

Mercury Sensors Technology Opportunity

Background

Mercury emission levels are facing increasing regulatory controls and many industries are unable to obtain analytical data in a timely manner.

Methods exist today to monitor emissions but they involve periodic survey sampling and external laboratory analysis. The turnaround time for analytical data on mercury emission levels is between two to four weeks with costs exceeding \$100,000 per survey. It is expensive and interventions cannot take place in a timely and efficient manner.

Industry leaders have recognised that if emissions were able to be monitored in real time then process operators could have the ability to enable significant benefits through:

- Optimising process controls for mercury reduction
- Minimising mercury vapor emissions and fulfilling regulatory and freedom to operate obligations
- Monitoring and optimisation of expensive mercury vapor removal methods

Researchers at RMIT in collaboration with industry partners Alcoa and BHP have developed a first-of-type solution that satisfies the challenging demands of a wide industry base. The proprietary nanostructured gold sensor caters for a wide dynamic range of concentrations, measurable within a cocktail of flue emissions, with the results reported in alignment with industry processing timescales; a combination of key requirements unmet by current solutions.

Global Market Opportunity

The technology has been instigated and backed by industry, offering a unique solution with compelling benefits for multiple industries, positioned for global deployment.

Although research work has largely been focussed on the Aluminium Refining sector some initial investigations have validated lucrative opportunities to adapt the technology to the following sectors. These are also large contributors to global mercury emissions:

- Coal fired power stations
- Gold mining/processing
- Cement manufacture
- Copper/Lead/Zinc smelting

Stage of Development

The technology has been successfully laboratory trialed against emission stack samples, with continued ongoing testing for sensor stability, sensitivity and repeatability. The next steps are to validate a commercial prototype via field trials.

To fully commercialise the technology:

- Further research to be undertaken by the RMIT team to finalise the core technology
- A commercially appropriate set of specifications be drawn up for the instrument or range of instruments
- Instruments be developed, tested and proven to meet these specifications.

Value Proposition

An attractive opportunity to commercialise innovative leading-edge technology in the industrial and resources sectors. Measuring and managing mercury vapor emissions efficiently in-line is essential for process optimisation and regulatory compliance. The active and enthusiastic involvement of industry partners, Alcoa and BHP Billiton reflects the concern of industry with increasingly stronger regulatory frameworks driven by environmental issues and a higher public profile.

Intellectual Property

Patents have been filed in seven countries, Canada, China, European Union, Japan, South Africa, United States of America and has been granted in Australia. This should provide a unique and protected intellectual property advantage over competitors.

RMIT is seeking a Commercial Partner

RMIT is seeking a commercial partner to continue the technical development and commercialisation activities.

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