fluid IMPACT

CASE STUDY

ShipSonic TWIN-f

September 2010

Boat Manufacturer:	Oyster Marine, UK
Boat Type:	Oyster 62
Year of Manufacture:	2003
Keel Type:	Fin
LOA:	62' (18.9m)
Boat owner:	Eef & Ellen Van Maaren
Boat name:	Diamond For Two
Model installed:	ShipSonic TWIN-f PLUS

Background

The Oyster Marine is docked in Cogolin, France. She was purchased by the present owner in 2005. The marina where the sailboat is located is known for its severe algae and barnacle growth. The sailboat was hauled, cleaned and antifouling paint applied in May 2010 (annual cost > € 3000). With the goal of extending the haul out and repainting frequency the TWIN-f PLUS was installed on the sailboat in July 2010.

Installation

The generator is installed in a storage locker in the main cabin, while the control panel is installed at the navigation table. For test purposes 4 pairs of transducers were installed, 2 pairs aft and 2 pairs forward of the keel. They are separately controlled to optimize operating parameters including operating hours and duty cycle.

Observations

The boat had cruised for 1 month and then stayed immobile for another month. During that time the shore power was accidently cut, leaving the boat unprotected for approximately 3 weeks. After these 3 weeks algae growth on the hull as well as barnacle deposits on the propeller and shaft was observed. Shore power was restored and the system returned to operation for approximately 24h prior to her first sailing.

After leaving the marina the sailboat was unable to reach full cruising speed which confirmed the presence of hull contamination. However, after a few hours under power, speed and RPMs were regained to clean-hull performance. Live algae cannot be stripped by boat motion alone. Dead algae however are removed by boat motion, which was confirmed by regaining full speed.

Later visual inspection showed that the hull was nearly free of the previously observed algae deposit. Light algae deposit remained near the water line and a more dense film on the rudder. The algae near the water line could easily be removed by simple hand motion and are therefore dead. The rudder deposit however is a result of suboptimal transducer placement. The rear transducers were installed on a heavily reinforced section of the boat, attenuating ultrasonic transmission. The heads will be relocated near the propeller where the hull is not reinforced. Due to the fact that prop, shaft and rudder are not hard-connected to the hull, ultrasonic energy can only reach these components by radiation off the hull through the water. Transducer location has therefore a direct impact on performance.

Planning for 2011

“Diamond for Two” will be hauled in Spring 2011 and pictures will be taken. The absence of algae and barnacle deposits on the boat will extend the hauling cycle to two or more years. With the TWIN-f system boat operation will not only be more ecological but will benefit from continued cost savings aside the increased freedom of maintenance. For a 20m boat the payback is expected to be 1-2 years, depending on location and other factors.