

Press Release

13 September, 2016

New technology converts industrial waste heat into usable energy

Dutch RGS Development introduces unique silicon technology to promote energy efficiency and sustainability in high-temperature industrial processes worldwide.

Broek op Langedijk, the Netherlands - RGS Development today announced the launch of its heat panels. This novel energy-recovery concept captures industrial waste heat from processes in the steel, non-ferrous and glass industry (e.g. above casting lines, in furnaces, etc.) to convert it into useable energy (electricity and hot water or steam). RGS Development thereby promotes the energy efficiency and reduces the greenhouse gas emissions of energy-intensive industries. Pilot projects are now being run at TATA Steel in the Netherlands and at industry members of the Dutch Glass Association (NGF).

“As far as we can see now, RGS is the first company to have actually introduced an affordable and operationally feasible solution for the generation of electricity using high-temperature waste heat” said Mr Hans van de Weijde, Program Manager of TATA Steel regarding its Thermagy™ pilot.

Thermagy™ absorbs heat like solar panels absorb light

When exposed to a radiation heat source of 700°C–1200°C, Thermagy™ heat panels generate 10 to 20 MWh per m² of energy per year – about 50 times more than a solar panel with the same dimensions. This is achieved by a direct conversion using Thermo Electric Generation (TEG) technology, long known about but until now only applied in niche markets. With its new and patented production method, RGS Development has created a simple and cost-effective TEG concept, suitable for mass manufacturing and comparable to a solar panel with regard to simplicity of installation.

A flat panel as a first configuration

The heat panel will be the first configuration of Thermagy™ products. With it RGS Development aims to tap the huge potential of 700°C–1200°C radiation waste heat from energy-intensive industries such as the steel, non-ferrous and glass industries. In addition to electricity generation, Thermagy™ converts its cooling water into valuable process heat (i.e. hot water or steam).

Future areas of application include conversion of waste heat in the cement and ceramic industries, conversion of transportation (automotive) exhaust gasses, co-generation of electricity and heat in boiler systems, electricity generation in remote (off-grid) areas and autonomous powering of sensors – related to the ‘Internet of things’.

Maarten den Heijer, CEO of RGS Development on sustainability of energy-intensive industries: “We believe that industries, such as the steel, non-ferrous and glass industries, are vital for our economies in general as well as for many industry sectors in particular. By developing Thermagy™ we hope to support these industries in maintaining their value on the way towards energy efficiency”.

A green energy breakthrough

The Thermagy™ concept unlocks an additional clean energy source for heavy industries, next to, for example, solar and wind. The solution will support the energy-intensive industries in their energy transition from fossil fuels towards clean energy, energy efficiency and local energy generation. Based on a global energy review¹, it is estimated that the amount of unused high-temperature waste heat in energy-intensive industries in Europe may be as much as 100+ petajoule per year, equal to the total 2020 energy reduction target for the

¹ C. Forman et al. / Renewable and Sustainable Energy Reviews 57 (2016)

Netherlands. Over the next five years, RGS Development aims to install a recovery capacity of 1 petajoule per year of re-usable energy, comparable to the electricity consumption of 75,000 households and a greenhouse gas emission reduction of about 125kton CO₂.

Introduction through pilot projects

With the launch of the Thermagy™ heat panel, RGS enters the phase of pilot and demonstration projects, as already commenced at Tata Steel and in the Dutch Glass industry. Due to their modular, building-block design, the Thermagy™ heat panels are suitable for relatively small pilot projects and those with a short lead time. These projects obtain practical information about each specific situation before installing entire Thermagy™ systems at full scale. Within the target markets of steel, glass and non-ferrous industries, RGS will focus on accessible applications like steel casting lines and furnaces. Thermagy™ projects will be aligned with the renewable energy initiatives in order to achieve maximum contribution to the national and regional energy objectives.

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About RGS Development

We believe that heavy industries are important for our economy and that these industries can operate in harmony with a sustainable world. We're glad to contribute to increasing their sustainability.

Founded in 2000, RGS Development employs specialists and application engineers who devise new and sustainable energy solutions for the steel, non-ferrous and glass industries. Supported by recognised research institutions (MESA+, DLR, Fraunhofer and CEA, among others) and industry partners (Tata Steel, Ardagh Group and Airbus Safran Launchers, among others), new products are developed based on the unique RGS silicon semiconductor casting technology for bulk and nanostructured materials. RGS received the 2015 FD Materials Champions Award.

For more information on RGS Development and Thermagy™, please visit: www.rgsdevelopment.nl