[0004] It is an object of the present invention to provide an improved system for producing, distributing, and sustaining air between the wetted hull of a vessel and the surrounding water as the vessel transits for the combined purposes of reducing Viscous Resistance (R_V) and providing sound insulation around the watercraft's hull. It is another object of the present invention to extend R_V reduction and sound insulation to a level at or near the entirety of the wetted hull surface area to extend laminar flow beyond the hull's bottom which also enhances sound insulation attributes. Another object of the present invention is to provide a method of operating such a system in a displacement watercraft. Another object of the present invention is to provide a method for incorporating the present invention into the construction or the retrofitting of displacement watercraft of varying sizes and hull forms without a dry-docking requirement, weakening of the existing hull, or interference to any other shipboard equipment, systems, or discharges. It is another object of the present invention to provide a method for installing or retrofitting such a system aboard a vessel without interference to the watercraft's cargo space(s), cargo carrying capacity, or cargo handling. It is another object of the present invention to provide a system for producing, distributing, and sustaining an air layer between the wetted hull and the surrounding water that can be operated in an efficient and stable manner as the watercraft transits in heavy sea conditions. It is another object of the present invention to provide a system for reducing the emissions of Greenhouse Gasses, Carbon and Sulfur into the atmosphere. Additional features and benefits of the present invention are further discussed in the sections below.

SUMMARY

[0004a] In an aspect, the present disclosure refers to a transverse hydro-laminar flow system comprising: a plurality of air dispersal units; a first base anchor; a second base anchor; an air supply system; a controller; a power system; the plurality of air dispersal units being serially coupled to each other; the first base anchor and the second base anchor being positioned offset from each other; the plurality of air

dispersal units being mounted in between the first base anchor and the second base anchor; the air supply system being in fluid communication with the plurality of air dispersal units; the controller being electronically connected with the air supply system; and, the power system being electrically connected to the controller and the air supply system.

[0005] The present disclosure is a transverse hydro-laminar flow system that reduces the R_V resultant from the friction incurred by a watercraft's wetted hull as it moves through different bodies of water. The system of the present disclosure not only facilitates the production, distribution, and sustainment of the desired air layer between the watercraft's wetted hull and the surrounding water, but also ensures the system's structural integrity, durability, and non-interference with the watercraft operations. The present disclosure includes multiple air dispersal units, multiple base anchors, an air supply system, and a control system. These components form an air dispersal structure that supports air distribution across most of the watercraft's wetted

hull by distributing the multiple air dispersal units around the watercraft's hull to generate an air layer designed to improve laminar flow across the wetted hull and simultaneously reduce hull noise emanating to the ocean environment by means of an air buffer. Because less fuel will be burned as a result of using this system, there will be less Greenhouse gas emissions from the watercraft.

[0006] The air dispersal structure formed by the multiple air dispersal units distributes and sustains an air layer across the watercraft's wetted hull. The length of the air dispersal unit is based upon the dimensions of the watercraft (length, beam, draft), the underwater hull configuration, and the air production/distribution needed to sustain the air layer necessary for R_V reduction and sound isolation. Multiple air dispersal structures are strategically positioned across the wetted hull from a point of origin at or near the watercraft's bow to points of termination near the watercraft's stern or as far as necessary to ensure maximize air layer effectiveness across the wetted hull. As such, the air dispersal structure can range from ten feet (ft.) to 400 ft. as required and may include both perforated and non-perforated air dispersal units in support of delivering/sustaining airflow at specifically desired locations across the wetted hull. The quantity of air dispersal structures employed per watercraft will range between two to 14 based upon the watercraft's dimensions and the underwater hull configuration.

[0007] By creating an air layer between the watercraft's wetted hull and the surrounding water, the present disclosure can increase fuel efficiency of the watercraft (8-20%), reduce fuel demand, reduce operating costs, reduce hazardous emissions, reducing noise pollution, and reduce the rate of marine growth upon the hull. The present disclosure uses oil-free compressors and incorporates recycled plastics within the various components to further enhance efficiency and to protect the environment. All facets of the present disclosure described herein can be easily installed in new construction watercraft or retrofitted aboard in-service watercraft. The installation involves no hull access cuts and can be completed waterborne, thus eliminating the time, cost, operational impact, and risk associated with dry-docking. The present disclosure is scalable to displacement watercraft of all sizes, hull forms, missions, and types of propulsion and is adaptable to support any unique wetted hull fixtures or access requirements. The present disclosure does not interfere with existing cargo capacity/handling, does not impede current hull cleaning practices, and is removable (in part or total) as required.