

BALLAST PUMP WITH INTEGRATED PUMPSMART SYSTEM PROVES A SUCCESS

BOILER CASE STUDY

California Maritime Academy T.S. Golden Bear

Vallejo, CA

Ballast Pump with PumpSmart System

CUSTOMER APPLICATION AND KEY CHALLENGES

The T.S. Golden Bear is the primary training ship for the California Maritime Academy located in Vallejo, on which cadets apply technology skills and classroom knowledge. The Golden Bear is not only a year-round student-training vessel, but also a testing ship for various oceanic systems.

Global Maritime regulations mandate that ships cannot discharge their bilge tanks because ballast water taken into a tank from one body of water and discharged in another body of water can introduce invasive species of aquatic life.

As a result, engineers designed a system that would kill targeted organisms in the water before pumping the water into the ship's bilge. The challenge facing the engineers was to find a variable speed pumping solution with pumping curve flexibility and installation adaptability to test their design. In addition, the ship's tight space concerns also required a vertically installed pump solution to save as much space as possible.



T.S. Golden Bear at CMA, the only degree-granting maritime academy on the West Coast

THE R.F. MACDONALD CO. ANALYSIS & SOLUTION

R.F. MacDonald Co. had a long history with the California Maritime Academy, and although the Maritime engineers would install the system with partners based in Washington D.C., they turned to R.F. MacDonald Co. to deliver the right product and support services to meet their stringent bilge water testing requirements.

R.F. MacDonald Co. supplied a Gould's 3410V centrifugal pump with a integrated PumpSmart variable speed drive module. The variable speed drive keeps the pump at the best condition of service, maintains the designed flow rate and changes the RPM of the motor to match the system speed requirements

The Goulds 3410V has small capacity double suction pumps specifically designed for Marine service. It has capacities up to 8,000 GPM, with Heads to 570 feet, temperatures to 350° F and pressures to 250 PSIG.



The ballast treatment pump motor, with the majority of the vertically mounted pump beneath the metal divider

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The PumpSmart System user interface provides information on the pump processes

The PumpSmart System is contained in a locker to save the maximum space and protect the equipment, while a sturdy laptop provides the user interface screen. The PumpSmart System is fault tolerant, which will not permit the pump to operate outside user specified ranges, or under conditions that typically cause pumps to fail. A variable speed controller can match pump output to exact system head requirements, without the need for energy consuming control valves. The smart pumping system can significantly reduce all major components of life-cycle cost.

PROJECT RESULTS

The pump has been operating for several years, meeting all the testing requirements even while undergoing on-sea testing enactments. R.F. MacDonald Co. continually monitors and services the equipment to ensure optimum testing operation.



The PumpSmart System Locker

**A Goulds Pump with
integrated PumpSmart
provides successful
operation of a ballast water
treatment system on the
T.S. Golden Bear, a year-round
training vessel for the
California Maritime Academy**