Global Energy Ventures (GEV), is an Australian publicly listed company (ASX:GEV) with the benefit of over 20 years’ experience in the design and engineering of marine pressure vessels, resulting in the development of its CNG Optimum ship for the marine transport of Compressed Natural Gas. The move to develop GEV’s Compressed Hydrogen (C-H2) Ship was a natural progression to meet market requirements for the storage and marine transportation of hydrogen.

GEV has received American Bureau of Shipping, Approval in Principle for the 2,000t C-H2 ship containment system, designed to store 2,000 tonnes of ambient temperature hydrogen at an operating pressure of 250 bar. Receipt of AIP confirms there are no unresolvable risks to prevent further successful development - with the roadmap to Full Class Approvals now defined. Further details including a summary of the C-H2 Ship design principles are available here.

WORLD FIRST C-H2 SHIP
2,000 tonne hydrogen capacity
250 bar operating pressure
ABS Approval in Principle
US Patent Filed

GEV is also considering a pilot-scale (400 – 500t) C-H2 ship for various project applications.

The C-H2 supply chain is simple and energy efficient, leveraging the application of compression, a proven technology in hydrogen storage and transport.

GEV’s business model is to Build, Own and Operate the C-H2 supply chain which consists of:

Compression: Compress and load green hydrogen directly from the electrolyser to the C-H2 ship at an operating pressure of 250 bar. A C-H2 Ship is always berthed at the port or loading buoy and therefore eliminates the requirement for storage prior to loading.

Storage & Shipping of Hydrogen (in its pure gaseous form): Each C-H2 Ship has a storage capacity of 2,000t of hydrogen and is powered by electric drive engines and onboard fuel cells (using H2 direct from the tanks). The ship is a closed system with no losses or boil-off.

Decompression: The C-H2 Ship unloads predominantly unassisted (due to its high-pressure cargo), delivering pure gaseous hydrogen to the customers distribution system for various fuel cell applications.

C-H2 supports the development of a global hydrogen economy

Understanding the world’s shift to net-zero, GEV undertook a Scoping Study to determine the competitive shipping range and technical feasibility of C-H2, via a 100% green hydrogen supply chain analysis.

GEV’s Scoping Study examined:
> The levelised cost and energy efficiency of a C-H2 supply chain against Liquefied H2 (LH2) & ammonia (NH3) for export of green H2.
> 50,000; 200,000; and 400,000 tpa of green hydrogen exports
> 2,000; 4,000; and 6,000 nautical mile shipping (i.e. Australia to Asia)

Key conclusions of the Scoping Study are summarised below, with full details and supporting appendices provided here:
> The Levelised Cost of Hydrogen for the C-H2 supply chain was very competitive as a marine transport solution for green hydrogen for distances of 2,000 nautical miles (3,700 kms) and remained competitive to 4,500 nautical miles (8,300 kms).
> C-H2 was viewed as a simple and energy efficient supply chain, maintaining hydrogen in a pure gaseous form.
> C-H2 had minimal technical barriers for commercialisation in line with export project timelines.
> C-H2 was seen as the ideal solution for volatility in renewable generation, as it had the ability to ‘load follow’ such profiles, whereas LH2 and NH3 could not.

Memorandum of Understanding with BALLARD

GEV and Ballard Power Systems are working together to design and develop a hydrogen fuel cell system to power GEV’s C-H2 Ship using H2 from its storage tanks, providing a zero-emission marine transport solution. Ballard will be responsible for the design of the fuel cell system, utilising its FC WaveTM Technology and to assist GEV with the integration of the FC System into the design of the C-H2 Ship.

Contact: Nicolas Pocard
VP Marketing & Strategic Partnerships
nicolas.pocard@ballard.com

For further information please visit www.gev.com or contact Martin Carolan, Executive Director on +61 404 809 019 or mcarolan@gev.com

This Corporate Flyer has been prepared by Global Energy Ventures Limited ABN 53 109 213 470 (ASX:GEV) (“GEV”) as a summary of GEV’s operations and results for the purposes of a Corporate Flyer to existing or potential partners in a C-H2 supply chain project. This Corporate Flyer is not a disclosure document, is for information purposes only, should not be used as the basis for making investment decisions or other decisions in relation to GEV or its securities, and does not constitute an offer to issue, or arrange to issue, securities or other financial products.