

# STEP MARINE™ ANTI-ICING SYSTEM



## PRINCE WILLIAM SOUND SERIES

In Valdez, Alaska, where Crowley's 10,192-h.p. tugboats will be utilized, the average annual snowfalls is 300 inches and in recent years temperatures have gone as low as  $-40^{\circ}\text{F}$ . Even the common winter temperatures, which are more moderate, are accompanied by wind chills and cold spray that freezes on tug decks. Regardless of weather conditions, operations go on year-round, docking and undocking tankers and escorting the huge oil vessels out of the harbor and into Prince William Sound.

Vessel Management Services, Inc., the Crowley Maritime Corporation subsidiary, charged with designing and overseeing construction of the new tugs spent two years in research, ultimately choosing STEP Marine™, a conductive low-voltage plastic heating system to prevent accumulation of ice and snow. The solution used until now by Crowley for heating decks involved a network of pipes through which the tug's engine-coolant water is circulated around; however the piping requires continuous maintenance to control cracks and leaks. STEP Marine™ would provide the same safety for personnel and deck equipment while reducing the maintenance costs associated with the previous warm-water solution. The construction was done at Dakota Creek Industries.

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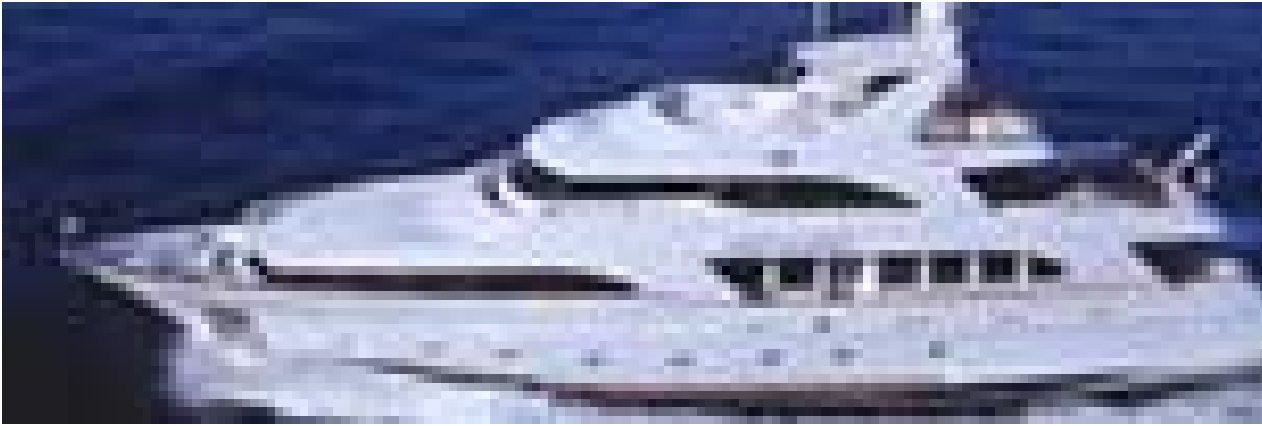
## NOAA FISHERIES SURVEY VESSEL

Oscar Dyson is the first of four planned 208 ft. fisheries survey ships to be built by VT Halter Marine that will either augment or replace aging ships in the NOAA fleet. The ship is a leading edge research vessel with the ability to conduct fisheries research and oceanography simultaneously throughout the world's oceans.

Oscar Dyson, which will not replace an existing NOAA ship, will be home ported in Kodiak, Alaska; its primary mission will be to monitor the Bering Sea and Gulf of Alaska fisheries and ecosystems, particularly the multi-billion dollar Alaskan pollock fishery, one of the nation's largest.

As the ship will be navigating in cold waters and to prevent instability that could occur with snow and ice accumulation, VT Halter Marine installed over 4,000 square feet of STEP Marine™ heating elements in the ship deck, bulkhead and walls. STEP Marine™ is a patented, thin and flexible semi-conductive polymer heating element. The system is low-voltage (24V-30V) and maintenance free.

# STEP MARINE™ RADIANT HEAT



## BENETTI YACHTS

Luxurious yachts with the ultimate comfort – heated floors. Benetti installed STEP Heating Element™ in the bathrooms to take away the chill of cold tiles.

STEP Heating Element™ can be installed under most floor coverings – including ceramic and porcelain tile, natural stone, hardwood and laminates, resilient and carpet.

STEP Heating Element™ is a patented, thin and flexible semi-conductive plastic mat which operated on low-voltage. It is self-regulating and cannot overheat. The nature of the plastic material automatically reduces or increases its heat output to adjust to temperature changes; this means that when the ambient temperature gets warmer, the electrical resistance increases, and the consumption of electricity decreases. The system has low power consumption and is maintenance free.

STEP Heating Element™ is cut to length on the job site making it ideal for both new construction and retrofit. The system is available – from floor warming to partial or complete heating.