(Visual Sail Position And Rig Shape)

VSPARS Olympic

VSPARS Olympic is a sail shape recognition system for small boats which uses off-the-shelf waterproof digital cameras to capture sail shape and rig deflection automatically. The cameras are mounted on the deck of the boat and are set to take pictures at user defined intervals (eg. every 5s). When ashore, the VSPARS software automatically runs through all of the pictures and finds the coloured sail stripes and optional rig patches. By knowing information about the camera location and orientation, and the length and height of each stripe, the software calculates the true stripe shape and location in 3D space. In addition, the deflection of the stripe luff or rig patch from the "unloaded" condition is calculated, which allows the mast bend and sag and the forestay sag at each stripe to be determined.

Camera Units:

Several commercially available cameras are recommended by VSPARS, including the *Pentax Optio WG-2* waterproof camera and the GoPro HD camera range. Generic lens distortion calibrations for these cameras are supplied with the system. Several GoPro models have both wide and narrow angle modes, suitable for capturing both offwind and upwind sails respectively. Other camera models can be calibrated on request. The cameras are mounted on deck by the user. Camera mounts and spray guards for the Pentax and GoPro series are available from VSPARS.

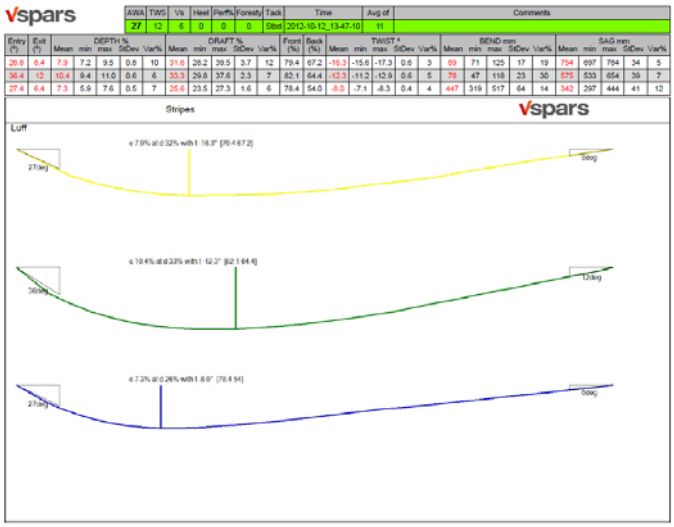
Features:

An annual software license package comes with 1yr full email support and includes software updates.

- ultra-lightweight
- tracking of multiple stripes per sail
- 3D sail shape and rig deflection
- compare sail shapes with any target shape
- criteria to eliminate bad stripe results
- integration with boat data
- search, filter and merge sail shapes using intelligent database
- automatic and manual offline stripe analysis
- de-warping module to generate an undistorted stripe picture

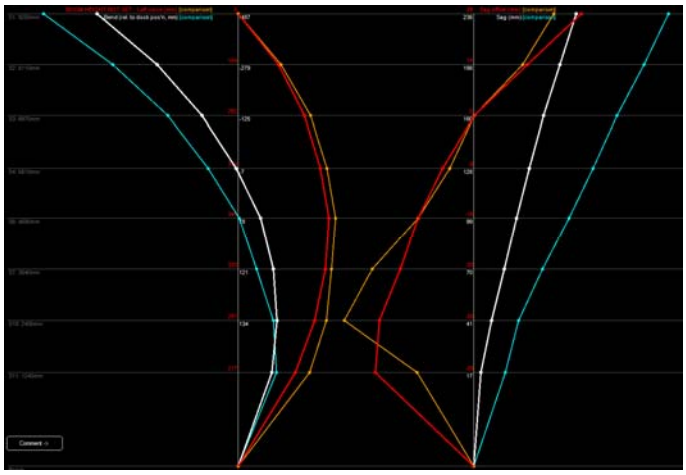
Software and outputs:

The VSPARS software automatically finds the stripes and batch processes all the images of the day. For small boats which sail with significant amounts of cunningham, contrasting colour rig patches on the mast can be used to ensure the rig deflection is found accurately.



Stripe finding can be manually adjusted if required. Criteria can be invoked to ensure that only correctly found stripes are saved. Sail shapes can be linked with onboard databases (such as Cosworth Pi) to store performance variables (eg. boat speed, TWS, AWS, etc). A powerful filtering database can then be used to find sail shapes for particular sails in particular conditions, and select individual tests with ease.

Sail shapes can be averaged over time by selecting multiple individual shapes. Averaged sail shapes can then be loaded back into the program as benchmark targets. Stripes can be viewed in 3D in a rotatable viewer. PDF and JPG outputs make debriefs quick and effective.



System:

A laptop or desktop PC is required to run the software. A minimum of a dual core 1.6GHz processor and 1.5GB RAM is recommended. The software is designed to be displayed on almost any remote wired or wireless display module (eg. iPad) as well as the main laptop screen.

Outputs include:

- stripe camber, draft, entry, exit, twist relative to CL – output to file and displayed on screen
- mast & forestay deflection
- full 3D sail stripe coordinates (X, Y, Z) suitable for IGES file creation
- Rig bend, sag and twist over its full height
- Rig bend and sag plots allowing quick analysis of dynamic rig stability and symmetry
- PDF report export including presentation of rig plot comparisons and analysis of dynamic effects over time (min, max, average, standard deviation)
- PDF report of tack to tack comparison plots highlighting pre and post tune differences in rig symmetry