



# CHAPMANS

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**ASX/Media Release**

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## **CHAPMANS TAKES STRATEGIC INTEREST IN BREAKTHROUGH CLEAN-TECH WASTE TO ENERGY OPPORTUNITY**

### **HIGHLIGHTS**

- Chapmans subsidiary COL has invested \$600,000 for a 19% equity holding in breakthrough plasma gasification waste-to-energy business Syn Dynamics Australia Pty Ltd (SDA).
- COL may increase its interest to 25% for a further \$1.9m following completion of a commissioning report by CSIRO on SDA's test plant and further commercial modelling and market entry planning.
- Plasma gasification is a next-generation extension of gasification, a globally proven and adopted process by which carbon based material is converted in to synthetic gas, or 'syngas'.
- Syngas is a global commodity with a wide range of commercial uses including various forms of renewable energy such as electricity generation and as a fuel or feedstock for chemical manufacturers.
- More than 300 gasification plants operate globally with the most common applications being:-
  - clean gasification of coal in coal-fired power generation;
  - conversion of industrial and commercial waste into clean energy (syngas); and
  - conversion of biomass waste into ethanol or syngas.
- SDA's plasma gasification technology converts a wide range of waste in to syngas with modular and smaller mobile plants that make waste treatment technology affordable and accessible for wide scale adoption.
- SDA's plasma gasification technology is patented and unique; it uses water-based conduction and generates plasma from carbon dioxide gas in a process called plasma hydrolysis (PHP).
- It has specific water treatment and processing efficiencies enabling it to convert close to 100% of waste feedstock into syngas and can treat most common waste materials.
- SDA's test plant has been developed in Europe and Australia over the past seven years, having already successfully undergone numerous tests in the UK and Australia.
- This included 120 batch processing plant tests in a one year Proof-of-Concept Project with leading plasma gasification experts at Queensland University of Technology (QUT).
- SDA has appointed highly experienced process plant and construction engineer Blake Cannavo as CEO in preparation for commercial market entry.
- SDA's initial target market is hazardous waste from oil refineries, petrochemical plants, smelters and mines – a massive global market opportunity and pre-sales discussions are underway.



The Directors of Chapmans Limited (ASX: CHP) (Chapmans, the Company) are pleased to announce that subsidiary, Chapmans Opportunities Limited (COL), has entered into an exclusive binding subscription agreement (Agreement) to take a strategic \$2.5 million position in breakthrough plasma gasification business Syn Dynamics Australia Pty Ltd (SDA).

SDA has developed a next-generation plasma gasification technology that converts a wide range of waste material into a high value syngas product. Unlike other brown-to-green gasification technologies, SDA's technology is able to convert 100% of waste material feedstock into syngas. Other competing technologies typically achieve conversion rates of between 30% - 50%, operate only at mega station scale (such as power stations) due to their high energy consumption and produce tars and toxic chemicals such as dioxins hence limiting their adoption.

SDA's patented plasma hydropyrolysis technology has been designed to address the performance, efficiency and scale characteristics of existing gasification technology with the objective of optimizing conversion, cost and accessibility requirements of the global waste mass markets.

COL views this as a ground breaking clean-tech opportunity, poised to enter the commercialisation phase with a massive potential addressable market globally.

## Investment

COL has entered into an Agreement to make a strategic investment of \$2.5 million in SDA and acquire a 25% interest in the total share capital of SDA, in two tranches as follows;

- **Tranche 1:** 2,353 shares at a total subscription price of \$600,000 for a 19% holding; and
- **Tranche 2:** 980 shares at a total subscription price of \$1,900,000 for a 6% holding.

Tranche 1 has now been completed. As part of the Agreement COL has board representation.

The funds will be used for the ongoing development and commercialisation of the SDA plasma gasification technology. This will include further batch and continuous processing plant research, development and validation under an initial one year Research Agreement with the Commonwealth Science and Industrial Research Organizations' (CSIRO) Queensland Centre for Advanced Technology (QCAT). Under the CSIRO Agreement, SDA plans to be able to have prospective customer bulk samples tested ahead of commercial supply agreements.

Finalisation of Tranche 2 of the Agreement is subject to further due diligence to be undertaken by COL including satisfactory testing and validation by CSIRO, further commercial modelling and market entry planning including pre-sales discussions with a number of prospective customers consisting of large global petrochemical manufacturers and mining companies .

Chapmans has also entered into an exclusive mandate to advise and list SDA on the ASX on commercial terms acceptable to both parties within the next 12 months.

## Plasma Gasification and the Syn Dynamics Opportunity

Gasification is a process by which carbon based material is converted in to a gaseous fuel, namely a mixture of carbon monoxide, hydrogen and carbon dioxide – also known as synthetic gas or syngas.

Plasma gasification is a next-generation extension of the gasification process and has undergone a surge in interest and commercial application over recent years. It uses an ionized gas (a plasma) to convert the organic matter into syngas or solid waste.

It has the advantages, relative to other gasification systems, of having no formation of tars which are detrimental to gasification systems and no toxic chemicals (such as dioxins) produced in the gas stream.



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Syngas is a global commodity in its own right and represents a key building block of modern chemical industry, with a wide range of commercial uses and applications. These include electricity generation and as a liquid fuel source.

Syn Dynamics' plasma gasification technology has two compelling technical advantages;

- Its extremely high waste-to-syngas conversion rate which contributes to its cost effectiveness; and
- Its ability to treat a wide range of waste material including hazardous waste, biomass and landfill, in addition to solid hydrocarbons such as coal.

Combined, these factors open up substantial global commercial market opportunities in the corporate and government sectors, as large organisations seek new waste utilisation and storage solutions.

### **Experienced Management with Proven Track Record**

SDA has appointed Blake Cannavo as CEO. Mr Cannavo is a highly accomplished project director with more than 24 years' experience in diverse engineering and processing plant projects within the mining, energy and construction industries.

Mr Cannavo has extensive networks in the process engineering, mining, energy and construction sectors having overseen large scale processing plant projects as a senior executive with Fortescue Metals Group (ASX:FMG) and Aquila Recourses and more recently as principal of Bamford Engineering and Consulting. During this time Mr Cannavo has been involved in executing projects, primarily process plant design and construction, valued up to \$10 billion in both local and international markets such as Papua New Guinea/New Zealand, South Africa, Western Australia ('Pilbara'), Queensland and UK/Europe.

### **Initial Target Market**

SDA's initial target market will be hazardous waste from oil refineries and chemical plants. This represents a large global market, as the oil refinery and chemical manufacturing industries are confronted with chronic storage, compliance, environmental and public health risks in relation to the storage and treatment of waste from refinery and processing plants.

SDA can advise that it is currently engaged in positive ongoing discussions with global players in the oil refinery, chemical manufacture and mining industries in relation to the adoption of its plasma gasification technology. SDA and COL will advise the market of any material progress on these discussions.

### **Background**

Swiss company Syn Dynamics GmbH (SDG) discovered a unique plasma gasification technology in 2009 and has subsequently invested considerable resources in developing the technology. The technology is patented with all intellectual property rights held by SDA.

After successfully developing the technology, SDA completed a highly successful Proof-of-Concept Project in conjunction with the Queensland University of Technology in Brisbane to validate the technology and assess its scalability for commercial use. Costing over \$500,000, the project involved more than 120 separate batch processing tests, and key outcomes included;

- Syn Dynamics technology was confirmed as a stable and reliable plasma gasification system with an advanced and accurate software control system;
- An understanding of the critical parameters for plasma conversion of carbon-based materials to syngas was developed;
- Suitable industries to market Syn Dynamics' plasma technology were identified, and
- A pathway to develop the Syn Dynamics' technology to the next stage was identified.



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## Update on Other COL Transactions

Chapmans advises that due to what it sees as declining valuations and investor sentiment in the cloud-based digital technology sector it has taken the risk averse decision to not proceed with its previously announced proposed transactions with Skyfii Limited (ASX: SKF) and Whizz Technologies Pty Ltd.

Furthermore COL is pleased to announce that since its announcement of 14 June 2016, it has successfully raised \$4m from a strategic investor at a pre-money value of \$16m (\$20m post money) to complete the \$5m investment in Sports Fantasy Global Limited.

Chapmans continues to assess value accretive new business opportunities in high growth sectors pursuant to its business model, and will advise the market further at such time that any opportunities become material.

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## About COL

Chapmans Opportunities Limited (COL) is a subsidiary of ASX-listed diversified investment company Chapmans Limited (ASX: CHP). It is an investment entity focused on making non-controlling investments in small to medium Australian companies, predominantly providing active expansion capital in the technology sector. COL plans to seek an ASX-listing in due course.

## About Chapmans

Chapmans (ASX: CHP) is an ASX listed diversified investment company engaged in special situation investments across a diverse range of industries, with a focus and expertise in the mobile and advanced industrial technology sectors. It seeks to be an active strategic investor in high growth areas of the market, and to identify and work with emerging high growth companies. The Company's investment philosophy and approach are based on a unique mix of high conviction and special situation features, characterised by advisory and equity investments structured around specific events and assets for both public and large private corporates.