



The Morley Kite Sail (from Catalyst 33)

one metre, have been built, with radio control of the sail setting. These models have been tested on Southport beach in the presence of a steady westerly wind (wind blowing from seaward across a clear area of tidal sandbanks/shallow water). The models behaved as predicted.

Arrangement of the Morley Tethered Kite Sail System

The basic design has been fully described in articles published in Catalyst issues 14 and 33 [Refs 1 & 2]. These articles show a possible arrangement with variable geometry, which can be utilised either as a conventional rig or in the form of a tethered kite sail. The former rig has some advantages when close manoeuvring is required. The kite sail can be set when in open water.

In order to deal with fluctuations in the direction of the apparent wind, the sail assembly is free to rotate about the mast. It appears that this is the first time that this arrangement has been proposed. In order to deal with the fluctuations in the apparent wind speed, means are provided whereby the sail automatically spills wind before the lifting force becomes large enough to lift the boat from the water. The design still relies on a conventional keel and rudder combination for course direction and to combat leeway.

The proposed system, therefore, reduces heel to negligible values, provides for a substantial increase in sail area, reduces hull drag to negligible values and also provides for the rapid transformation to a single sail conventional rig.

Contribution of this Project to Nautical Science

The successful development of Dr. Morley's Kite Sail System will, in the first place, prove the practical application of his theoretical work. In the long term, it will provide an alternative sail plan to the current conventional small boat sail systems. The

benefits of the Morley Tethered Kite Sail System is that it significantly reduces the heeling effects, which in turn, provides a safer, more stable and less tiring environment for the sailor. In addition, the system provides increased boat speed by producing lift, which reduces both the wetted surface area and drag.

Project Objectives

There are five main objectives:

1. To design and manufacture a full scale Morley Tethered Kite Sail System suitable for a medium sized two-man popular class of sailing/racing dinghy.
2. To install a full scale Morley Tethered Kite Sail System in medium sized two-man popular class of sailing/racing dinghy.
3. To carry out sailing trials with the Morley Tethered Kite Sail System, installed in the chosen dinghy, and develop the techniques for handling the rig.
4. To sail the Morley Tethered Kite Sail System dinghy against a conventionally-rigged dinghy of the same class. To monitor the relative boat speed, angle of incidence, and control issues under a variety of recorded wind and wave conditions.
5. Publish the results of the full scale sailing trials in Catalyst.