



Hansen Sails, LLC is pleased to introduce the new Hansen Compliant Leech technology (HCL.)

HCL is the result of considerable testing and development and provides a major improvement in performance by allowing a sail to automatically adjust its shape and twist according to the aerodynamic pressures encountered. In the case of boardsailing, HCL is particularly significant because few on-the-fly changes to a sail's tuning can be made other than outhaul which primarily controls draft in the lower sections of the sail. The overall shape and twist in the key upper sections are pre-set during rigging and cannot be controlled under way. Also, significant distortion is caused by the resilient bending of the mast under changing loads. For modern truncated tip planforms, it is well known that the optimal twist and shape is highly variable depending on the course sailed and wind and water conditions. As such, a pre-determined setting which cannot be actively changed is a compromise in all but a few specific conditions. HCL solves these problems by providing a full shape with minimal twist which progressively flattens and twists off as the wind builds through the judicious placement of elastic 'flex panels' in the sail body. The HCL technology also includes an on-the-fly compliance adjustability function for additional tuning and range.

In use, an HCL equipped sail automatically adjusts its shape in gusts and turbulent conditions and as the sheeting angle varies during maneuvering and course changes such as reaching or running. In engineering terms, HCL matches the compliance of the sail to changes in aerodynamic force. The result is an effective moderation of the velocity squared aerodynamic forces as well as the relationship between sheeting angle and force. HCL thus provides a much greater time-averaged coupling of the sail to the wind for improved performance and handling. In testing, notable improvements include low-end power and acceleration, upwind VMG, delayed stall, gust absorption and ease in handling while turning off the wind, jibing or water starting. HCL also provides a wider range of effective sheeting angles and an extremely smooth ride which eliminates much of the fatigue associated with high-performance sailing. Other added benefits include simplified rigging and improved mast compatibility as the sail's shape and twist is less dependent on rig tension and mast flex.

In yachting, where rig motion in a seaway or turbulent air cause rapid shifts in velocity and sheeting angle, HCL provides immediate reactive micro-adjustments which are otherwise impossible due to the critical lag between input and active human response. The result is an average increase in drive per unit time which is of use in either a competitive racing or cruising environment. Additional benefits include simplification of sail control equipment and reduction of shock loading on the rig and hull for improved reliability and safety. Certain aspects of HCL technology are also applicable to other aerodynamic or hydrodynamic devices.

Hansen Sails, LLC is actively pursuing a utility patent regarding this technology and anticipates licensing those interested. For further information, contact info@hansensails.com