CSPCWG10-08.9A

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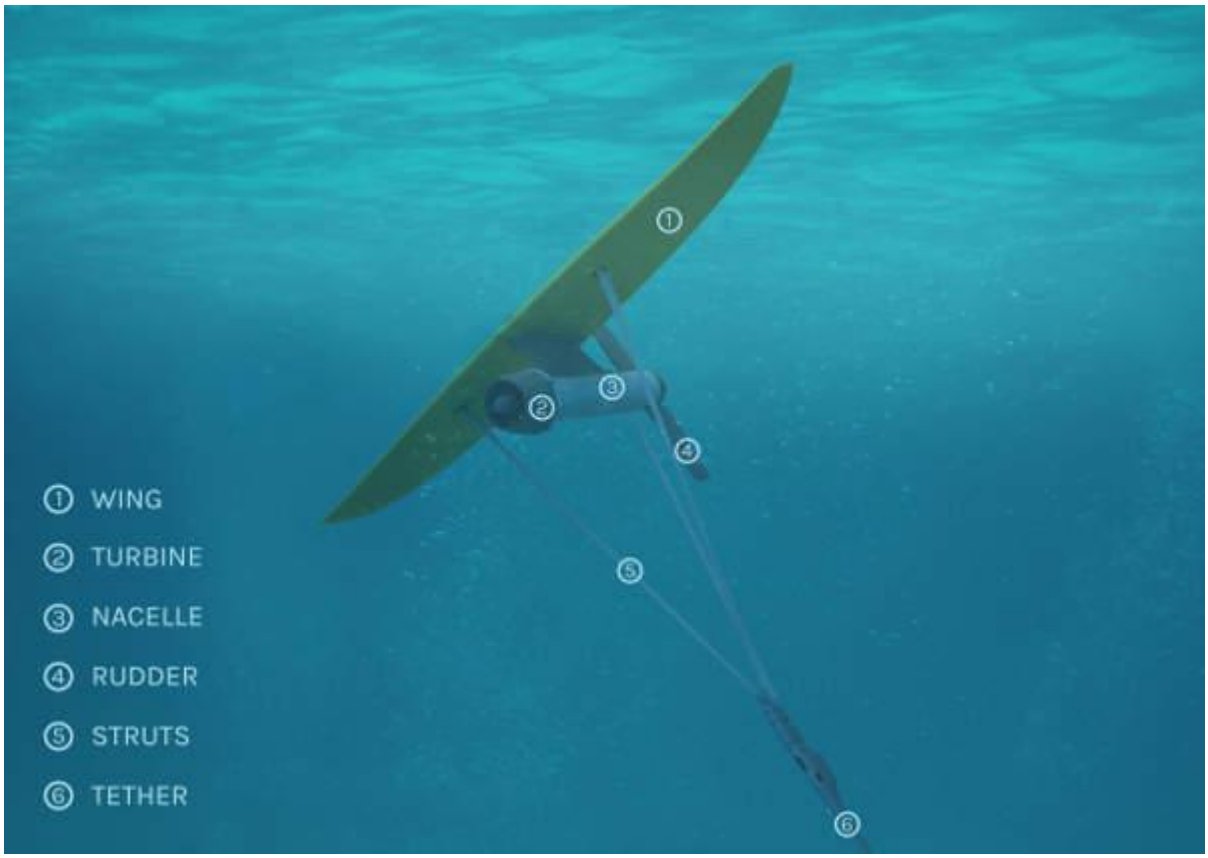
Paper for Consideration by CSPCWG

Sweeping underwater kite

Submitted by:	UK
Executive Summary:	A new type of renewable energy device is being tested. CSPCWG is invited to consider how this device should be charted and whether any change to S-4 and/or INT1 is required.
Related Documents:	S-4; INT1
Related Projects:	None

Introduction / Background: **Extract from Hydro International**

Swedish marine-energy technology company Minesto has identified Wales as a possible location for a full-scale deployment of its marine power plant, Deep Green. Deep Green is able to cost-effectively produce electricity from low-velocity tidal and ocean currents.



The potential for Deep Green has been established after extensive measurements of the sea conditions carried out by SEACAMS. This is a Welsh research project offering marine businesses access to research facilities, expertise and knowledge from Welsh Universities. SEACAMS objective is to help expand the coastal and marine sector in Wales and its activities are supported by European Regional Development Funding through the Welsh Government.

Minesto has for some time worked with SEACAMS on detailed site studies for marine renewable energy projects in Welsh waters. Data on tidal currents and seabed conditions has been collected and processed by SEACAMS, and evaluated by Minesto. Minesto regards these data as promising for a future full-scale deployment of its Deep Green marine power plants.

Sweeping Underwater Kite

Deep Green resembles a sweeping underwater kite, comprised of a wing and a turbine, which is secured to the seabed with a tether and moves with high speed in a figure 8-shaped path in the tidal or ocean current. This technology is capable of producing energy in a cost-efficient manner in slow currents. Deep Green produces 100% renewable tidal energy.

Compared to other traditional and renewable energy sources, tidal and ocean current energy is considerably more predictable and reliable and causes no visual impact and positive environmental impact. Marine energy from the world's ocean has huge potential. Deep Green, with its low weight and ability to operate in low-velocity currents, has several advantages compared to other tidal and ocean current power plants: the catchment area is much larger, and service and maintenance is more cost effective, resulting in low electricity production costs, comparable with traditional energy sources.

Deep Green is currently undergoing sea trials in Strangford Lough, Northern Ireland, as part of the commercialisation of this technology. Deep Green has the potential to double the amount of tidal power that the UK can produce since it is the only available solution that works cost effectively in slow currents.

Analysis / Discussion.

This is a form of 'underwater turbine' but covers a 'much larger catchment area'.

In S-4, underwater turbines are considered at B-445.10 and assume a fixed structure which can be charted by a point symbol (L24). However, it also allows for groups of turbines as a 'current farm' or 'turbine field' – basically an area symbol plus legend.

B-445.12 although headed 'Wave energy devices; Wave farms', refers to the 'renewable energy installation symbol' (L6.1). This symbol can be used as a point symbol or combined with an area symbol. In many ways it seems more suitable for this new 'kite' device than the underwater turbine symbol. However, although referred in S-4 as a 'renewable energy installation symbol', in INT1 it is simply designated 'wave farm'.

Conclusions.

L6.1 (with an area symbol if appropriate) is a better symbol for this new devices than L24.

Recommendations.

Amend designation of L6.1 in INT1 to 'Renewable energy device, Wave farm'. This widens the use of the symbol (as originally envisaged).

Consider rewriting B-445.10-12 under one heading of 'Other offshore renewable energy devices' (as distinct from wind turbines, which are of course above water). Retain existing symbols but clarify appropriate usage.

Justification and Impacts.

Widens the scope of L6.1 as originally intended. Clarifies usage for the compiler.

Small change to INT1. Some re-writing in S-4 (which may be considered a 'clarification').

Action required of CSPCWG.

The CSPCWG is invited to:

Endorse:

- The proposed change to INT1
- The proposed rewrite of S-4 sub-sections B-445.10-12

Advise whether the proposed changes to S-4 are a clarification or should be referred to Member States for approval.