

ASX

# Announcement

8 June 2012

## Second Kalina Cycle<sup>®</sup> power plant with FLSmidth

The Directors of Wasabi Energy (ASX: WAS, AIM: WAS, OTCQX: WSPLY) advise that its Kalina Cycle<sup>®</sup> licensee, FLSmidth has secured a contract to install its second Kalina Cycle<sup>®</sup> power plant utilising waste heat from a major cement plant.

The new contract is for a 4.75 MWe Kalina Cycle<sup>®</sup> power plant which will be installed by Q2 CY2013 at Star Cement's cement plant in Ras Al Khaimah, United Arab Emirates. Star Cement Co. LLC was acquired in 2010 by UltraTech Cement which is part of the Aditya Birla Group, a US\$35 billion Indian based diversified global corporation.

Wasabi Energy will receive a one-off license fee based on the gross power output of the Kalina Cycle<sup>®</sup> plant.

The Executive Chairman of Wasabi Energy, Mr John Byrne explained "the new contract highlights the potential for the tremendous growth of Kalina Cycle<sup>®</sup> technology. Through our licensing agreements, Wasabi Energy receives one-off licence payments of between \$50,000 and \$150,000 per installed MW, depending on the licensor and the particular industry."

"We have estimated the global market potential for waste heat recovery for the cement and lime industries at in excess of 15,000MW".

He added "FLSmidth as the world leader in supplying engineering to the cement and lime industries is well positioned to capitalise on this market."

"We would expect that when the first Kalina Cycle<sup>®</sup> project at the DG Khan plant in Pakistan comes on stream next quarter, the order rate will increase."

"For Wasabi however, licensing and engineering income, such as that received from FLSmidth is not expected to be the primary driver of growth" Mr Byrne said.

"While these will provide a solid income stream, Wasabi Energy plans to drive its growth by building owning and operating power plants and selling power to either the customer providing waste heat or into the local grid."

"Wasabi Energy aims to start 25MW of build own operate plants over the next 12 months."

The company recently announced on 23 May 2012 it is purchasing an option to acquire 50% of the Tuzla Geothermal Power Project in Turkey. This project has an operating 7.5MW geothermal power plant and we are working on a pre-feasibility study for a first stage build out of new 14 to 17.5MW geothermal power plant. Resource estimates by MTA, the Mineral Research & Exploration General Directorate in Turkey which discovered the resource indicate power generation potential of up to 80 MW from the Tuzla Geothermal Power Project."

Further details on the new FLSmidth contract are set out below.

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## FLSmidth Secures 4.75 MWe Kalina Cycle® Power Plant Project.



- FLSmidth secures contract to design and build a 4.75 MWe Kalina Cycle® power plant in the United Arab Emirates
- First project for FLSmidth under the global Kalina Cycle® licensing agreement with Wasabi Energy
- Strong Kalina Cycle® project pipeline in cement industry driven by high demand for energy efficiency projects

Wasabi Energy (ASX: WAS, AIM: WAS, OTCQX: WSBL) is pleased to announce its cement and lime industry Kalina Cycle®<sup>1</sup> licensee, FLSmidth has secured their first power plant project under its global licensing agreement. The 4.75 MWe Kalina Cycle® power plant will be installed by Q2 CY2013 at Star Cement's cement plant in Ras Al Khaimah (figure 1), United Arab Emirates. Star Cement Co. LLC was acquired in 2010 by UltraTech Cement which is part of the Aditya Birla Group, a US\$35 billion Indian based diversified global corporation.

The Kalina Cycle® power plant will draw waste heat from the clinker cooler in the cement production process to generate 4.75 MWe of emission-free electricity. Cement production is highly energy intensive and Star Cement has taken the step to reduce costs by improving energy efficiency which also results in reduced greenhouse gas emissions.

Star Cement has selected FLSmidth to design, engineer and supply a Kalina Cycle® plant based on their track record as one of the world's leading providers of engineering, procurement and construction management services to the cement and lime industries. Following a competitive process, Star Cement selected the Kalina Cycle®. The cost of the Kalina Cycle® was similar to conventional technologies due to its significantly higher annual power generation than competing technologies.

Ras Al Khaimah Cement Plant<sup>3</sup>- Kalina Cycle® Power Plant Site



Fig. 1

Additional details regarding the Kalina Cycle® in the cement and lime sectors and relevant projects have been provided in the following sections:

- >> Cement Industry ..... page 2.
- >> About FLSmidth ..... page 2.
- >> Project Comments ..... page 3.

<sup>1</sup> - Kalina Cycle® is a registered trademark of Global Geothermal Limited<sup>2</sup>. The Kalina Cycle® is a patented power cycle technology owned by Global Geothermal Limited.

<sup>2</sup> - Global Geothermal Limited (U.K.) and Recurrent Engineering LLC (U.S.) are wholly owned subsidiaries of Australian Securities Exchange (ASX: WAS) and AIM (AIM: WAS) listed, Wasabi Energy Limited.

<sup>3</sup> - Image courtesy of FLSmidth. <http://www.flsmidth.com/en-US/ehighlights/Archive/Cement/2010/April/Star+Cement+in+Ras+Al+Khaimah+makes+a+fine+start>

## The Kalina Cycle® - In the Cement Industry

Wasabi Energy, under its license agreement with FLSmidth, will receive a one off license fee based on the gross electrical capacity of the Kalina Cycle® power plant. FLSmidth will undertake the design, engineering and supply, with construction of the project to be completed with a local contractor.

Since signing the license agreement with Wasabi Energy, FLSmidth has established an energy efficiency group that focuses on delivery improvements in energy recovery and usage to cement and lime plants. In addition Wasabi Energy through its subsidiary Global Geothermal Limited has conducted intensive training and technology transfer to the FLSmidth engineering team. These groups together with their global sales team are pursuing numerous Kalina Cycle® projects.

The cement and lime industries are focused on improving their thermal and energy efficiency due to the energy intensive nature of cement and lime manufacturing. At present global cement consumption is approximately 3.3 billion tonnes per annum with China accounting for about 1.8 billion tonnes per annum. Growth in the cement industry (excluding China) is predicted to be approximately 55 m tonnes per annum for 2011 and between 60 – 75 m tonnes per annum or around 5% in future years.

Cement is the main ingredient in concrete and for each tonne of cement produced it requires between 89 and 130 kWh of electricity. The annual power consumption by the global cement industry is estimated to be 300 TWh which represents approximately 5% of global CO<sub>2</sub> emissions. Through the implementation of the Kalina Cycle® power plant Star Cement will produce over 32,000,000 kWh of electricity annually through converting their waste heat.

With increasing pressure on the industry to improve its energy efficiency and environmental impact there is enormous potential for the adoption of the Kalina Cycle® to utilise the waste heat and to provide additional power to the cement and lime plants.

As announced in January 2011, Wasabi Energy is also contracted to FLSmidth to engineer and procure the first Kalina Cycle® power plant in the cement and lime industries at the DG Khan cement works in Khairpur, Pakistan. The 8.6 MW plant is under construction with commissioning expected in Q3 CY2012.



### About Aditya Birla Group

The Aditya Birla Group is a global US\$35 billion Indian based conglomerate that is in the League of the Fortune 500. Aditya Birla Group operates across 19 sectors in 36 countries and is headquartered in Mumbai, India. Approximately 60 percent of the Group's revenues are from overseas operations.

The Aditya Birla Group is amongst the world's top 10 cement producers and through its subsidiary Ultra-Tech Cement has a capacity for 52 mtpa. Ultra-Tech has 11 integrated plants, 15 grinding units, 5 bulk terminals and 101 RMC plants - spanning India, UAE, Bahrain, Bangladesh and Sri Lanka.

### Aditya Birla Group - Fact File

- Over 133,000 employees
- Operates in over 36 countries
- Rated Top Companies for Leaders - No 1 in Asia Pacific and No 4 in the world (Aon Hewitt, Fortune Magazine 2011)



### About FLSmidth

FLSmidth is a leading supplier of equipment and services to the global cement and minerals industries. FLSmidth supplies everything from single machinery to complete cement plants and minerals processing facilities including services before, during and after the construction.

FLSmidth is a global company with a local presence in more than 50 countries and project and technology centres in Denmark, Germany, USA and India.

The Group's in-house resources are primarily engineers who develop, plan, design, install and service equipment, with most of the manufacturing being outsourced to sub-suppliers.

Since 1882, FLSmidth has developed a business culture based on three basic values: competence, responsibility and cooperation, reflecting the way in which FLSmidth interacts with its stakeholders.

Additional information:  
flsmidth.com

### FLSmidth in Brief

- Provides equipment, systems and services for the cement and minerals industries
- Founded in 1882 by Frederik Læssøe Smidth
- Listed on NASDAQ OMX Copenhagen in the C20 index
- Employees: Approximately 13,000 of which 1,600 in Denmark
- Turnover 2011: DKK 21,998m (EUR 2,959m)
- Offices in 50 countries world-wide
- Headquarters: Valby (Copenhagen), Denmark.

### Research & Development - Innovation

FLSmidth pursues an active research and development programme which reflects the aim of being the preferred partner and leading supplier to the global cement and minerals industries.

With the increasing focus on CO<sub>2</sub>, higher energy prices and the increasingly stringent emissions standards in the world markets, FLSmidth deploys considerable resources to develop new solutions to meet the important future challenges faced by their customers.



## Comment from the Chairman

Executive Chairman of Wasabi Energy, Mr. John Byrne commented:

*"We congratulate FLSmidth on its first project under the Kalina Cycle® license agreement. We have been working closely with FLSmidth for over 12 months on this and other project prospects. The cement and lime industries are focused on improving their efficiency and impact on the environment and FLSmidth are ideally positioned to deliver Kalina Cycle® power plants through their OneSource solutions."*

*"The cement and lime industries represent a large market for the Kalina Cycle® and we have conservatively estimated the global market potential at in excess of 15,000 MW. FLSmidth as the industry leader is well positioned to capitalise on this market."*

*"FLSmidth is focused on delivering energy efficient methods to both existing and new plants. The Kalina Cycle® can produce an additional 10-20% of electricity utilising the waste heat that is currently vented into the atmosphere."*

*"Our strategy with our licensees is to work with them to ensure the technology transfer is complete and to progress the Kalina Cycle® within their license area. FLSmidth have embraced the technology and are enthusiastically pursuing a number of opportunities. We are delighted with their progress and they make an ideal licensee for the Kalina Cycle®."*

Yours Sincerely,

Mr. John Byrne

Executive Chairman  
Wasabi Energy

## For further information contact

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## Comment from FLSmidth

Department Manager, Mr. Kevin Happ commented:

*"FLSmidth is leading the way in the cement and lime industry through its license with Wasabi Energy for the Kalina Cycle® power technology. We are pleased to provide our first 4.75 MWe Kalina Cycle® power plant to Star Cement in the United Arab Emirates."*

*"FLSmidth is the preferred choice of Star Cement when they invest in the latest technology and efficient machinery for their plant. Having already received a Pyro system from FLSmidth with a design capacity of 6,850 tpd in 2006, Star Cement approached FLSmidth again in 2011 with the aim of reducing their operational costs and wanting to reduce clinker temperature by upgrading their existing clinker cooler. Very satisfied with the technology and services provided by FLSmidth, in 2012, Star Cement signed another contract with FLSmidth for a Waste Heat Recovery System (WHR) based on the state-of-the-art Kalina Cycle® technology."*

*"Kalina Cycle® technology offers unmatched efficiency. For this project, it provides more than 20% higher power generation compared to conventional Rankine Steam Cycle or Organic Rankine Cycle based technologies operating under the same input conditions."*

*"The innovative Kalina Cycle® WHR system supplied by FLSmidth ensures an economical and sustainable cement production facility for Star Cement who are clearly taking a lead in having the most efficient technologies for its cement plant operations. By integrating the innovative Kalina Cycle® WHR system supplied by FLSmidth, Star Cement is ensuring its future as a sustainable cement production facility."*

*"FLSmidth is currently working on numerous waste heat recovery projects around the world where the Kalina Cycle® will be the leading technology."*

## For further information contact

### FLSmidth Enquiries

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[www.flsmidth.com](http://www.flsmidth.com)

## Corporate Information

General corporate information regarding Wasabi Energy and the companies Wasabi Energy holds a strategic investment in can be found in this section. Announcements regarding Wasabi Energy corporate developments are made to the Australian Securities Exchange (ASX) and the London Stock Exchange's, Alternative Investment Market (AIM), are also available on the Wasabi Energy website. Additional information regarding the investee companies can be found at their respective web sites, details below.

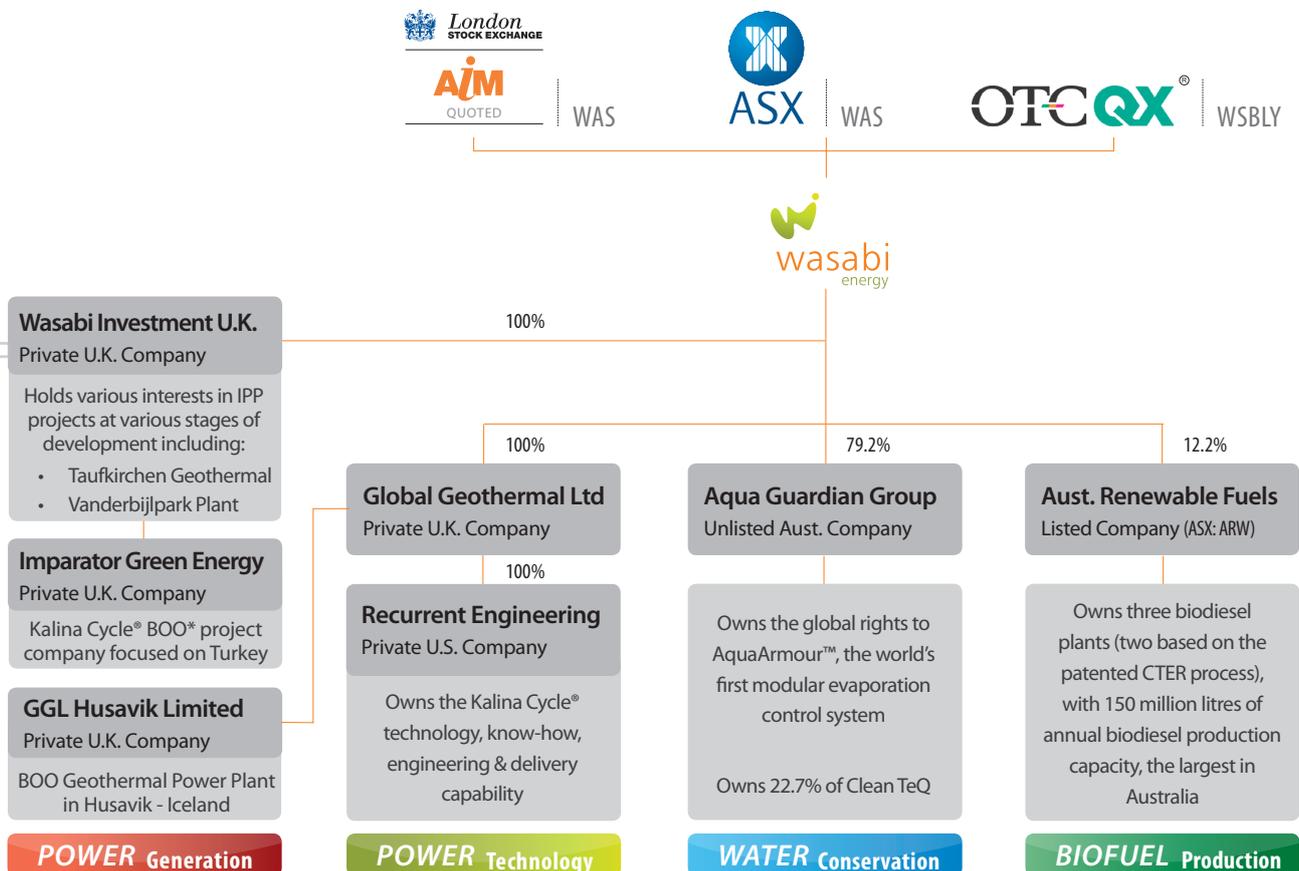


## About Wasabi Energy

Wasabi Energy Limited is listed on both the Australian Securities Exchange (ASX: WAS) and the AIM market in London (AIM: WAS) as well as American Depository Receipts trading on OTCQX Market (OTCQX: WSBLY). Wasabi Energy is an emerging power producer that also invests in sustainable technologies. Its power business is based on the proprietary Kalina Cycle® power generation technology which utilises low grade, waste heat from industrial facilities or geothermal sources to produce electricity. In a typical industrial application of the Kalina Cycle® technology can increase energy efficiency in an industrial plant by up to 20%. Through its strategic investments Wasabi Energy owns a 79.2% interest in Aqua Guardian Group, the developer of the AquaArmour™ a water management, conservation and algal control product. Aqua Guardian Group also has a 22.7% interest in the air, water and minerals ASX listed company Clean Teq (ASX: CLQ). Wasabi Energy also owns a 12.2% interest in Australian Renewable Fuels, a separately ASX listed company (ASX: ARW) which produces liquid biofuels from a variety of non-food grade feedstocks.

Additional information:  
[www.wasabienergy.com](http://www.wasabienergy.com)

## Group Structure



\* BOO - Build-Own-Operate

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