

## HAZER SIGNS MOU WITH LEADING USA-BASED GLOBAL HYDROGEN GROUP

- Hazer executes MoU with Pan American Hydrogen Inc (PAH), a Texas-based global supplier of hydrogen systems
- Hazer and PAH to jointly develop a technical roadmap for the integration of Hazer technology into standard hydrogen production units designed by PAH
- Collaboration to accelerate commercialisation of the Hazer Process and deliver lower cost, lower emission commercial hydrogen generation units for the \$US100B hydrogen market.

**PERTH, AUSTRALIA; 14<sup>th</sup> NOVEMBER 2016:** Hazer Group Ltd (“Hazer” or “the Company”) (ASX:HZR, HZRO) is pleased to announce that it has signed a non-binding Memorandum of Understanding with Pan American Hydrogen Inc (PAH), a Texas-based global supplier of modular hydrogen generation plants, to jointly develop and commercially deploy the Hazer Process for low cost, low emission hydrogen production.

Under the terms of the MoU, PAH and Hazer will jointly develop both a technical roadmap for integration of the Hazer technology into standard hydrogen generation units as designed by PAH, and a commercial roadmap for how the combined technology would then be commercially deployed. The completion of these discussions will then see the two companies enter into a binding Framework Agreement that will form the basis of the partnership moving forward.

The focus of the collaboration initially will be on small (pilot plant scale) projects capable of producing ~100kg (~50Nm<sup>3</sup>H) of hydrogen per day, with the scope for further development of larger scale opportunities. This scale of plant has been identified as the initial small-scale production units necessary for many hydrogen-to-energy projects, as well as being the typical target volume for distributed vehicle refuelling systems.

The anticipated arrangement would accelerate the commercial development of the Hazer technology substantially, through expedited development of the proposed pilot plant, as well as accelerating the commercial deployment of the Hazer technology.

Pan American Hydrogen has provided commercial plant designs based on using Natural Gas, LPG, Methanol or Naphtha feedstocks, and has specific expertise in downstream hydrogen processing and purification based on Pressure Swing Adsorption (PSA) technology, which is an ideal fit for the Hazer Process. This expertise makes the group an ideal co-partner for Hazer along with Kemplant, Hazer’s strategic chemical engineering partner; Kemplant has significant expertise in the design of Fluidised Bed reactors and other components of the core Hazer reactor, and the output from the reactor is easily integrated with the downstream processing units that Pan American would typically couple with Steam Methane reformer-based production units.

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Pan American also has full manufacturing capability with all relevant US certifications and accreditations and has installed plants across Asia, Europe and North and South America. They have well-established connections within the global hydrogen market, both in industrial chemical opportunities as well as emerging and alternative energy markets, and would through the partnership assist with identification of possible projects where (initially) small production plants could be deployed.



**430 Kg/day (200 Nm<sup>3</sup>/h plant**  
**Location: Ukraine**



**640 Kg/day (300 Nm<sup>3</sup>/h plant**  
**Location: Spain**



**8,500 Kg/day (4,000 Nm<sup>3</sup>/h plant**  
**Location: USA**

*Above: Selected examples of hydrogen generation plants designed, fabricated, installed, commissioned and serviced by Pan American Hydrogen.*

**Sergio Martinez, President of Pan American Hydrogen Inc, stated:**

“We are delighted to have the opportunity to work with Hazer on the development and deployment of their technology, and see significant commercial opportunities for the small scale hydrogen generation plants that Hazer and Pan American can deliver. We are impressed by the commercial opportunity that the Hazer Process represents for production of hydrogen with a lower CO<sub>2</sub> footprint, which we see as critical for the ongoing market application of hydrogen in global energy markets. We also see great potential for Hazer to offer the lowest cost hydrogen production technology globally, as hydrogen costs can be significantly reduced by credits from graphite sales, even at graphite values significantly below current market values.”

**Geoff Pocock, Managing Director of Hazer, commented:**

“It is a great validation for the Hazer technology to have secured a significant international hydrogen production partner. We have been impressed with Pan American’s capabilities and experience in the hydrogen production industry, and we see this as a significant step in accelerating the commercial development of the Hazer process”

**[ENDS]**

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## ABOUT HAZER GROUP LTD

Hazer Group Limited (“Hazer” or “The Company”) is an ASX-listed technology development company undertaking the commercialisation of the Hazer Process, a low-emission hydrogen and graphite production process. The Hazer Process enables the effective conversion of natural gas and similar feedstocks, into hydrogen and high quality graphite, using iron ore as a process catalyst.

## ABOUT PAN AMERICAN HYDROGEN INC

Pan American Hydrogen (PAH) is a modular plants manufacturer, whose team has more than 34 years of experience manufacturing hydrogen generation plants based on Steam Hydrocarbon Reforming (SHR or SMR) or electrolysis based technologies. Pan American provides full turnkey solutions, including design, fabrication, installation, commissioning and service. In recent years, PAH and affiliates have designed, constructed and delivered hydrogen production plants across 5 continents for the steel and glass industries, pharmaceutical and chemical industries, electronics, oil & gas, biofuels and power generation industries, at scales of 200 Nm<sup>3</sup>H up to more than 13,000 Nm<sup>3</sup>H.

For more information on Pan American, see <http://www.phydrogen.com>, contact [team@phydrogen.com](mailto:team@phydrogen.com), or call +01 (956) 365-3773.

For further information, investor or media enquires, please contact:

### Michael Wills – Hazer Group

Email: [mwills@hazergroup.com.au](mailto:mwills@hazergroup.com.au)

Phone: 0468 385 208

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