is a leader in providing reliable flow solutions to the world's most critical industries. We have earned our leadership position over the past 100 years by applying a relentless customer-focused commitment to delivering the best possible solutions to meet customers' mission critical applications. From our suite of high quality, pre-engineered pump & compressor technologies to unique, custom designed and engineered packages, at Blackmer, providing the right solutions is a mission without boundaries.

Blackmer guarantees to provide you with the best solution and equipment for your special requirements. As a systems integrator and specialist in engineered pump and compressor packages, we provide fully customized, engineered and tested mechanical packages for the most demanding applications.

Our Applications Engineers will recommend the most suitable pump or compressor for the application requirement and work with our design engineers to create complete package process flow diagrams (PFD), unit piping diagrams (P&ID) and skid drawings in 3D. This results in a complete package including piping, instrumentation, flow accessories and electronics.

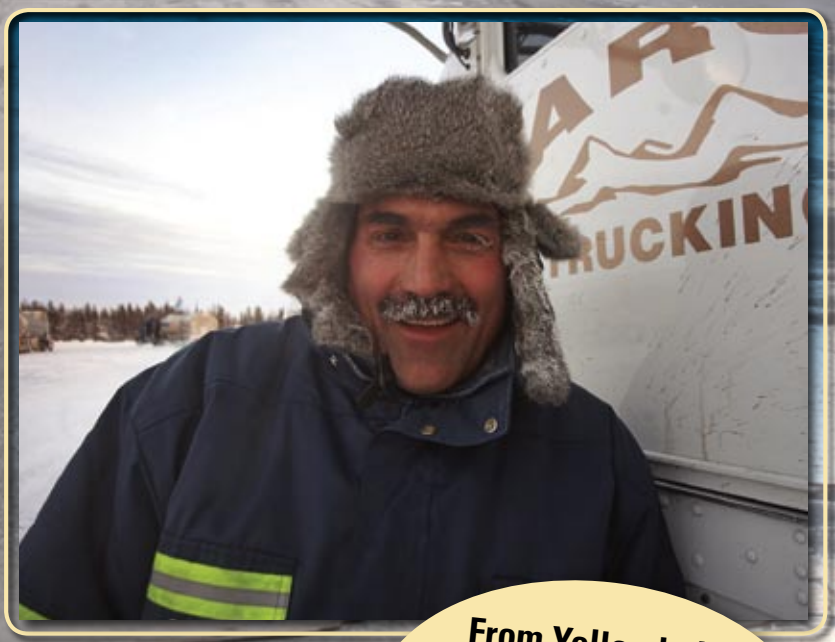
From custom engineered liquid transloading systems, mobile defueling system packages and LP gas evacuation compressor packages, to portable batch processing pump platforms, our engineered solutions are limited only by your imagination or need. We develop and construct customized and tailored packages according to individual customer demand. Blackmer custom packages can be engineered to adapt any of our pump or compressor technologies to meet your unique requirements.

Our custom packages are used in a wide variety of markets including defense; petroleum distribution, transportation and refining; chemical industry; food industry and mining. Blackmer is an ISO 9001: 2000 Certified company offering technical capabilities around the world. We will provide assistance with installation, startup & training, and service by authorized Blackmer-trained technicians.

The New **GX2B-HRA**
Mobile Defueling Pump Solution

"The cold, hard fact is, on the ice road, nothing beats a Blackmer pump."

Alan Scraba
Owner,
ARS Trucking
Edmonton, Alberta



From Yellowknife to the Diamond Mines, Blackmer keeps this Ice Road Trucker rolling!

TXD Series
Sliding Vane Pumps

Products Overview

Sliding Vane Truck & Transport Pumps

For use in the global truck-and-transport industry, these pumps feature a sliding-vane design that provides sustained performance and trouble-free operation.

Features:

- Global industry leader in truck & transport pumps
- Sliding vane design provides sustained performance and trouble free operation
- Adjustable relief valves protect pumps from excessive pressure
- Line stripping and dry-run capabilities

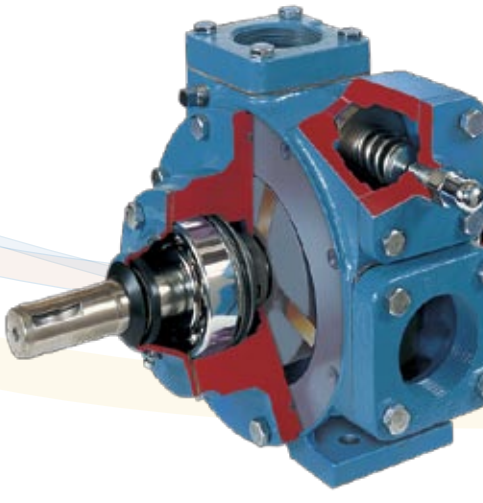
Technical Data:

- Cast iron, ductile iron and stainless steel models available with special elastomers for fuels and biofuels compatibility
- Port sizes 1.5 in. to 4 in.
- Max. working pressures to 12.1 bar (175 psi)
- Speeds to 1,200 rpm with PTO and hydraulic drive capabilities
- Temperatures to 190° C (375° F)
- Viscosities to 10,500 cSt (50,000 ssu)

Performance Data:

- Max. flows to 1,911 L/min (505 gpm)
- Max. differential pressure to 8.6 bar (125 psi)

Certifications & Associations:



Sliding Vane LPG/ Liquefied Gas Pumps

Designed for use with hard-to-handle products such as LPG/propane, butane, NH_3, CO_2 and refrigerants.

Features:

- Global leader in mobile and stationary pumps for liquefied gasses
- Sliding vane design provides sustained performance and trouble free operation
- Models for hard-to-handle products including LPG/propane, butane, NH_3, CO_2 and refrigerants
- Patented cavitation suppression liners for enhanced service life and reduced noise
- Differential Bypass Valves especially designed to protect against excessive pressure damage
- U.L. listings for LPG (propane), butane, propane/butane mixes and NH_3 services

Technical Data:

- Ductile iron construction for thermal shock resistance
- Port sizes 1 in. to 4 in.
- Max. working pressures to 29.3 bar (425 psi)
- Motor speed (direct coupled), gear reducer, belt, PTO, hydraulic drive capabilities

Performance Data:

- Max. flows to 1,325 L/min (350 gpm)
- Max. differential pressure to 13.8 bar (200 psi)
- Differential Bypass Valves provide full-flow pressure control to 946 L/min @ 8.27 bar (250 gpm @ 120 psid)

Certifications & Associations:

Products Overview

Sliding Vane Industrial & Process Pumps

Designed for specific process and transfer applications that can benefit from sliding-vane technology.

Features:

- Designed for specific process and transfer applications
- Highly efficient sliding vane technology
- Self-adjusting vanes sustain performance
- Self-priming, line stripping and dry run capabilities
- Ideal for thin or non-lubricating, viscous, abrasive and shear-sensitive fluids
- Sealless, mechanically sealed and packed designs available

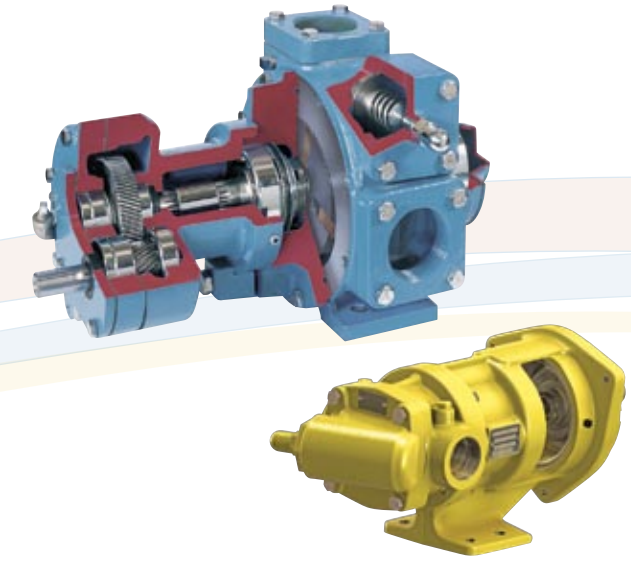
Technical Data:

- Cast iron, ductile iron and stainless steel models available
- Port sizes ¾ in. to 10 in.
- Max. working pressures to 17.2 bar (250 psi)
- Temperatures to 266° C (500° F)
- Viscosities to >21,000 cSt (100,000 ssu)
- Motor speed and gear reducer drives

Performance Data:

- Max. flows to 8,404 L/min (2,220 gpm)
- Max. differential pressure to 13.8 bar (200 psi)

Certifications & Associations:



Sliding Vane Refined Fuels Pumps

Ideal for the transfer of refined fuels/hydrocarbons and biofuels thanks to sliding-vane operation and self-priming, line-stripping and dry-run capabilities.

Features:

- Designed for refined fuels/hydrocarbons and biofuels
- Highly efficient sliding vane technology
- Self-adjusting vanes sustain performance
- Self-priming, line stripping and dry-run capabilities

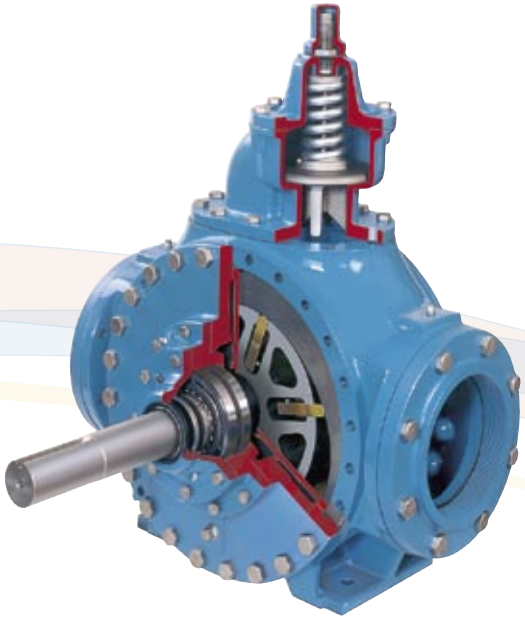
Technical Data:

- Cast iron and ductile iron models available
- Port sizes ¾ in. to 10 in.
- Max. working pressures to 17.2 bar (250 psi)
- Temperatures to 266° C (500° F)
- Viscosities to >21,000 cSt (100,000 ssu)
- Motor speed and gear reducer drives

Performance Data:

- Max. flows to 8,404 L/min (2,220 gpm)
- Max. differential pressure to 13.8 bar (200 psi)

Certifications & Associations:



Products Overview

Abaque Peristaltic (Hose) Pumps

Abaque peristaltic (hose) pumps can handle the toughest applications, from abrasive and aggressive to shear-sensitive and viscous liquids.

Features:

- Sealless construction
- Reversible pump
- Dry-run capable
- Excellent volumetric capacity (dosing)
- Self priming

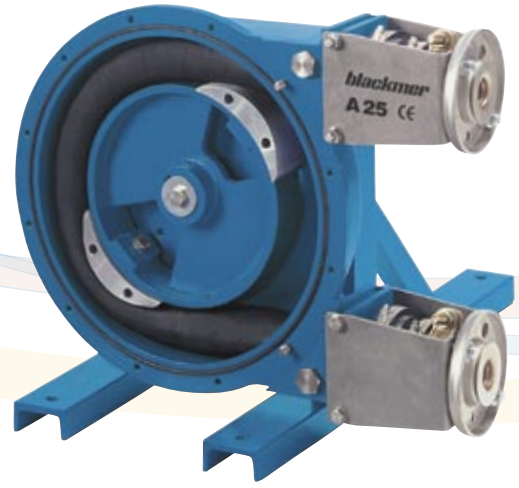
Technical Data:

- 9 sizes – 10 mm (3/8 in.) thru 100 mm (4 in.) sizes*
- ANSI, DIN or barbed connections
- Hose options: Natural rubber, Buna-N, EPDM
- Hose Inserts: Stainless steel (standard), PP or PVDF
- Ductile Iron non-wetted components

Performance Data:

- Max. flow: 48 m^3/h (211 gpm)
- Max. discharge pressure: 15 bar (217 psig)
- Max. suction lift: 9 m (29.5 ft) of water
- Max. viscosity: 40,000 cSt (185,000 ssu)

Certifications & Associations:



*consult factory for larger sizes

HD/LB Series Oil-Free Reciprocating Gas Compressors

Designed for the transfer and recovery of carbon dioxide, refrigerants, sulphur dioxide, chlorine, vinyl chlorine, natural gas, nitrogen, butane, propane, LPG, anhydrous ammonia and other liquefied gases.

Features:

- Oil-free design for chemical, petroleum, industrial gas and liquefied-gas applications
- Ideal for LPG/propane, butadiene, hydrogen, natural gas, sulphur dioxide and other gases
- Use in applications such as vapor recovery, gas gathering, gas transfer, gas evacuation, liquefied gas transfer, gas blanketing, pressure boosting, flare elimination and leak-test recovery
- High-efficiency valves move more volume
- Heavy-duty, precision-ground crankshaft for smooth, quiet operation
- Standard and custom packaging options

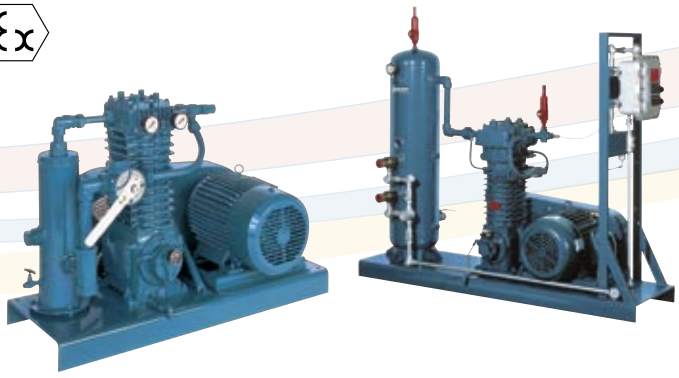
Technical Data:

- Ductile iron construction for greater resistance to thermal and mechanical shock
- Single and two-stage models available
- Air-cooled and liquid-cooled models available
- Single, double, and triple-seal models available
- Belt, PTO, engine and hydraulic-drive options available

Performance Data:

- Max. capacities to 212 m^3/hr (125 cfm) for gases; 2,575 L/min (680 gpm) for liquids
- Max. working pressure to 51.7 bar (1,000 psi)
- Temperatures to 177°C (350°F)

Certifications & Associations:



"You can use Blackmer pumps in all different kinds of applications, they're easy to maintain and known for their reliability."

Scott Johnson
President, Gen-X Energy Group
Burbank, WA

XL Series Sliding Vane Pumps and ProVane® Motor Speed Sliding Vane Pumps

Superior performance in alcohol recovery and caustic transfer, ease of maintenance and high efficiency help save energy (and money) while making energy.

A Smart Energy™ Solution by Blackmer

Blackmer Sliding Vane Pumps are Energy-Efficient by Design

BLACKMER MEMBER OF PSG PUMP SOLUTIONS GROUP A DOVER COMPANY

Blackmer A DOVER COMPANY

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