

Kalina Cycle® - Enhanced Energy Efficiency Solutions

Global Licensing Agreement with FLSmidth for the Kalina Cycle® in Cement & Lime Industries.



Sustainable Power Generation

Efficient. Safe. Reliable. Proven.

ASX Announcement

20 June 2011

Global Licensing Agreement with FLSmidth for the Kalina Cycle® in Cement & Lime Industries.



- Wasabi Energy signs global Kalina Cycle® licensing agreement with leading EPC provider FLSmidth
- Kalina Cycle® to spearhead efforts to reduce emissions of global cement and lime industries
- Licensing agreement expected to generate substantial licensing and engineering revenues
- FLSmidth has already identified more than 10 plants for potential application of Kalina Cycle® technology
- The Khairpur Kalina Cycle® plant on track to produce first power in the first quarter of 2012

Wasabi Energy (ASX: WAS, AIM: WAS) has signed a global Kalina Cycle® technology licensing agreement with FLSmidth (NasdaqOMXC: FLS), a leading supplier of engineering, procurement and construction (EPC) services to the global cement and minerals industries.

This license agreement will facilitate the rapid adoption of the Kalina Cycle® across the global cement and lime manufacturing industry resulting in significant reductions in CO₂ emissions for the cement industry whilst generating substantial licensing and engineering revenues for Wasabi Energy.

In January 2011, Wasabi Energy² announced a landmark contract with FLSmidth³ to build the world's largest Kalina Cycle® power plant at the Khairpur Cement Plant⁴ (figure 1) in Pakistan operated by the D.G. Khan Cement Company. Delivery of the Khairpur Kalina Cycle® plant is on schedule and with the licensing agreement with FLSmidth announced today, positions the Kalina Cycle® as the most efficient, safe and practical waste-heat-to-power generation technology for the global cement and lime manufacturing industry.

Details regarding the global Kalina Cycle® licensing agreement have been provided in the following sections:

- >> Implications of Agreement page 2
- >> Global Cement Industry page 3
- >> Chairman's Comment page 4

Details of FLSmidth Licensing Agreement

FLSmidth has been granted a technology license by Wasabi Energy for the exclusive utilisation of the Kalina Cycle® technology across the global cement and lime manufacturing industry. The licensing agreement covers all aspects of the cement and lime manufacturing industry globally, with the exception of the countries covered by existing licensees.

The license agreement can be summarised as follows:

- FLSmidth have paid Wasabi Energy an upfront fee to secure exclusive access to the Kalina Cycle® technology in the cement and lime manufacturing industry (this fee is in line with other licensing agreements)
- The Kalina Cycle® technology licensing fee incorporates specialised technology related training and technology transfer elements, initially for over 20 engineers
- Wasabi Energy will receive technology royalties from FLSmidth for every newly installed Kalina Cycle® plant (on an installed megawatt basis) across the cement and lime manufacturing industry
- Wasabi Energy has agreed to provide project engineering and commissioning support for an initial four projects to ensure the Kalina Cycle® technology is implemented optimally

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

² - 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.

Implications of Licensing Agreement

The adoption of the Kalina Cycle® technology across the global cement and lime manufacturing industry is set to accelerate rapidly. The selection of FLSmidth³ as a technology licensee for the Kalina Cycle® was based on FLSmidth's leading global position across the cement and lime manufacturing market as well as the group's innovative approach to successfully delivering technology driven efficiency and sustainability solutions.

As a leading global engineering services provider, FLSmidth conducted a detailed evaluation of available waste-heat-to-power generation technologies and confirmed the advantages of the Kalina Cycle® for the cement and lime manufacturing industries. In addition to D.G. Khan's Khairpur Cement Plant in Pakistan (*figure 1*), FLSmidth has initially identified more than 10 cement plants potentially suitable for the immediate application of the Kalina Cycle® technology to improve overall energy efficiency performance. The Kalina Cycle® technology can be retrofitted to existing cement plants or delivered as part of the supply for new cement plants being constructed. The FLSmidth and Wasabi Energy engineering teams will commence detailed evaluation of these and other Kalina Cycle® opportunities in the cement and lime manufacturing industry.

For additional information about FLSmidth and its history of successfully adopting innovative technologies, refer to:

>> About FLSmidth page 5.

Key-Statistics for Global Cement Industry⁶

- 5** - Percent of global CO₂ emissions
- 75** - Mtpa of new cement kiln capacity³ required annually
- 100** - kWh/t power consumption in cement production
- 1,500** - Number of cement plants in the world today
- 2,800** - Mtpa of installed cement kiln capacity today
- 9,132** - MW of potential power generation from waste heat

Khairpur Kalina Cycle® Power Plant Update

Delivery of the world's first Kalina Cycle® plant in the cement industry (as announced by Wasabi Energy in January 2011) remains on schedule with key engineering milestones successfully delivered and all major power plant components on order.

Site works for construction of the 8,600 kW Kalina Cycle® power plant at the Khairpur Cement Plant in Pakistan (*figure 1*) are expected to commence in the fourth quarter of 2011. Power generation from the Khairpur Kalina Cycle® power plant is on track to commence in the first quarter of 2012 and once fully operational, is expected to reduce the CO₂ emissions of the cement plant by up to 31,000 tonnes per year⁵.

Khairpur Cement Plant⁴ - Site of Kalina Cycle® Power Plant



Kalina Cycle® Market Opportunity

Wasabi Energy estimates that the integration of the Kalina Cycle® technology into a cement plant in a waste heat recovery configuration has the potential to reduce overall power consumption by 10 - 20%. On this basis, the Kalina Cycle® has the potential to reduce power consumption of the global cement industry by up to 9,132 MW⁷, equivalent to taking more than 7.3 million cars off the road⁸.

For additional information on the operational and economic advantages of the Kalina Cycle®, refer to:

>> Overview of the Kalina Cycle® page 6.

³ - Information regarding FLSmidth and its operations have been sourced from a range of publicly available publications developed by FLSmidth and are available on the FLSmidth corporate website, 2011.

⁴ - The Khairpur Cement Plant is owned and operated by D.G. Khan Cement Company, the largest cement manufacturing company in Pakistan. D.G. Khan Cement Company is a member of the Nishat Group.

⁵ - Based on IEA emissions intensity data for Pakistan of 432g CO₂/kWh, average annual output of 8,600 kW and a operational capacity factor of 95%.

⁶ - Researched and compiled by Activated Logic from a range of public and proprietary sources, 2011.

⁷ - Analysis by Activated Logic, 2011. Key assumptions: Annual cement industry power consumption 300 TWh (IEA), energy recovery of 20% and power capacity factor of 75%.

⁸ - Analysis by Activated Logic, 2011. Key assumptions: Global emissions intensity of 507g CO₂/kWh (IEA), average vehicle CO₂ emissions intensity of 5,500kg CO₂/car/year (US-EPA) and total energy recovery outlined in footnote 7.

Global Cement Industry

Global demand for cement, a key ingredient for the production of concrete, is increasing rapidly, driven primarily by the rapid industrialisation of developing countries, particularly across Africa & Middle-East, Latin America and developing Asia. The increased demand for cement globally presents society with significant energy and carbon emissions reduction challenges.

Energy intensiveness of Cement Production⁷

Cement production is a highly energy intensive process generally requiring between 89 and 130 kWh of electricity for each tonne of cement produced. Annual power consumption by the global cement industry is estimated to be approximately 300 TWh; as a result is directly responsible for about 5% of all anthropogenic CO₂ emissions, globally.

Industry Emissions Reduction Mechanism

In a recent report titled *Cement Technology Roadmap*⁸ published jointly by the World Business Council for Sustainable Development and the International Energy Agency, a number of carbon emissions reduction strategies were identified. The first strategy relates to thermal and electrical efficiency, and specifically made the recommendation for; “deployment of existing state of the art technologies in new cement plants, and retrofit of energy efficiency equipment where economically viable”. The Kalina Cycle[®] technology is suitable for both new and existing plants.

Cement Production Process⁷ - Generalised Schematic

The Kalina Cycle[®] technology is able to recover waste heat from the process gas streams; specifically from the preheater and clinker cooler exhaust gases (figure 3 - steps 4 & 7, respectively). The Kalina Cycle[®] is particularly well suited to the typical heat sources available in a cement plant. The unique ammonia-water working fluid of the Kalina Cycle[®]

exhibits important thermodynamic characteristics which include non-isothermal boiling and condensing. These thermodynamic characteristics combined with the flexibility to alter the ammonia-water concentration at various points in the power plant, improve the effectiveness of heat acquisition, regenerative heat transfer and heat rejection.

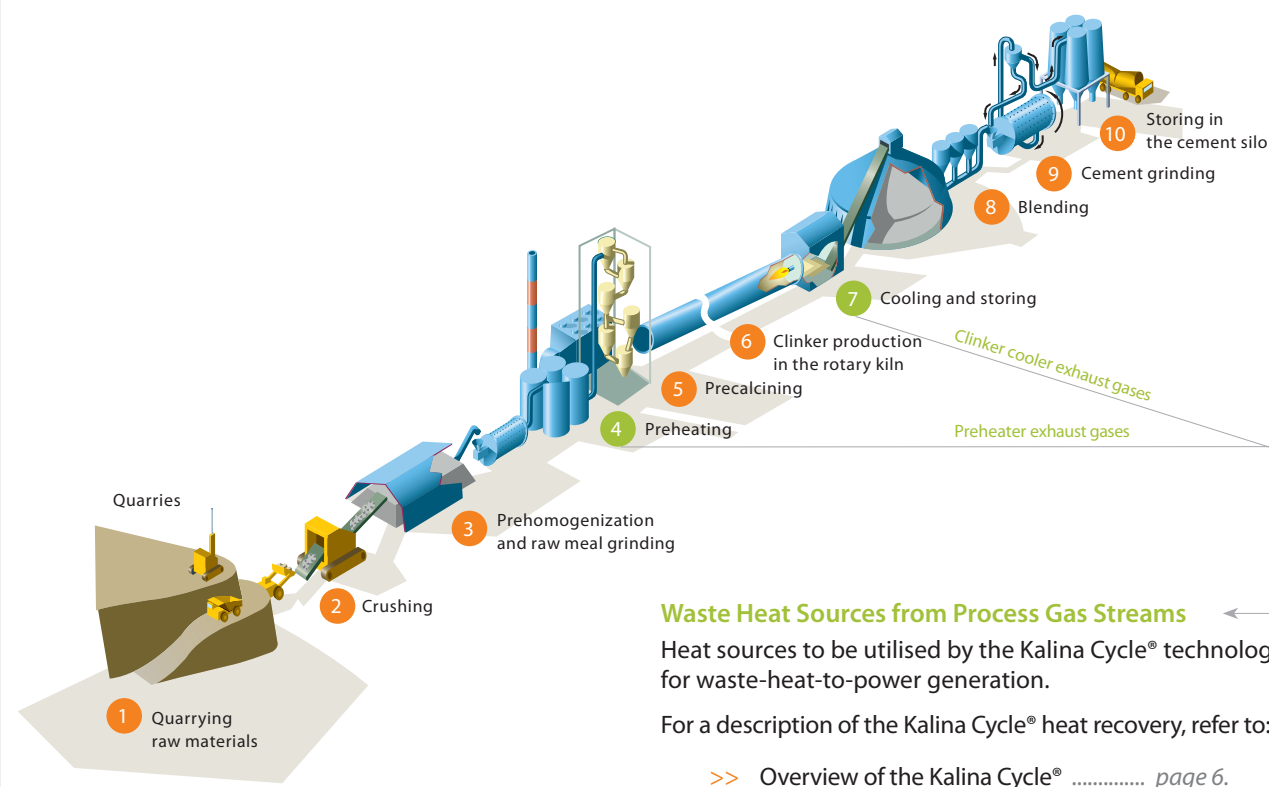


Fig. 2

⁸ - Cement Technology Roadmap 2009 - Carbon Emissions Reductions up to 2050. Published by the International Energy Agency (IEA) and the World Business Council for Sustainable Development (WBCSD).

Comment from Chairman of Wasabi Energy

Executive Chairman of Wasabi Energy and Director of Global Geothermal Limited, Mr. John Byrne commented:

"The negotiation of a global Kalina Cycle® technology licensing agreement with FLSmidth less than 5 months after the award of the landmark Khairpur Kalina Cycle® contract, highlights the confidence established market leaders like FLSmidth, see in the future of our waste-heat-to-power generation technology."

"We recognise there are significant synergies between our patented technology and the core capabilities of FLSmidth and are delighted to be expanding our collaboration with FLSmidth beyond the Khairpur Kalina Cycle® project, to cover the global cement and lime manufacturing industry. FLSmidth is the largest EPC provider to the global cement industry and have installed more than 2,000 cement kilns throughout their 129 year history."

"Converting waste-heat-to-power is a proven, cost effective way to improve the energy efficiency (and to reduce greenhouse gas emissions) of energy intensive industries such as the cement and lime manufacturing industry. FLSmidth is a market leader in terms of implementing energy efficiency technologies in the cement and lime manufacturing industry - we are delighted they have determined the Kalina® Cycle technology to be an efficient, safe and reliable waste-heat-to-power generation technology."

"Combining our technology ownership position with the licensing agreement announced today, we now have the capacity to rapidly deploy our innovative technology across another sector, the global cement and lime manufacturing industry."

Yours Sincerely,

Mr. John Byrne
Executive Chairman

Comment from CEO of FLSmidth

Group Chief Executive Officer of FLSmidth Mr Jørgen Huno Rasmussen commented:

"FLSmidth has a legacy of successfully pioneering the adoption of innovative technologies and providing efficient solutions for the global cement and minerals industries. In recent years we have implemented a number of technologies to improve energy efficiency of cement and minerals plants. In addition to improvements in energy efficiency FLSmidth has achieved across our existing client project portfolio, we view significant additional opportunities for implementing waste-heat-to-power generation projects."

"We are very pleased we have been able to secure a commercial interest in the Kalina Cycle® and are excited about being able to offer the technology as an add-on to both new and existing cement and lime plants as the technology provides FLSmidth with a unique source of sustainable competitive advantage."

"In working with Wasabi Energy, our respective engineering teams have formed an excellent working relationship in recent months whilst working on the Khairpur Kalina Cycle® project. We look forward to an ongoing collaboration to ensure the successful adoption of the Kalina Cycle® in the global cement and lime manufacturing industry."

Yours Sincerely,

Mr. Jørgen Huno Rasmussen
Group Chief Executive Officer

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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). Wasabi Energy has major investments in three key strategic assets. It owns 100% of the 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%. Wasabi Energy owns a 50% interest in Aqua Guardian Group, the developer of the AquaArmour™ water saving product. It also owns a 17% 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:
wasabienergy.com



About Global Geothermal Limited

Global Geothermal Limited (GGL) holds an extensive Kalina Cycle® intellectual property portfolio and is focused on licensing the innovative technology into two core business streams, Enhanced Energy Efficiency (EEE) and Renewable Energy Generation (REG).

In 2007, Global Geothermal Limited, a private company incorporated in the United Kingdom, was established to consolidate the global Kalina Cycle® intellectual property interests, which involved the acquisition of U.S. based engineering firm, Recurrent Engineering LLC, now a wholly owned subsidiary. The initiation of new Kalina Cycle® projects generally requires Global Geothermal Limited issuing a Kalina Cycle® technology license to the project developer, and for Recurrent Engineering LLC to provide the power cycle engineering necessary for the design of the Kalina Cycle® power plant.

Wasabi Energy Limited has been progressively increasing its ownership interest in the Kalina Cycle® technology for over 5 years, through the acquisition of a range of commercial interests and substantial intellectual property portfolios. As of January 2011, Global Geothermal Limited is a wholly owned subsidiary of Wasabi Energy Limited.

Additional information:
globalgeothermal.com



About FLSmidth³

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 40 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 subsuppliers.

Over the past 129 years, 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 11,500 of which 1,500 in Denmark
- Turnover 2010: DKK 20,186m (EUR 2,707m)
- Offices in 42 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 CO₂, 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.

Overview of the Kalina Cycle® Technology

Global Geothermal's Kalina Cycle®, the proven and most thermodynamically efficient power cycle technology in the world, is now on the verge of large-scale adoption in:

- **Enhanced Energy Efficiency** (EEE), and
- **Renewable Energy Generation** (REG);

applications, across the globe.

Building on the initial Kalina Cycle® Technology breakthroughs in the mid 1980's, the innovative technology has undergone intensive development, optimisation and large-scale demonstration with some of the most significant power generation and industrial companies in the world. A comprehensive suite of second generation Kalina Cycle® innovations including the patented RIP-Cycle and Multiple Heat-Source applications have recently been pioneered by Global Geothermal Limited; however the superior and unparalleled thermodynamic efficiencies remain firmly at the core of the Kalina Cycle®.

The superior efficiency of the Kalina Cycle® provides an environmentally sustainable alternative for power generation, whilst offering significant savings in the construction of new power generation capacity and ongoing operational costs.

The thermodynamic power cycles which collectively constitute the Kalina Cycle® have been reviewed and verified by the U.S. Department of Energy (DOE), numerous leading universities and a variety of independent researchers and consulting engineers over a 20 year period, including, most recently, Shaw Group's Stone & Webster.

The Kalina Cycle® is the greatest innovation in power generation technology in over a century.

The adoption of the Kalina Cycle® is underpinned by a series of operational and economic advantages over alternative power generation technologies.

Operational Advantages

- Use of existing and proven power plant components
- Underlying principles are simple and understood
- Ammonia has no ozone depleting potential
- Less sensitivity to decreases in heat source temperature
- Safe power plant configuration
- Improved design performance on both hot & cold days

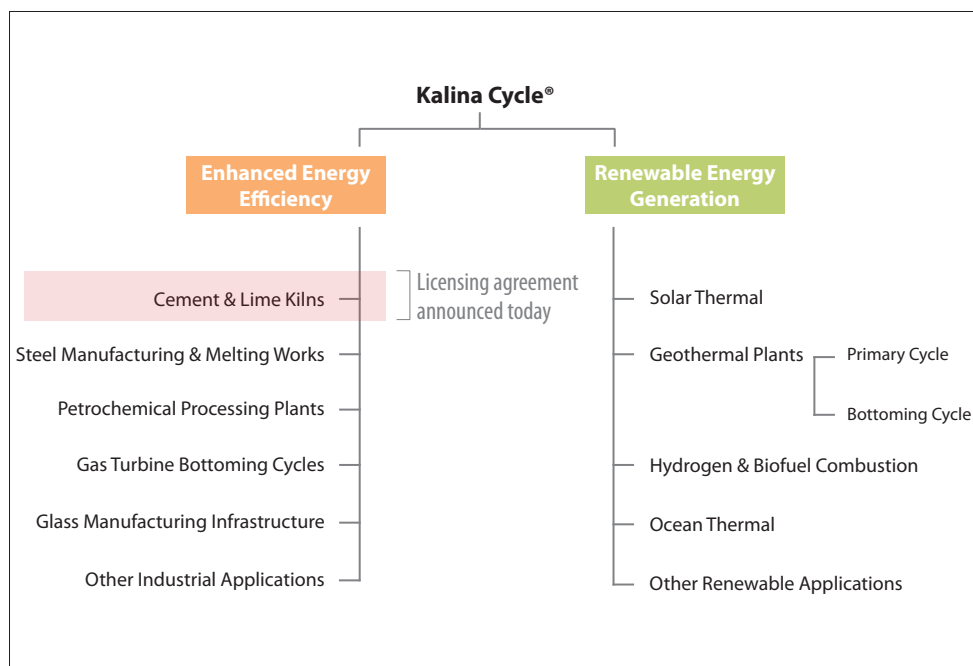
Economic Advantages

- 10% to 50% more power with the same heat input
- Lower power plant auxiliary loads
- Ammonia is a relatively inexpensive working fluid
- Very high capacity factor with minimal downtime
- Reduced capital cost for fixed output rating
- Optimise plant efficiency with ammonia-water variation

Global Geothermal's Kalina Cycle®.

The next-generation, power cycle technology.

Segmented Applications for Kalina Cycle® Technology



Recent Activity

June 2011

- Global Kalina Cycle® licensing agreement for the cement and lime manufacturing industries announced with FLSmidth.

January 2011

- Contract with FLSmidth, a leading supplier of equipment and services to the global cement and minerals industries, to build an 8,600 kW Kalina Cycle® power plant at the Khairpur Cement Plant⁴, located in Pakistan.

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