MODULAR-TYPE VERY LARGE FLOATING STRUCTURES

TECHNICAL FIELD

[0001] The present subject matter relates, in general, to floating structures, and particularly to modular-type very large floating structures for sea.

BACKGROUND

[0002] Seventy percent of the Earth's surface is occupied with water in form of oceans, seas, rivers, etc. Thus, floating structures may provide usable space on surface of oceans and seas as an alternative to land. The floating structures may be utilized for various purposes such as building large scale seaweed farms, aquaculture, ocean farming, bridges, docks, manmade islands, and establishing large solar farms on the ocean. The class of floating structures for such purposes is referred to as very large floating structures (VLFS).

[0003] Oceans and seas may have very rough environment and the VLFS deployed there may face significant challenges. Strong ocean currents and powerful waves pose huge threats to the integrity of the structure of the VLFS. Several designs and structures for the offshore structures designs have been proposed in literature to address such challenges. For example, US patent number 8251002 discloses a pontoon based structure. The pontoon based structure is a set of buoyant chambers and non-buoyant chambers that keep the structure afloat while the upper deck supports external loads. Similarly, US patent number 4290381 utilizes D'Alemberts principle to counter the effects of waves by using a large disc made out of concrete and/or steel. Further, US patent publication number 20130298841 describes a flexible floating structure that uses of a flexible joint based design for the flexibility. These joints can be made out of hinge joints, ball socket joints, pivot joints or similar joints.

SUMMARY

[0003a] According to an aspect, there is provided a floating structure comprising a closed loop tensegrity structure including: a plurality of beams, wherein each beam of the plurality of beams is formed by coupling multiple n-strut twisted prism units, n is an integer greater than 2, wherein each of the multiple n-strut twisted prism units includes n-sided planar polygonal surfaces on opposite sides through which the respective n-strut twisted prism unit is coupled to another n-strut twisted prism unit or a beam adapter; and a plurality of beam adapters, wherein each beam adapter of the plurality of beam adapters is an m-strut twisted prism unit, m is an integer greater than 4. The m-strut twisted prism unit comprises: m-sided planar polygonal top surface; m-sided planar polygonal bottom surface, opposite to the m-sided planar polygonal top surface; and at least m number of side faces formed as planar polygons. An n-sided planar polygonal surface of a beam of the plurality of beams is coupled to a side face of a beam adaptor of the plurality of beam adaptors in such a way that vertices of the n-sided planar polygonal surface of the beam and vertices of the side face of the beam adaptor form common vertices of a surface.

BRIEF DESCRIPTION OF DRAWINGS

[0004] The features, aspects, and advantages of the subject matter will be better understood with regard to the following description, and accompanying