NEWS

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Calix

HIGHLIGHTS

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EDITORIAL

Welcome to Issue Number 20 of the Calix Newsletter.

Phil Hodgson
CEO

In this issue, we cover the significant progress of our BOOSTER-Mag™ product trials in Australia. In addition to winning an Accelerating Commercialisation grant, commencing sales in the Philippines, and successful on-going trials in Europe, our BOOSTER-Mag™ product development is accelerating in Australia with major expended field trials in tomato crop, following successful small-scale trials last season. Interim results are looking great.

We also recently completed major trials of our AQUA-Cal+™ product with major shrimp and prawn producers in Malaysia. The significant impact our product had on water quality, sludge control, disease and ultimately yield has seen multiple repeat orders generated from local Malaysian producers. We are working hard to build on this success in Malaysia, as well as commencing marketing into Thailand, Vietnam, Indonesia and Southern China.

Our PROTECTA-Mag™ business also passed a major milestone late last year, with 100 manholes protected using our unique product and application techniques. We have multiple companies now lining up to be our applicator partners, and we have established the building blocks to accelerate PROTECTA-Mag's™ growth both domestically and internationally.

Our R&D progress over the last quarter was also very pleasing, with two new patent applications filed. In this newsletter, you can read about a very exciting potential application of our technology in advanced batteries – a hot topic given the rapid acceleration in electric motor vehicle development.

We are also very pleased to announce our win in the NSW Premier's Export Awards – Environmental Solutions category, as well as being nominated as a National Export Awards Finalist. Our relentless focus on growing revenue, especially overseas, is starting to pay off. Given all three products covered in this newsletter have now established overseas sales, we hope to do even better this year in our export earnings.

I hope you enjoy reading about our significant progress in this Newsletter.

Calix recently moved its Queensland manufacturing operations from Molendinar to Nerang. The whole process took just under three weeks and demonstrates the flexibility and simplicity of our unique manufacturing process.

BOOSTER-MAG™ PROGRESS

AUSTRALIAN PROCESSING TOMATO GROWERS LEADING THE WAY WITH BOOSTER-MAG™

BOOSTER-Mag™ is enhancing productivity and sustainability of processing tomato farming.

The commercial production of processing tomatoes (for paste or canning) is impossible without the use of insecticides, fungicides and bactericides to control pests and diseases. Preventative application of pesticide is an integral and expensive part of commercial farming.

Calix is working closely with Victorian growers and the industry research body (APTRC) to quantify the benefits that BOOSTER-Mag™ foliar spray treatment can provide in regard to farm productivity, safety and sustainability. An initial and scientifically rigorous evaluation undertaken over the 2015/2016 season and across three different farms demonstrated that BOOSTER-Mag™ treatment applied on top of conventional pesticide treatment regime reduced insect damage by as much as 85% and further, increased the yield of marketable crop by as much as 8%.

Expanded scale (4 & 6ha) field evaluations of BOOSTER-Mag™ are now underway. The trials involve a CONTROL field which is farmed using only convention pesticides and a BOOSTER-Mag™ treated field where conventional pesticide products are only be used if required. The insect and disease pressure on control and treated blocks is being monitored weekly throughout the season. Performance will ultimately be assessed by comparing crop yield, crop quality and the relative cost of chemical treatment over the season.

At around the half way point in the season, results are very encouraging with growers reporting:

- **Equivalent pest and disease pressure and plant growth**
- **A 70% reduction in the use of hard and expensive chemicals**
- **Maintenance of beneficial insect populations which are demonstrably helping to control pests naturally**

Although subject to final assessments after harvest, growers are already indicating their intent to include BOOSTER-Mag™ into their standard growing practices.

Similar outcomes are observed in other crops. Halfway through the current season, one Victorian grower and winemaker is experiencing the best crop for some years and at the same time, notes that BOOSTER-Mag™ has enabled a 70% reduction compared to previous dosage rates in historical fungicide use. For more information on BOOSTER-Mag™ or to download our technical brochure, visit www.calix.com.au

SHRIMP AQUACULTURE

SHRIMP IS THE MOST VALUABLE TRADED MARINE PRODUCT IN THE WORLD.

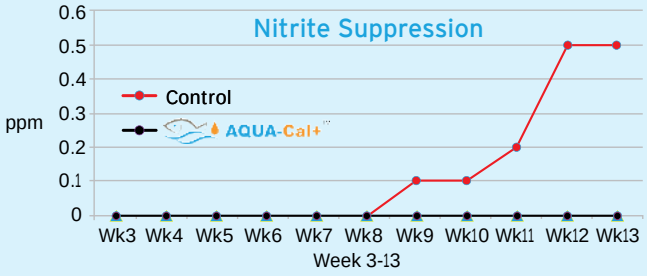
AQUA-Cal+™

In 2005, farmed shrimp was a US $10.6 billion industry. Today, production is growing at an approximate rate of 10 percent annually – one of the highest growth rates in aquaculture.

Recent trials in shrimp farms, in both lined ponds (semi clear water) and earthen ponds have shown astounding results for AQUA-Cal+™, Calix's enhanced magnesium hydroxide solution for water conditioning and yield improvement in aquaculture. Vannamei or whiteleg shrimp, also known as Pacific white shrimp, is a variety of prawn of the eastern Pacific Ocean commonly caught or farmed for food. Monodon, commonly known as the giant tiger prawn or Asian tiger shrimp, is a marine crustacean that is widely reared for food.

In both cultures, significant improvements where seen in water quality, sludge control, harvest weight, survival rates and reduction in FCR (Food Conversion Ration).

AQUA-Cal+™ eliminates soluble iron and neutralizes nitrite, phosphate and ammonia, thus reducing mortality and giving a faster growth rate of the prawns.



AQUA-Cal+TM = Higher Revenue
Trial results: Monodon, earthen ponds

Pond	Shrimp /Kg*	Survival Rate (%)	Harvest Weight (kg)	Total Revenue (RM '000)
Control	46	88	4,732	135
AQUA-Cal+	33	91	6,672	234

*Market Shrimp Price/kg
46 shrimps - RM28.50; 33 shrimps- RM35.00 (1RM (Ringgit) = AUS$0.3)

Following the trials, AQUA-Cal+™ is now rapidly growing to become an essential part of many shrimp farms' pond management programs.

For more details or a copy of the full case study, please contact us.

A healthy AQUA-Cal+™ shrimp

No iron presence after pre-treatment with AQUA-Cal+™

CALIX SCORES A TON

CALIX'S PROTECTA-MAG™ SPRAY COATING HAS NOW BEEN USED TO REHABILITATE OVER 100 CORRODED MANHOLES ACROSS AUSTRALIA.

PROTECTA-Mag™

The technology provides a new long-term solution to managing pH levels in the region's ageing concrete sewer systems.

Many Australian councils and water utilities recognise corrosion of concrete as a major and expensive wastewater management issue, threatening a growing number of sewer assets. A number of councils and utilities in New South Wales, Queensland and Victoria have taken a proactive approach to meet this asset management challenge, contracting Calix to apply its PROTECTA-Mag™ spray coating to prevent future corrosion of existing manholes in concrete sewer systems.

INTERESTING FACT

"Choosing the appropriate technology is vital to extending the life of the manhole, as well as ensuring cost efficiency. A single PROTECTA-Mag™ coating adds additional service life to a sewer asset, while avoiding a costly and time-consuming clean up and emergency asset replacement in the future." says Nitin Apte, Sales Manager at Calix.

With up to a seven-year lifetime, PROTECTA-Mag™ coating can be re-applied indefinitely onto the surface, thus differentiating it from epoxy resins that require the surface to be chiselled clean before a new coating can be applied. Many manholes have already been coated with inorganic coatings and epoxy resins. Over time these coatings peel off, meaning that the rehabilitated manhole loses its protection and cannot be re-coated easily. PROTECTA-Mag™ does not peel away and, in some cases, can be applied to areas where other resins have peeled away, offering good protection against future asset corrosion.

To date, Calix has protected over 100 manholes around Australia using the PROTECTA-Mag™ technology. Due to an increasing number of orders, and in order to continue providing the best level of services to our clients, we have established a network of local partners across Australasia including Laser Plumbing, Roth Plumbing, and Sav's Plumbing, and we are also commencing services soon in New Zealand.

R&D UPDATE

CALIX ADVANCED MATERIALS = BETTER BATTERY TECHNOLOGY FOR ELECTRIC VEHICLES?

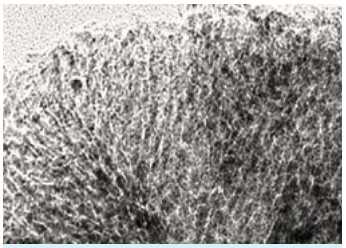
Calix has successfully developed four new products based on its unique nano-active magnesium oxide, and we continue to expand the use of this reactive product into new materials, such as catalysts and sorbents.

What other novel materials can the Calix Flash Calciner (CFC) produce, and what are the global challenges that can drive their adoption?

One application that looks very promising is the production of electrode materials for electric vehicles. The Electric Vehicle market is expanding rapidly, and need high performance batteries. Take the case of rechargeable lithium batteries. These are now widely used in all types of applications, and the production technologies are well developed for the basic requirement – energy storage. The challenge for electric vehicles is that they need lightweight rechargeable batteries that deliver power for acceleration, to recover power from breaking, and to receive power for fast charging.

Calix believes its low cost, nano-active production process can deliver the solution. Calix can process materials that are chemically identical to those used in current energy storage batteries.. Furthermore, Calix's technology can produce a strong, "nano-active" mineral honeycomb from these materials, which in batteries allows the electrolyte to move through the pores to access the electrode material, and quickly release or store the lithium ion. Our aim is to produce material that can "drop in" a cheaper, longer lasting alternative in existing battery production processes, and increase the speed of a battery by up to a factor of 100 or more.

Calix' experimental program on nano-active battery materials will ramp up this quarter, following a patent application we recently filed. Our CFC process has been proven to give all these desirable properties in our nano-active Magnesium Oxide (MgO), and this work will aim to prove that this learning can be applied to the production of powerful electrode materials.



Transmission electron microscope image of Calix's "nano-active" magnesium oxide... "mineral honeycomb".

Project LEILAC Update

The LEILAC project, aiming to use Calix's technology to efficiently capture the process CO_2 emissions for the lime and cement industry, continues to be successfully implemented.

Due to widespread interest, a Visitor Centre has opened early at the Lixhe plant, providing details about LEILAC and how the pilot will be constructed. Check our Youtube Channel to watch a video on the potential construction process (https://youtu.be/9a2jcXMfKmg). A great article on LEILAC was published in January by Global Cement Magazine: http://www.globalcement.com/magazine/articles/1004-trapping-process-co2-emissions-with-the-leilac-project.

Stay updated... follow LEILAC on Twitter @ProjectLEILAC.

Leilac

INTRODUCING

SHAYNE RETTKE - MECHANICAL ENGINEER

Shayne joined Calix in August 2016 in the role of Mechanical Project Engineer. His first task on joining Calix was to manage the relocation of our Queensland ACTI-Mag™ Production Plant to another site on the Gold Coast. The relocation was completed on time, on budget and with zero LTI's.

He is now heavily involved with PROTECTA-Mag™ as Project Coordinator, where his responsibilities include liaison with customers, maintenance of equipment and sparing and also product supply across Australia and in New Zealand. Shayne also provides operational training and quality assurance for PROTECTA-Mag™ application specific to each site and customer.

After completing a Bachelors degree in Mechanical Engineering from UNSW he moved to Gladstone, Central Queensland, where he worked for an engineering services company. Here he gained valuable experience in preparing quotations, procuring, designing and machining heavy industry equipment for companies such as Rio Tinto Alcan, Boyne Smelter Limited and Queensland Alumina Port.

Shayne has also worked as a professional lifeguard supervisor for the Bega Valley Shire Council. He was the youngest supervisor in NSW, responsible for public safety across 8 patrolled beaches and 150km of coastline. He also lifeguarded across 6 councils in NSW and QLD. Shayne has been heavily involved with volunteer Surf Life Saving for the past 20 years and has been awarded with a group bravery citation from the Australian Governor General.