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PRE-PILOT PLANT SIGNIFICANT PERFORMANCE IMPROVEMENTS AND 2ND GENERATION UPGRADE COMMISSIONING AHEAD OF SCHEDULE

- **The 1st Generation FBR Pre-Pilot Plant (1st Gen PPP) testing is complete.**
- **Final results show significant improvements in average product production rates by >400%.**
- **Testing demonstrates negligible CO2 emissions produced by the Hazer process.**
- **The system upgrade (2nd Gen PPP) installation is complete and commissioning has commenced ahead of schedule.**

PERTH, AUSTRALIA 19th July 2018: Hazer Group Ltd (ASX: HZR) has demonstrated a 400% increase in the average production rate of hydrogen and graphite during final test runs on the 1st generation Fluidised Bed Reactor (FBR) Pre-Pilot Plant (1st Gen PPP) compared to initial test runs and results previously announced in the ASX announcement "Pre-Pilot Plant Update – Achievement of Successful On-line Catalyst Injection" on 22 November 2017.

An average production of nearly a kilogram of graphite was achieved in a single run with an equivalent production rate of more than 5.5 kg per day of total products, comprising unpurified graphite and hydrogen content. This represents a >400% increase on production rates initially reported.

"From the current small and un-optimised reactor, Hazer engineers have successfully demonstrated the capability and capacity to adapt the process to yield higher graphite or hydrogen purities. The next phase of development using the 2nd generation upgrade is to optimise reactor throughput and purity for both products," said acting Hazer Chief Executive Officer Mark Edwards.

"Most importantly safety is a priority, throughout the 1st generation reactor operation and testing, Hazer operators' developed and followed operating procedures ensuring zero safety incidents, providing confidence in the system engineering and control requirements to ensure zero harm."

Three Development Pathways

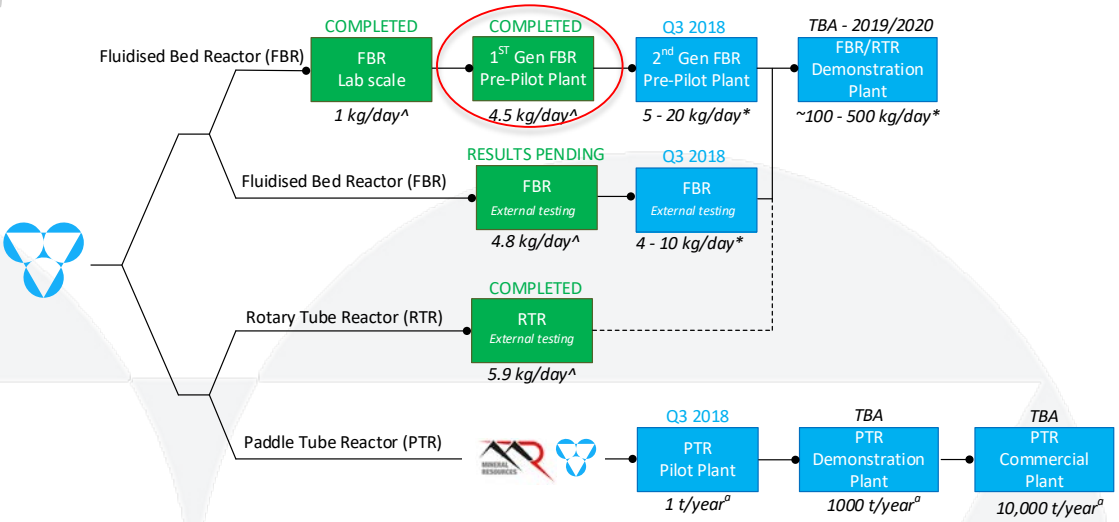
Hazer is evaluating three main development pathways to expedite commercialisation timelines for specific business case scenarios using the Hazer process where the production of hydrogen is the primary objective.

The Mineral Resources Limited (ASX:MIN) project continues to pursue the commercialisation of the Hazer process where the production of graphite is the primary objective.

"This update focusses on the Hazer 1st Gen FBR pre-pilot plant pathway, which remains the core development path for clean hydrogen production," said Mr Edwards.

The production results analysed below predominantly reference the volume of the graphite that has been produced notwithstanding the main objective is the production of hydrogen. The reason for this orientation toward graphite volume is that can be measured more precisely.

Through extensive testing, Hazer has determined that for every kilogram of graphite produced at least 250 grams of hydrogen is produced. Using this graphite:hydrogen production ratio, and online tailgas analysis, Hazer is able to evaluate the hydrogen volume.



^ *Actual equivalent graphite capacity rate achieved (unpurified)*
* *Nominal graphite target capacity (unpurified)*
° *Nominal graphite target capacity (purified)*

These rates are given in terms of graphite capacity for comparative purposes only. Each plant will inherently produce hydrogen in addition to graphite. The ratio of hydrogen to graphite is approximately 1:4.

Figure 1: The 1st Gen PPP stage (circled in red) contributes to the overall development of a commercial pathway. Refer to ASX announcement "Corporate & Technical Development Update" released on 19th June 2018 for more details.

Scale-up development is being undertaken in sequential stages, each building on the functionality and/or capacity of the previous stage(s).

The purpose of the first stage "FBR Lab Scale" was to demonstrate the suitability of the Hazer process with fluidised bed reactor systems.

The 1st Gen PPP was constructed to test key technical features that are essential for the large-scale commercialisation of the technology, including (1) continuous online catalyst injection, (2) continuous online graphite removal, and (3) design for a greater range of operating conditions such as elevated pressure.

Upgrades to the 1st Gen PPP (termed "2nd Gen PPP") are being finalized to increase the system production capacity, improve product purities and to enable the system to operate for extended durations. Once these tests are completed the core aspects of the process will have been demonstrated.

Following this a demonstration plant is planned that will include most ancillary plant functions to enable full system integration testing as well as further product and energy optimization.

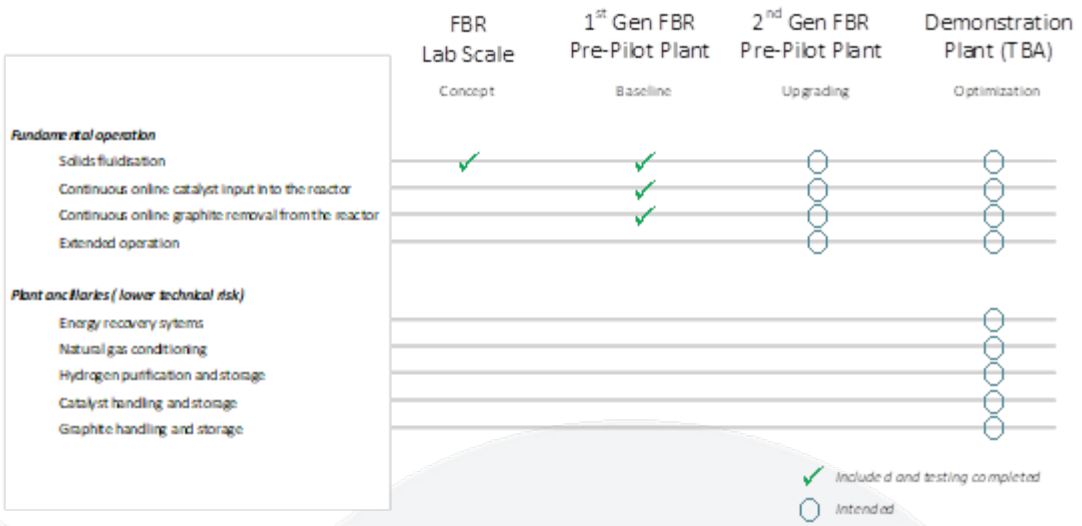


Figure 2: Intended functionality of each FBR development stage

Basic performance metric targets have been set to guide the incremental improvements of each development stage. The definition of the metrics are [1] Nominal graphite capacity - extrapolated rate of graphite production over a 24 hr period, [2] Bulk graphite production - physical production of graphite from each run, [3] Maximum steady state hydrogen purity - the highest hydrogen concentration at steady state operation, and [4] Maximum graphite purity - the highest graphite purity achieved.

In summary the 1st Gen PPP has been successful in its intent to demonstrate the continuous operation at full operating conditions. It was just shy of meeting bulk graphite production target of 1 kg, however was able to generate this graphite at over 4 times the targeted rate. The 2nd Gen PPP is designed to significantly improve all metrics, in particular the graphite capacity and bulk graphite production which are 10 times the targets for the 1st Gen PPP. The performance metrics targets and results are shown for each development stage in Table 1.

	Lab FBR		1st Gen PPP		2nd Gen PPP	
	Target	*Achieved*	*Target*	*Achieved*	*Target*	*Achieved*
Nominal graphite capacity^	*1 kg/d**	1.5 kg/d*	*1 kg/d*	4.5 kg/d	*10 kg/d*	TBA
Bulk graphite production^	*1 kg**	1 kg*	*1 kg*	0.9 kg	*10 kg*	TBA
Maximum 'Steady state' hydrogen purity	*Not tested*	Not tested	*50% vol*	51% vol	*60% vol*	TBA
Maximum graphite purity	*75%*	78%	*85%wt*	87%wt	*90% wt*	TBA

**Sub optimal reaction conditions and non-continuous operation*

^These values are given in terms of graphite capacity for comparative purposes only. Each plant will inherently produce hydrogen in addition to graphite. The ratio of hydrogen to graphite is approximately 1:4

Table 1: Key performance results and targets for each FBR development stage

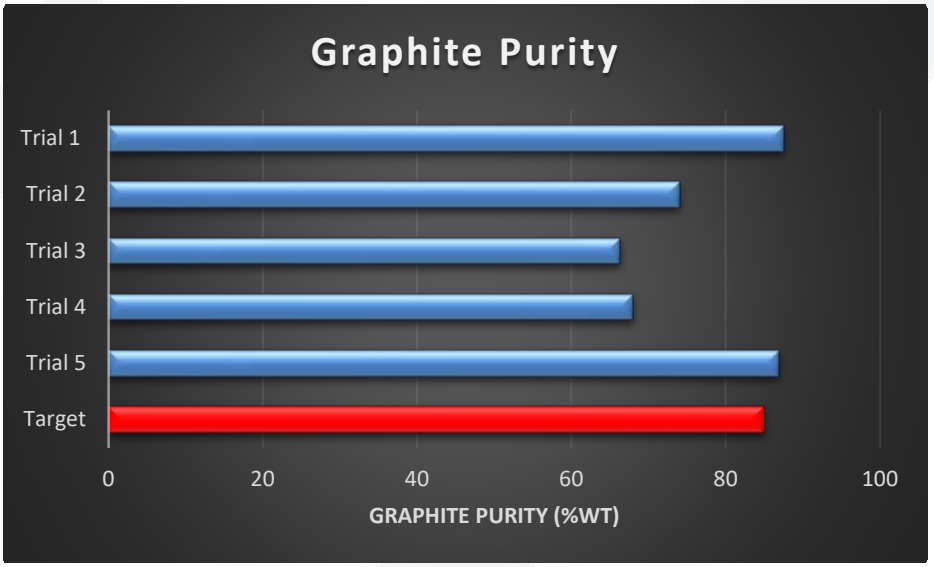
Results from 1st Gen PPP Testing

Following on from the initial fully continuous operations, Hazer has now demonstrated on-line catalyst additions with > 50 catalyst addition sequences per test run, demonstrating steady-state operations with tangible operational and production improvements.

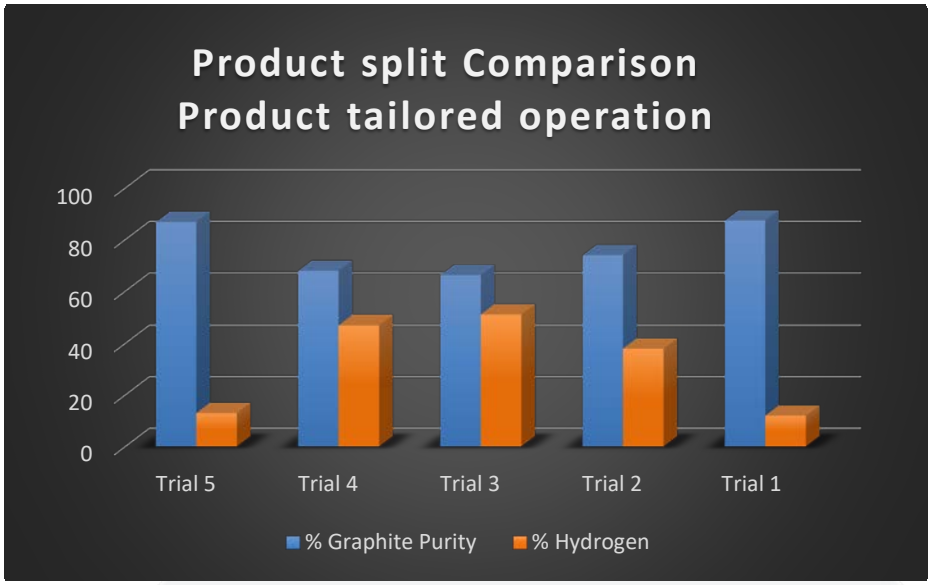
Photo 1 : Single run graphite produced from the Hazer Process

Production Rates and Graphite Purity

The below graphs provide information on the range of graphite purity levels and the coincidental hydrogen purity achieved using different test conditions to target different outcomes. The reactor from the 1st Gen PPP is small and limits the purity levels achievable but provided confirmation of the process and understanding on performance against different operating conditions.



Graph 1 : Graphite purity levels achieved per test run.

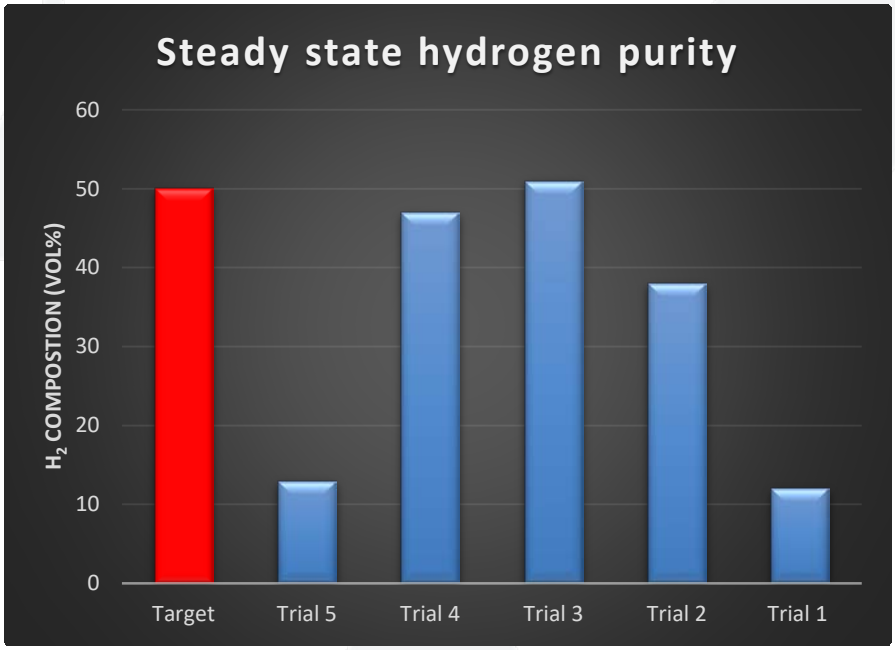


Graph 2 : Comparison of hydrogen/graphite purity achieved per test run.

Hydrogen Production

The highest steady stage average hydrogen purity achieved was 51% vol%, with negligible co-production of other gasses or non-graphite species.

"These results are very encouraging as they are approaching the ideal range for off-the-shelf purification technologies, and there is great opportunity for further optimization," commented Mr Edwards.



Graph 3 : Steady state average hydrogen purity per test run.

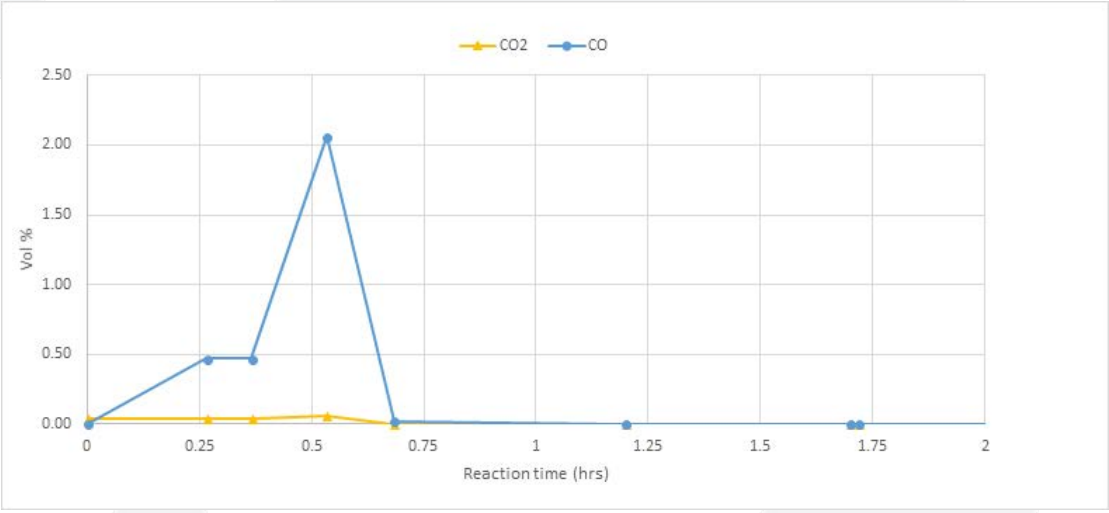
The above results were obtained without gas recycle operation, allowing for further optimisation in commercial applications.

“These results have allowed development of concept process flow diagrams for the next stage demonstration size plant and provide the data needed for further developing the fluid bed reactor business case,” said Mr Edwards.

Negligible CO2 and CO Emissions

Results from third party compositional gas analysis from multiple test runs demonstrates emissions of CO and CO2 from the process are negligible. Some emissions were expected by the liberation of oxygen during the reduction of the iron ore however these results were even lower than expected.

Levels of these gases are at their peak (<2% vol) only when the catalyst is initially injected into the reactor and then reduces to insignificant levels (<0.3% wt) in subsequent injections as the reaction stabilizes.



Graph 4: CO2/CO emissions in the tailgas showing once stabilised, the Hazer process has negligible CO2/CO emissions.

“Our vision is to find a solution to climate change by commercialising a process to reduce CO2 emissions in hydrogen production. Only the heating step contributes to the overall technology emissions which can be near zero if renewable energy is used, so effectively these negligible carbon emission results prove the Hazer process is better for the environment,” said Mr Edwards.

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2nd Gen PPP & Plant Relocation Update

Commenting on the Company's short to mid-term endeavours, Hazer's Acting Chief Executive Officer, Mark Edwards confirmed that due to the construction of the reactor for the 2nd generation upgrades being ahead of schedule, the 2nd Gen PPP will be commissioned and tested in Sydney prior to relocating to Perth.

"This opportunity allows important testing to be completed earlier than expected and can be done in parallel to relocation planning," said Mr Edwards.

The next stage of testing timeline still aligns with the Sydney office closure notice periods. The commissioning of the 2nd Gen PPP commenced in the 3rd week of June.

"This is an important step to the pathway to commercialisation and our vision to be a leader in the production of low emission hydrogen," concluded Mr Edwards.

Progressive testing results of the 2nd Gen PPP are expected in the coming months.

Photo 2 and 3: (Top) Completed 2nd Gen PPP, and (right) Hazer engineers, Brett Creagh and John Murphy (left to right), alongside the modified system.

[ENDS]

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.

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