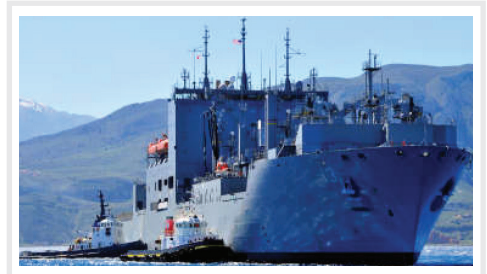
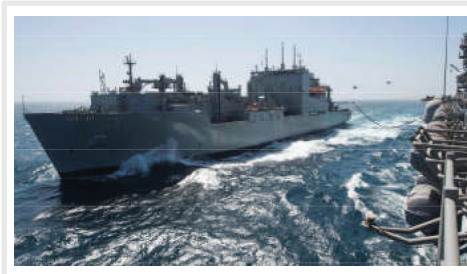


US Navy T-AKE Class Central Saltwater Cooling Pump Power Requirements



Simsite® Structural Graphite Composite Impellers and Rings Save 20% on Energy Consumption!

Sims Pump Valve Company was tasked to design & manufacture a **Simsite**® Structural Graphite Composite Impellers for the Central Saltwater Cooling Pumps onboard the USNS Lewis and Clark.

The original bronze impellers in addition to being inefficient were quickly wearing as a result of damage from corrosion, erosion and cavitation.

The new **Simsite**® Impellers were designed using computational fluid dynamic (CFD) to maximize, performance, efficiency and longevity. The **Simsite**® Impellers were machined from a solid blocks of the patented **Simsite**® structural graphite composite, SMS-302, as opposed to being cast or molded. As a result of the computerized robotic precision machining from the solid block of structural composite, the new **Simsite**® impellers were much stronger, perfectly balanced, more reliable, and more efficient. **Simsite**® Impellers and Casing Rings will not corrode in salt water! They are also much more resistant to erosion and cavitation damage. The US Navy, and many other Navies around the world have been using **Simsite**® Pumps and Pump Parts for many years. All **Simsite**® Pumps and Pump Parts are US Navy Shock and Vibration qualified. (MIL-S-901-D and MIL- STD-167-1)



The New Computer Designed and Engineered **Simsite**® Structural Graphite Composite Impeller & Rings were installed inside this central salt water cooling pump, size 16" onboard the USNS Lewis & Clark (class T-AKE-1). The capacity is 7300 GPM, head = 92 Feet,



After the installation of the new Simsite® Impellers & Casing Rings, and extensive performance testing, the Navy determined that the Simsite® Impeller required nearly 20% less energy to operate at the same performance parameters. This improvement in efficiency was attributable to the decrease in cavitation, the increase in efficiency as a result of the new engineered computerized vane geometry design, and the smoothness & accuracy of the Simsite® Impeller and Rings. Energy savings has been a major advantage of Simsite® Structural Composite Pumps and Pump Components for many years. This report was generated from data taken by ships personnel and historical data for the US Navy T-AKE Class vessels.

Pump Conditions:

- Base Power Requirements, (i.e. Pier side operating self- sustained)65,000KW HR/DAY
- Fuel Consumption at Base Load6,300 Gallons per Day Fuel
- Costs\$2.77/Gallon KW
- HR Cost=6300Gal/Day*\$2.77/Gal divided by 65,000KW HR/DAY.....\$0.27/KW HR
- Pump Operating Requirements with the original Bronze Impeller192 Amps
- Pump Operating Requirements with a new Simsite® Impeller.....155 Amps
- The Simsite® Impeller requires 37Amps fewer for operation – Savings:37 Amps
- Power Savings = 37Amps*480Volts*1.732/100030.72 KW
- Cost Savings = 30.7 KW*\$0.27/KW HR\$8.51/HR
- Savings per Day\$204.25
- Savings per Year\$74,554.00

Original Bronze Impeller for the central salt water cooling pump, size 16," showing damage from Corrosion, Erosion, and Cavitation.



The new Simsite® Composite Impeller was designed & manufactured using computational fluid dynamics (CFD) to maximize efficiency and performance and reduce cavitation damage.