

INNOVATION

SPOTLIGHT from the brands of Altra Industrial Motion Corp.



1
PERCENT
Amount of world's fresh water
available for human use.*

WICHITA CLUTCH COMPOSITE JACKETS SAVE PRECIOUS FRESH WATER ON OFFSHORE OIL & GAS DRILLING RIGS

Offshore oil rigs often operate in harsh, isolated locations where fresh water supplies from shore or tankers can be very unreliable. The cost of fresh water on these rigs is very expensive. On-board fresh water storage capacity is typically only around a weeks supply.

The use of an on-board fresh water maker can provide more than 200 gal/day to help meet potable water demands for workers as well as for washdown and operation of equipment. However, operation of these units is often costly. If fresh water supplies run too low, the platform may need to be temporarily abandoned causing expensive production shortfalls.

Because of these economic realities, rig manufacturers are constantly looking for ways to reduce on-board fresh water usage.

COMPOSITE WATER JACKETS REDUCE FRESH WATER USAGE BY 12 MILLION GALLONS PER YEAR

Large, heavy-duty brakes used on offshore platform draw works and anchor winches require significant amounts of water to cool the units during operation. Most brake designs use cast iron water jackets to circulate water through the brake for cooling. Unfortunately, if salt water is used, the cast iron jackets eventually become corroded requiring time-consuming and expensive replacement. To prevent water jacket corrosion, scarce fresh water must be used for cooling purposes.

To meet industry demands, Wichita engineers utilized cutting edge technologies and state-of-the-art composite materials to develop a corrosion-resistant, salt water friendly jacket design for use in their line of AquaMaKKS™ clutches and brakes.



 **Wichita Clutch**[®]
Altra Industrial Motion

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A BREAKTHROUGH IN CLUTCH & BRAKE DESIGN

Wichita's revolutionary new water cooled clutch and brake jacket design (patent pending) utilizes a composite material that will not corrode, so salt water and water sources with high PH acidic values can be used for cooling the units.

With technology borrowed from the aerospace industry, Wichita spent a year developing the prototype composite water jackets that are now revolutionizing the marine-duty water cooled clutches and brakes used for tensioning on offshore oil and gas platforms and in other heavy-duty applications.

In an offshore platform tensioning brake, alternating friction discs and water jackets are used to transmit torque by applying axial force from the pneumatic, hydraulic or spring set actuator. The water jackets provide the required high heat dissipation.

The composite material in the new water jackets was developed by Wichita engineers working with a partner firm who tested several polymer combinations before selecting the high-tech blend that satisfied the design requirement to be as strong as the original iron parts' typical design stresses. In fact, structural testing of the AquaMaKks 36-inch diameter composite water jacket resulted in zero failures even when the part was stressed to more than four times the maximum design load.



A new 36" composite water jacket (above, left) weighs approx. 95 lbs. A comparable 36" cast iron jacket (above, right) weighs approx. 375 lbs. The reduced weight is a significant maintenance and installation benefit in weight-restricted applications.

Wichita's composite water jackets provide many additional benefits including:

- Improved channeled water flow - achieved via grooved design molded into the jacket for enhanced cooling capability
- Fast & easy maintenance due to the lightweight composite jacket design that weighs approximately 25% less than the competitors' metal design
- Water jacket design and material allows for longer life, requiring fewer replacements
- Reduced overall clutch weight – critical for weight restricted applications
- Composite water jackets easily retrofit into older AquaMaKks, Kopper Kool or competitors' units with iron water jackets.

The Wichita engineering team continually works on developing advanced materials for the composite water jacket program.



AQUAMAKKS CLUTCHES AND BRAKES ARE DESIGNED TO PROVIDE ACCURATE TORQUE CONTROL FOR HEAVY-DUTY TENSIONING APPLICATIONS

AquaMaKks™ clutches and brakes are pneumatically or hydraulically controlled and water cooled. They consist of a series of alternating friction discs and water jackets. Torque is transmitted by applying axial force from the pneumatic, hydraulic, or spring set actuator. Copper wear plates are used for excellent heat dissipation.

Other features include:

- Durable air tube design with high-strength, reinforced neoprene for longer service life
- Long-lasting friction material with minimal wear on mating copper
- Optional HICO friction material provides up to 50% higher torque
- Provisions are available for electronic wear monitoring

*Source: www.globalchange.umich.edu