



Specializing In **Pumps in military/ Mission-Critical** marine service

By Jane Alexander, Editor

The toughest, most mission-critical applications in the world are those of the military services. When failure is never an option, durability and reliability under the most extreme conditions is not a “desire,” it’s an absolute requirement. Nothing less is acceptable. Designing, manufacturing and supporting military-grade, mission-critical pumps is not a business for the faint of heart. Demanding an intense commitment to excellence, it is an area of the industry reserved for some of the most qualified, experienced and knowledgeable fluid transfer professionals among us.

Blackmer has been serving the U.S. Military

since 1914. For the past 60 consecutive years, the company has been providing its mission-critical flow solutions for the U.S. Navy. Recognized as one of the true industry specialists, today, it is setting a standard for ship service worldwide. It is a key strategic supplier, not only to the U.S. Military, but also to NATO Services and the French Military/Marine Services for vane and centrifugal pumps.

Higher Level of Purpose

According to Carmine Bosco, President of Blackmer, “When you understand that people’s lives could depend on the products you make, it is a con-

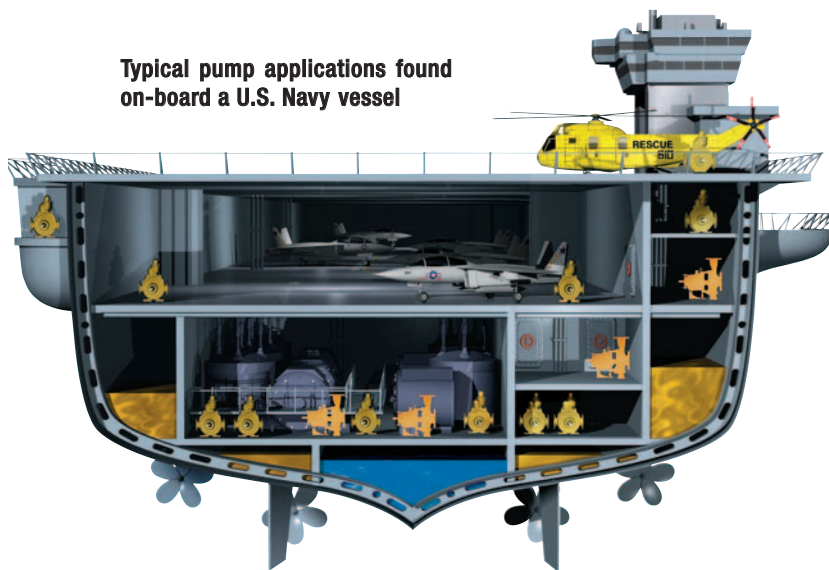
sciousness-raising experience that defines a higher level of purpose and responsibility in what you do.”

As a former Combat Engineer Officer and Vietnam War veteran, Bosco understands firsthand the value of being backed by reliable, qualified and dedicated troops—which is precisely why the company views its role as a sacred obligation, “There is nothing we are more passionate about than our Military/Marine business,” he says. “Our first obligation is to the honorable men and women who are on those ships and in those vehicles. Commitment and excellence are not buzz words we apply to this aspect of our business; they are essential and uncompromising ingredients.”

This attitude and dedication permeates Bosco’s organization, from top to bottom. It’s a corporate culture built on a long, proud tradition. It was more than half a century ago, when the U.S. began an initiative to build the most massive fleet of naval vessels in history, that his company got the call.

Blackmer pumps were commissioned for ships ranging from destroyers to aircraft carriers. While they provided excellent performance under normal service conditions, their reputation for rock-solid reliability would be firmly established when the pumps were battle-tested. And seen battle, they have. The company points out that based on a

Typical pump applications found on-board a U.S. Navy vessel



recent listing of ships, it looks as though virtually every combatant U.S. Naval vessel since the 1950s has sailed with Blackmer pumps on board.

There Has to Be a Reason

The basic design for the company’s military/marine pumps goes back over 100 years—back to when Robert Blackmer developed the first rotary-vane pump. Now, the descendants of that pump are in use all over the world, on land and on sea—sometimes under crisis and/or combat conditions. In these types of situations, how tough your equipment is and how well it performs can mean the difference between life and death. For manufacturers like Blackmer, there’s no cutting corners on the road to durability and reliability.

“I know it’s an over-used term in the business world today, but the number one reason our

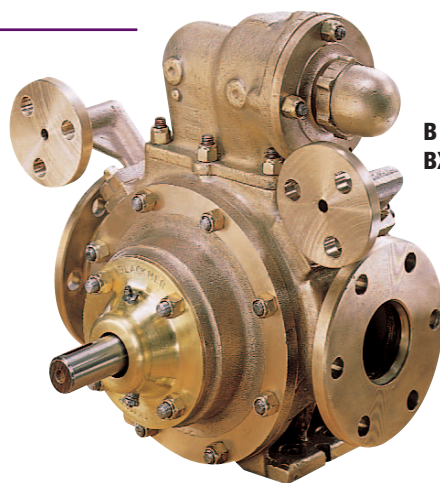
products are so durable and reliable is their quality,” says Stephen Brown, Manager, Military/ Marine Products Group. “From design to final assembly, we carefully control every aspect of the product quality.” As an example, he refers to the company’s dedicated bronze foundry, and the fact that only virgin metals are used in the casting process—metals that are constantly being tested.

What their pumps can do also plays a strong role in the company’s success. Its products meet specifications of Mil-P-19131 and ASTM F1510, and comply with the most stringent commercial standards for design, construction and operation. Over the last century, they’ve proven themselves time and again in a wide range of applications. These include the transfer, circulation, stripping, loading and unloading of a variety of fluids—everything from fuel oil,

bilge water, JP-5 and lube oil to wastewater. One of the most important applications they handle, though, is the pumping of AFFF (Aqueous Film Forming Foam), the ever critical, specially formulated concentrate used to suppress and extinguish onboard fires.

The AFFF Challenge

Although fires are uncommon occurrences on ships in typical daily operations, they are one of the most feared things that could happen—especially on a ship at sea. Therefore, tremendous efforts go into preventing onboard fires, all the way from development, implementation and training in procedures to design, specification and construction of the vessels themselves. Elaborate fire-fighting systems are built into every naval ship, and it's imperative that they work effectively when needed. However, like any other system, these are only as good as the equipment that supports them. There



**Blackmer
BXL2 pump**

lies the real challenge. It is not easy to pump AFFF, even under the best of circumstances.

AFFF possesses penetrating action to smother and cool Class A fires on ships ranging from aircraft carriers to destroyers to oil tank vessels. In the case of a Class B fire, the foam has the ability to smother fire from the dense foam, plus it has the ability to form an emulsion with oils and other hydrocarbons to actually create a cooling barrier interface that lowers the temperature of the oils, reducing the heat of combustion and flashing actions of the material.

On the other hand, AFFF's inherent chemical properties—the very properties that make it such an effective fire-fighting and life-saving substance—also make it very difficult to move through a pumping system. Blackmer pumps have proven their ability to perform this mission-critical task flawlessly. As a result, the company says that its pumps are the preferred choice of U.S. naval ships for AFFF applications.

Meeting Specific Needs

Blackmer's experience in creating design-for-purpose pumps that meet the extreme demands of military service also has resulted in a variety of specially designed component parts and features that offer improved fluid-handling capabilities for end users outside the military/marine industry (see Sidebar, pgs. 46-47). These innovations are ultimately commercialized and lead to improved performance, reduced maintenance and extended pump life.

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Relative to its sliding vane pumps, which are essentially maintenance-free, the company uses mechanical seals, isolated bearings and self-adjusting vanes to ensure highly efficient performance. Sliding vane technology allows the pump to maintain volumetric efficiency at near-original levels, even after significant in-service wear.

All pumps are mechanical devices and subject to failure, though. In the event of a failure, vane pumps can be quickly repaired and placed back into service. This is an especially important factor in mission-critical applications.

Industry Expertise

It's clear that Blackmer has succeeded at tackling some of the most difficult pumping challenges there are—protecting ships and their precious human

**Designing,
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cargo being at the top of the list.

As Carmine Bosco says, "When you've dedicated more than 50 years to serving the special needs of a specific niche, you

can call yourself an expert. We have stepped up to the toughest applications in the world for the U.S. Navy, and we're very proud of that fact." **P&S**



**This is the vent
that breathed in the air
that contaminated the system
that skidded the bearing
that scored the shaft
that shattered the impeller
that shutdown the process
that couldn't fill the orders
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that tanked the stock price.**



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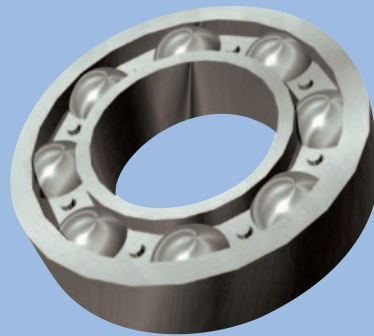
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High-Quality Parts for Mission-Critical Applications

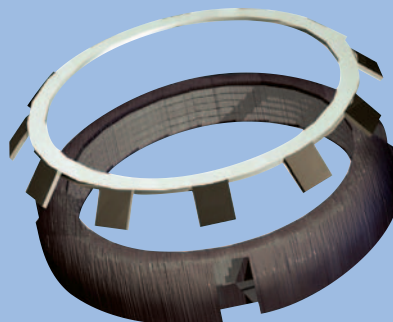
While high-quality component parts are crucial to the operation of any pump, they're even more so when it comes to mission-critical military service. Blackmer's product line-up features the following:

- Sliding vane pumps have external ball/roller bearings that are completely protected from pumpage by mechanical seals. These externally lubricated, low-friction bearings have been proven to last longer and reduce power requirements.



External ball/roller bearings

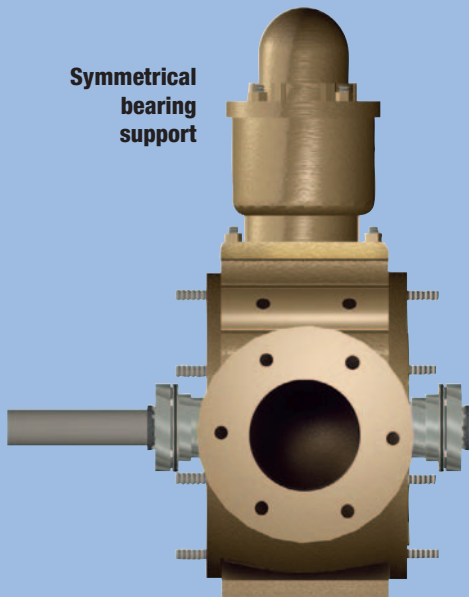
- Pump housings and heads are made of bronze. Highly ductile bronze resists thermal and mechanical shocks. It provides superior corrosion resistance essential for many marine applications.
- The company's vane pumps have mechanical seals, designed to meet the specifications of ASTM F1511. These seals provide optimal fluid isolation and bearing protection. A variety of seal materials are available to assure fluid compatibility.
- Lock collars provide maximum design and installation flexibility. They allow the pumps to be mounted in vertical or horizontal orientations.



Lock collar

“When you understand that people’s lives could depend on the products you make, it is a consciousness-raising experience that defines a higher level of purpose and responsibility in what you do.”

Symmetrical bearing support



- Liners and vanes can be changed out quickly—with the pump still connected to drive and piping. This makes it easy to bring internal pump tolerances back to original levels.

- Vane pumps in this line have symmetrical bearing supports, which means the pump rotor is centered between the two bearings to distribute loads equally on both bearings. This minimizes wear to the bearings and shaft, improving reliability and lengthening life.
- Adjustable relief valves that provide protection against excessive pressure build-up also included on Blackmer’s vane pumps .

For more information on the products referenced in this article, log on to www.blackmer.com or circle Reader Service Number 208.

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