



Tuesday, 13<sup>th</sup> September, 2016

## AIY Takes 20% Stake in ‘Green’ Ammonia Company

Authorised Investment Fund Ltd. (ASX: AIY, “AIY”) is pleased to announce that it has taken a 20% equity stake in Australian technology company Alchemy of Air Pty. Ltd. (“AOA”). The investment provides AIY shareholders exposure to ground-breaking advances that could redefine the 100 billion dollar ammonia (NH<sub>3</sub>) industry.

### Overview

AOA is collaborating with a USA-based research group NHThree LLC (NH<sub>3</sub>) to commercialise a unique, patented process that produces ammonia using Solid State Ammonia Synthesis (SSAS). The preliminary results have been very encouraging, strongly suggesting that the process can be economical at industrial scales.

AOA management recently signed an agreement with NH<sub>3</sub> after their due diligence suggested the enormous commercial potential of the technology. Under the terms of the agreement AOA has the exclusive rights to market and build the SSAS-based plants in Australia to cover a defined “Territory” that includes Australian, Japanese and other major Asian and Middle Eastern markets.

AIY’s investment will facilitate AOA to:

- 1) Fully commercialise the process;
- 2) Build a 1 tonne per day (tpd) pilot plant and a 10tpd commercial-scale SSAS Ammonia plant in Australia;
- 3) Set up an Ammonia R&D hub in conjunction with Australian institutions to build a centre of excellence for ongoing R&D into Ammonia and related Technologies and applications;
- 4) Become a manufacturer of commercial-scale SSAS Ammonia plants across the “Territory”; and,
- 5) Develop a pipeline of projects for SSAS-based Ammonia Plants.

AOA is led by a talented and experienced management team capable of driving the project to fruition.



Advantages of the SSAS Technology

Potential advantages over current production methods include:

- 1) Lower temperature and pressure requirements for production;
- 2) Lower energy requirements;
- 3) Lower capital costs;
- 4) Modular Plug and Play design;
- 5) No Hydrocarbon feed source required; and,
- 6) Zero greenhouse gas emissions.

The Ammonia Industry currently produces as much as 3% or more of the world's greenhouse gas emissions. By contrast, the SSAS Technology will only produce oxygen as a by-product. With an entirely renewable electricity source, SSAS ammonia will be 100% green.

Indicative Economic Comparison for NH<sub>3</sub> production Methods\*

	Haber-Bosch Natural Gas Feed	Electroliser + H-B	SSAS*
Energy required per tonne of NH <sub>3</sub>	10,600 kWh	13,000 kWh (H <sub>2</sub> production only)	7-8,000 kWh*
Capital cost, \$/tne/day NH <sub>3</sub> capacity	\$500,000	\$750,000	\$200,000*
“Fuel” cost to produce 1 tonne of NH <sub>3</sub> at large scale (1)	Depends on location and NG cost	\$460 (Power cost – 3.5 c/kWh) \$260 (Power cost – 2.0 c/kWh)	\$270 (Power cost – 3.5 c/kWh)* \$155 (Power cost – 2.0 c/kWh)*
Total cost to produce 1 tonne of NH <sub>3</sub> at moderate to large scale (2)	Depends on location and NG cost	>\$660 (Power cost – 3.5 c/kWh) >\$440 (Power cost – 2.0 c/kWh)	\$345 (Power cost – 3.5 c/kWh)* \$230 (Power cost – 2.0 c/kWh)*
Tonnes of CO <sub>2</sub> emitted per Tonne of NH <sub>3</sub> produced	1.8	0	0

- (1) 2.0 c-3.5c/kWh for power on close proximity to a Hydro source
- (2) Using a Capital recovery factor of 12% and N<sub>2</sub> purchased @\$30/tN<sub>2</sub>
- (3) All in USD
- (4) Estimated, 2007



**\*Indicative figures only, calculated by NHThree LLC from published peer reviewed research. Projections unsubstantiated by AOA or AIY. Note: tonnes and kWh have been up-scaled from US tons to reflect metric tonnes produced.**

### The Ammonia Market

Ammonia is the second-most-produced industrial chemical in the world, with over 150 million tonnes produced annually, predominately for fertilisers, fuels, explosives, rubber production and refrigeration. It is emerging as the key to a hydrogen-powered world because – unlike hydrogen gas – it can be transported and stored similarly to LPG utilising existing infrastructure.

Authorised Investment Fund’s Managing Director David Craig said Alchemy of Air represented an exciting and unique investment opportunity.

“Over 150 million tonnes of ammonia are produced worldwide each year. With the ammonia price ranging between \$300 and \$800 per tonne over the last five years, the ammonia industry is around a hundred billion dollar market,” said Mr Craig.

“The market will only get bigger if the hydrogen-powered economy is fuelled by ammonia. Japan has already announced it will become a hydrogen powered country and ammonia is in its sights as a safe method of transporting and storing a rich source of Hydrogen. Few would know for example that the fastest-manned flight in the world reached Mach 7 – twice the speed of a bullet – using ammonia as the main fuel source and that was 49 years ago.”

AIY has uploaded a document library onto its website with articles about ammonia, its place in the hydrogen economy and the SSAS technology for the benefit of shareholders.

### Details of the Investment

Under the terms of the agreement Authorised Investment Fund Ltd. will issue nine million (9,000,000) shares at the price of ten cents (10c) per share for the total consideration of nine hundred thousand Australian dollars (A\$900,000) to Alchemy of Air.

AIY, subject to raising capital, will invest up to \$1.3 million towards project costs over the next two years to facilitate the commercialisation process.

AIY has an option to acquire a further 10% of AOA, to bring its ownership to 30%, by investing a further \$3 million in AOA.

- Ends -



Contact: Mr. Andrew Mendelawitz

Phone: +61 3 9600 3242 (Melbourne)

Email: [info@authorisedinvestmentfund.com.au](mailto:info@authorisedinvestmentfund.com.au)

About Alchemy of Air

Alchemy of Air is an Australian company collaborating with an American Company to develop a revolutionary 'green' production process for ammonia. The company has secured the exclusive rights to the Solid State Ammonia Synthesis process for Oceania, Asia and the Middle East.

AOA has highly experienced management and technical teams, led by Mr. Rick Stroud (Perth) and Mr. Conrad Gaudin (Sydney).

About Authorised Investment Fund Ltd.

Authorised Investment Fund is an ASX-listed Pooled Development Fund (PDF) investing in innovative companies ready for immediate step-change growth. PDFs provide the ideal structure to build companies, paying 15% corporate tax, with zero capital gains tax and no tax on dividends for investors. Authorised Investment Fund has investments in energy, health, and construction technology companies.

[www.authorisedinvestmentfund.com.au](http://www.authorisedinvestmentfund.com.au)

**On behalf of the Board**

**Cathy Lin**

**Company Secretary**