



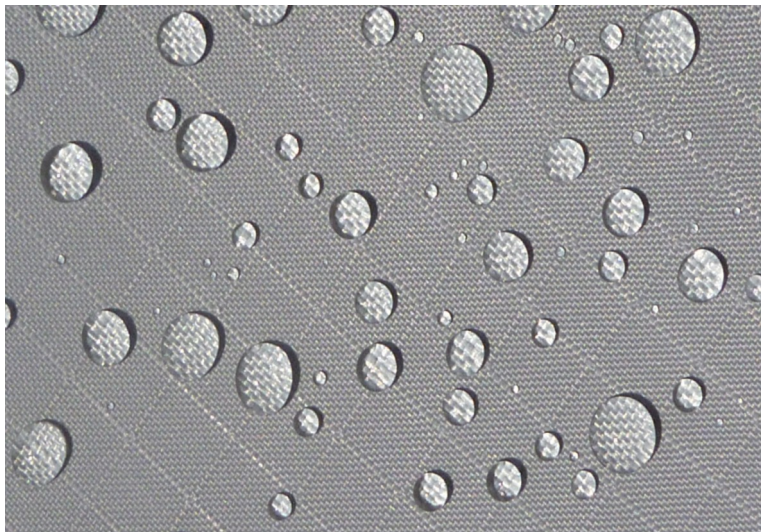
AUSTRALIAN

SNAPSHOT - AUGUST 2011

SOCIALLY RESPONSIBLE INVESTMENT

Treating the Untreatable

For most of us, the word “textiles” is synonymous with clothing or apparel. This is not surprising given the high profile of the textile industry from the first documented knitted and woven textiles of the late Stone Age through to the production of linen by ancient Egyptians and the first fine silks by the Chinese. Textiles have been not only a means of providing protection and keeping warm



but also of providing a visible demonstration of wealth and status throughout the centuries. Almost from the very beginning there has been a demand for textiles to be “multi-functional”, providing warmth combined with comfort, prac-

ticality with aesthetics. For centuries, textile production remained small scale and fragmented and it was the late 1700’s and the spinning and weaving technology advances specifically, which provided much of the initial impetus for the Industrial Revolution.

This resulted in mass production not only of affordable cotton and woollen clothes items, but also of bedding and furnishings and upholstery. Things would never be the same again in the High Street.

However, it was the 20th century and the progress in chemistry and polymer science specifically, which was to lead to the most dramatic and rapid innovation. The source of these new fibres such as polyester, nylon, fibreglass, polyethylene and carbon was

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the chemical laboratory and not the factory floor. These mass produced man-made fibres not only freed the textile industry from the constraints of cotton and wool production but they also offered new exceptional properties. The textile industry rushed to embrace these new fibres and the freedom of design and application that they offered, resulted in an explosion of specialist apparel including medical textiles, sports and work wear.

What is less appreciated however, is the extent these new materials were creating new markets for the textile industry. Few people for example would associate the use of textiles with the fabrication of modern wind turbine blades, an artificial hip joint, crop protection, construction or even industrial filters. Yet increasingly, performance textiles were being applied not only to new novel demanding applications but the replacement of traditional materials such as wood, aluminium or steel. Textile composites are now used routinely to replace conventional materials in the latest racing cars, commercial aircraft and racing yachts offering a compelling combination of lightness, flexibility and strength.

All that glitters is not gold

Although these new materials often bring the advantages of a new exciting property, they often have other inherent characteristics, which may restrict their performance or use. Many of the new synthetic polymer fibres are produced from oil, offering exceptional strength and sta-

bility but quickly melt and ignite in the event of intense heat or a fire. Aramids, a class of heat resistant and strong synthetic fibres are used extensively for applications where greater strength is required including ropes, bullet proof jackets and even as a replacement for asbestos in brakes. Despite these excellent, valuable properties, performance can be negatively impacted by contact with various liquids, acids or even prolonged exposure to sunlight. Engineering additional properties into these specialist polymers can be challenging with the risk that any changes to the chemistry may inadvertently have an adverse effect on the inherent properties and performance of the material.

It is the application of functional coatings to these textiles, which is seen by many as the next technological leap forward for technical



Above are two samples, one was treated with Alexium's Reactive Surface Treatment (RST) and one was not. This sample on the right underwent a single treatment making it self-extinguishing in a fire and super hydrophobic and oleophobic.



textiles. By applying specific functions to the surface, these specialist fibres can be given additional properties, addressing any inherent flaws and thereby further expanding their use. However, such a simple response does not come without its own technical and practical challenges. How will these coatings affect the weight or “feel” of the fabric and will the inherent properties of the fibres be affected after treatment? For example, will the application of a flame retardant coating have an adverse impact on the natural water or oil repellence of a fabric? The most critical issue of all is how coatings may be applied so that they are consistent, durable and cost effective? The surface chemistry of many of these modern synthetic fibres is non-reactive which means that they often lack the molecular binding sites found on natural fibres such as cotton or wool. Conse-

quently, many conventional coatings technologies are ineffective as they fail to bind to the fibres.

...Alexium - treating the untreatable

It was these issues which led to the development of Alexium’s Reactive Surface Treatment (“RST”). The company’s patented microwave driven chemistry enables nanoscopic coatings to be applied on to a wide range of fibres on a continuous “reel to reel” process so essential for the textile industry. Many conventional textile coatings rely on chemical bonding with the surface of the material; however, RST coatings may covalently bond to the surface of the fibre or form a nanoscopic intractable coating (a “shrink wrap” effect) around the individual fibres. The process is fast and environmentally friendly, enabling single or multi-functional coatings to be applied to textile fibres almost regardless of their surface chemistry.

“The use of technical textiles has experienced exponential growth over the past thirty years with new ones being identified on almost a





ALEXIUM

daily basis” commented John Almond, Business Development Director. “But for some of the most exciting and valuable opportunities there is a need for new or improved fibre properties which cannot be met with current solutions. If we can use our technology to apply these additional properties to the surfaces of textile fibres, we can significantly expand their use and most importantly enhance their value”.

The Alexium technology was developed originally by the US Air Force laboratories to provide chemical and biological protection to specialist CBRN suits. These suits are designed to offer protection to the wearer against a wide range of lethal chemical and biological threats, and yet must be lightweight, breathable, and comfortable for the wearer. The Alexium RST process has been used to attach multiple functions on the surface of traditional military textiles, which afford protection against a wide spectrum of potential threats.

Looking optimistically into the future

Alexium has a Cooperative Re-

search and Development Agreement (CRADA) with the US Air Force where the technology was initially developed. The RST technology has been submitted for a number of US government CBRN programs and is currently undergoing technical evaluation. It is estimated that there are well over 2 million CBRN suits in service with the DoD, the majority of which will require replacement over the next few years providing a very lucrative opportunity for Alexium. The company is developing strategic relationships with both cutting and sewing specialists as well as textile manufacturers to ensure that the technology is ready to be delivered.

However, like so many technologies developed



initially for the defence industry, other exciting opportunities lie with civilian commercial use. “We were not short of opportunities for the technology” said John Almond. “The challenge has been to focus on a limited number of initial applications where our technology provides a unique valuable solution. Additionally, we have had to demonstrate to our customers that the technology was robust, cost-effective and scaleable given that many of these applications could require the treatment of millions of square metres of textiles annually. The focus of our recent and current efforts is the preparation of the technology for large scale commercial use.”

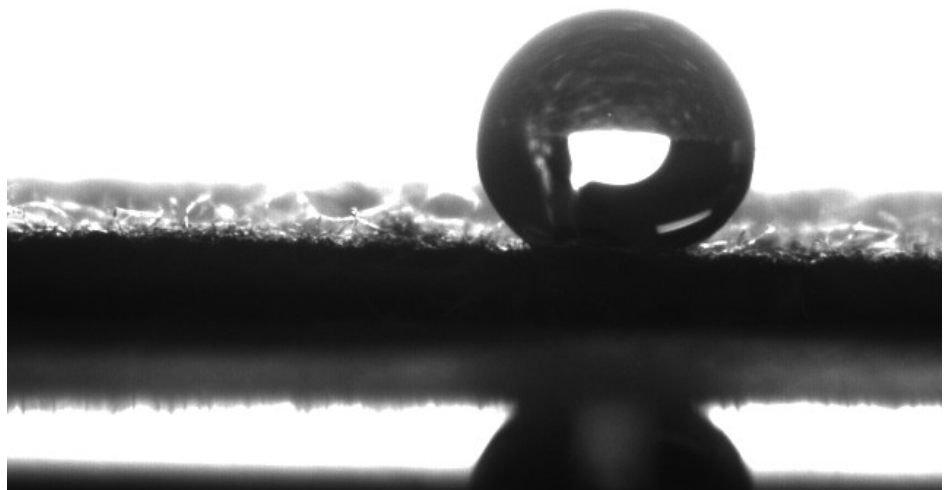
A major milestone for Alexium was the commissioning of its new RST unit earlier this year at its facility in Greer, South Carolina, which has enabled the company to demonstrate ‘reel to reel’ treatment of textiles and optimise the chemistry for each application. “Significant testing has been undertaken over the past few months which is essential before any new technology is introduced” commented John Almond “This may be frustrating for investors, but it is essential that after years of development the technology can be delivered with

confidence for large critical commercial applications.”

Given that the US government alone spends approximately \$2 billion annually on military textile procurements, much of it on advanced technical textiles, Alexium believes it is ideally placed to demonstrate its unique capabilities to the world which is hungry for the next generation of high performance technical textiles to further accelerate the industry’s tremendous growth.

For further information please visit:
www.alexiuminternational.com

Water (Contact Angle = 155 deg.)





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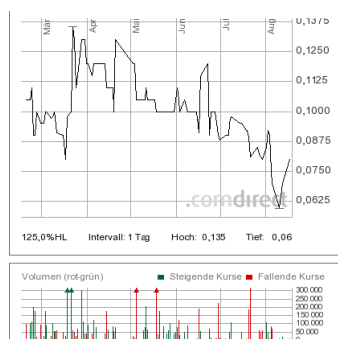
Alexium, Ratios



◇ Symbol, ASX	AJX
◇ Website:	www.alexiuminternational.com
◇ Market Capitalization (17 August)	8.63 Mio. AUD
◇ Receipts from customers (12 months)	50.000 AUD

Source: Comdirect, appendix 4C quarterly report

Chart & SRI-Highlights



Source: Comdirect, Australian Stock Exchange, 17 August

- ◇ New mult-functional materials produced in seconds
- ◇ "Clean" microwave chemistry replaces heat
- ◇ Very low energy use
- ◇ No harmful solvents
- ◇ Multiple properties grafted in one coating
- ◇ Lower water use and very limited waste
- ◇ Lower carbon footprint for producers
- ◇ Low surface energy coatings

Field of Activity & News

Alexium was founded to commercialize a reactive surface treatment process originally developed by the U.S. Air Force. Leveraging approximately \$30 million by the US Department of Defense (DoD) to develop the technology, Alexium acquired the technology from the DoD to produce solutions for commercial and military customers. Alexium has formalized these relationships under exclusive patent licenses and Cooperative Research and Development Agreement (CRADA). Alexium continues to expand its Intellectual Property (IP) portfolio.

- ◇ 04 August 2011: Change of Director's Interest Notice
<http://www.asx.com.au/asxpdf/20110804/pdf/42061bn67178ry.pdf>
- ◇ 29 July 2011: Appendix 4C - quarterly
<http://www.asx.com.au/asxpdf/20110729/pdf/4201z8hbt3mx4g.pdf>
- ◇ 24 June 2011: Alexium RST Technology Patent Granted in Singapore
<http://www.asx.com.au/asxpdf/20110624/pdf/41zdcymqym0j40.pdf>

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Reactive Surface Treatment Technology

<http://alexiuminternational.com/wp-content/uploads/2011/02/Alexium-Reactive-Surface-Treatment-Technology.pdf>



Company Presentation

<http://www.asx.com.au/asxpdf/20110120/pdf/41w8h0q9sj5kp0.pdf>

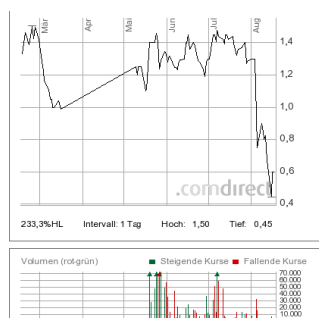
Produced Water Solutions, Inc.



◇ Symbol: Frankfurt	PWS
◇ Website:	www.produced-water.net
◇ Market Capitalization (17 August)	15.00 Mio. EUR
◇ Projected Gross Margin for 2012	\$17.921 Mil

Source: Comdirect and Company Executive Summary

Chart & SRI - Highlights



Source: Comdirect, Frankfurt Stock Exchange, 17 August

- ◇ Mobile wastewater treatment units allow on for site treatment
- ◇ Lower cost and lower environmental impact solutions for Oil and Gas exploration and production companies
- ◇ Produced Water Solutions also has disposal wells in Colorado, Utah and North Dakota

Field of Activity & News

Produced Water Solutions, Inc., a Cleantech company, providing environmentally sound solutions by treating and recycling waste waters through its innovative technologies, focused on the Oil and Gas Markets. The company utilizes its proprietary technologies and service programs to increase operating efficiencies and reduce disposal costs through comprehensive Produced and Frac water management and disposal solutions.

- ◇ 20 July 2011: Produced Water Solutions Continues Expansion with New North American Headquarters
<http://www.globenewswire.com/newsroom/news.html?id=226710>
- ◇ 6 June 2011: Produced Water Solutions Responds to Water Demands for Oil and Gas Exploration in North Dakota
<http://produced-water.net/north-dakota-oil-gas-exploration-production-water-needs-2011/>
- ◇ 1 June 2011: Produced Water Solutions Announced Aquisition of Montana Well for Development of Water Recycling Facility
<http://produced-water.net/acquisition-of-montana-well-for-development-of-water-recycling-facility/>

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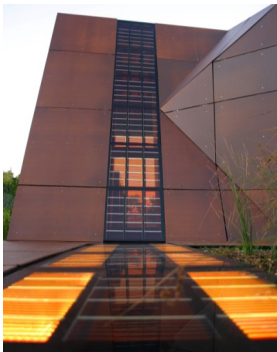


Tour the Mobile Treatment Unit
http://www.youtube.com/watch?v=UzFPorUW9vc&feature=player_embedded



B4B Radio Interview with Chairman, George Kast
<http://produced-water.net/media/>

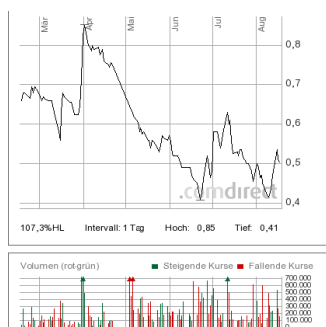
Dyesol, Ratios



◇ Symbol: ASX	DYE
◇ Website:	www.dyesol.com
◇ Market Capitalization (17 August)	72.15 Mio. AUD
◇ Receipts from customers (12 months)	1.897 Mio AUD

Source: Comdirect, appendix 4C quarterly report

Chart & SRI - Highlights



Source: Comdirect, Australian securities exchange, 17 August

- ◇ Commercialization of dye solar cells
- ◇ Leading supplier of 3rd generation solar technology
- ◇ Lowest embodied energy of any solar technology
- ◇ Minimized energy and water usage in manufacturing operations

Field of Activity & News

Dyesol works in the commercialization of dye solar cells for energy production. Dyesol develops & produces materials that are necessary for dye solar cells. Dyesol market test and lab instruments and provide consulting & technical services.

Dyesol operates in the B2B area. For example, Corus - the worlds fifth biggest steelmaker - and Dyesol in a joint production plant work together to produce steel using a dye solar cell coating technology that will produce power.

- ◇ 10 August 2011: DyeTec Solar Fully Equipped
<http://www.asx.com.au/asxpdf/20110810/pdf/4209t5gtkzm9py.pdf>
- ◇ 29 July 2011: June 2011 Quarterly Report and Appendix 4C
<http://www.asx.com.au/asxpdf/20110729/pdf/4202m4xfg5yj0w.pdf>
- ◇ 21 June 2011: Strategic Vision - Buildings as Power Stations
<http://www.asx.com.au/asxpdf/20110621/pdf/41zbcj83swg0zd.pdf>

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👉 'Dyesol takes research to Japan and creates solar steel in Wales'
http://www.pv-magazine.com/news/details/beitrag/dyesol-takes-research-to-japan-and-creates-solar-steel-in-wales_100003343/



👉 'Investor Update: Australian solar innovation wins R&D grants in Japan'
<http://www.climatespectator.com.au/commentary/green-deals-dye-cast>

Fairs & Congresses



13th Renewable Energy Finance Forum

20th - 21st September 2011, London, United Kingdom

The Renewable Energy Finance Forum - London is Europe's largest and most established event for renewable energy finance and investment.

The two-day event will unite investors with senior executives from across the renewable energy and technology sectors, to provide delegates with cutting-edge insight as well as unparalleled networking opportunities.

QUICK FACTS

WHEN?

20th - 21st September 2011

MORE INFORMATION

<http://www.euromoneyenergy.com/EventDetails/0/3963/13th-Renewable-Energy-Finance-Forum-London.html>

WHERE?

London, United Kingdom

Climate Action in the New Global Economic Order

10th - 11th October 2011, London, United Kingdom

The 15th Annual Chatham House Conference on Climate Change will assess the prospects for progress on climate action at the UN talks in Durban and in other spheres.

What progress can be expected at the UN talks in Durban and what level of climate change are they on track to prevent?

As developed countries cut back on spending, what are the prospects for action on climate?

How do national climate plans link in with the global framework?

QUICK FACTS

WHEN?

10th - 11th October 2011

MORE INFORMATION

<http://www.chathamhouse.org/climatechange2011>

WHERE?

London, United Kingdom