



**REVOLUTION FIBRES:
BRINGING THE NANOFIBRE REVOLUTION TO
ASIA & THE WORLD**

THE COMPANY

Established in Auckland in 2009 by CEO and Managing Director, Iain Hosie, Revolution Fibres Ltd is a New Zealand company playing a leading role in the global 'nanotech revolution' – the transformative innovations that utilise technology at the nanoscale – which is very, very small indeed. Nanofibre currently has the highest uptake of any nanotechnology, and Hosie is pushing for Revolution Fibres to be at the leading edge of this tech wave.

Revolution Fibres is still a relatively small company, currently employing 12 highly-qualified staff, half of them at masters or doctorate level in science or engineering. The company traces its origins to a research project in collaboration with the University of Canterbury and Plant & Food Research that sought to identify new technologies to produce the world's best air filter. The potential of nanofibre was known already, but at that time there were no manufacturers in the world who produced it.

Armed with a strong understanding of the technology, Revolution Fibres embarked on the journey of producing nanofiber, which reached industrial scale by 2012. The process of developing the company's capacity in this area took 3 years and about \$3 million in investment to get to the point where the nanofibre could be produced, but Hosie said the company has come out the other side as a profitable venture.

Revolution Fibres has pioneered the production, co-development and commercialisation of nanofibre and nanofibre products. The company's core nanofibre innovation can be seen as a platform technology: a material that is applicable to many other uses. Revolution Fibres has developed several niche uses of the technology and subsequently developed a range of nanofibre products. From 2015, the company began to receive many enquiries from various industries for service customisation, enabling Revolution Fibres to work with other companies to effectively "nanofy" textiles that were specific for their respective applications and supply chain.

The company uses electrospinning technology to create nanofibre out of a range of materials, including polymers and natural sources, such as collagen from hoki fish skins and plants. The nanofibres are then used to deliver revolutionary products used in various industries worldwide such as filtration, cosmetics, healthcare, textiles, electronics and aerospace. For example, their product line includes filters for HRV Next Generation ventilation systems, the anti-allergy pillow liner Nanodream, and high-performance carbon fibre products.

Having a number of different materials to construct products from, as well as being able to customise products for its clients, has provided Revolution Fibres with a competitive advantage

as flexibility in the market. The company operates a nanofibre customisation and service model by partnering with leading global brands such as McLaren in Formula One and Patagonia for outdoor clothing. This service model involving collaboration with larger, international partners now makes up to about 25% of the business.

The company has secured several innovation and high-tech awards, and is looking at its next strategic step. As a business, the company's focus has been on finding the right opportunities. "Not just having one interested client, but finding those opportunities that would revolutionize the industry, and understanding where more of those opportunities would be coming from," says Hosie.

The company's international expansion has led to the development of a client base in the United States, Europe and Asia. In 2018, about half of the company's revenues came from international markets, and of that 60% from one product line for the cosmetics market called ActivLayr™, which is sold almost exclusively abroad. ActivLayr™ is a collagen textile that can carry active ingredients into the skin, clinically proven to improve skin conditions, improve elasticity and reduce wrinkles by 31.5%. ActivLayr™ is a patented product that incorporates innovative extraction of collagen from hoki skins, in close collaboration with Sanford Fishing group.

CHALLENGES

New Zealand clean and green... but not high tech?

Revolution Fibres is a typical high-tech manufacturing start-up, according to Hosie, where the company had to understand the technology and then build the machines around the new technology. However, the telling and sharing of the New Zealand story for technology companies can be a challenge – in some cases, even a liability. As a result, some companies try to downplay the New Zealand story because of the perception of New Zealand as a major sheep country with little relevance to technology. Hosie recalls that the company "used to try and trade on that a lot and if you look at our brochures from the past, it was all about New Zealand natural ingredients and we are a country of innovators and things like that. But I don't know internationally if that really washed down that well."

Building partnerships in Asia

The company's production facilities were far from being at full capacity. It could produce a lot of nanofibre and needed to decide on what to do with it. This "spare" capacity meant that the company had to be diverse in terms of what to offer (products and services) and in which market to offer it, leading to partnerships in various industries.

In the past, Revolution Fibres had been a reactive business. As Hosie explained, "We have just taken the inquiries that have come our way. There hasn't been anyone out there really targeting a specific client, specific industry, and I guess that would be nice to do more of and Southeast Asia would be probably the first country or area we would do that. Singapore would make a lot of sense, or Hong Kong, where we can engage a lot better."

A central company strategy is to offer customization services – using its core technological capacity in nanofibre as something of a “service platform” – a technology that can be customised to make different products, according to the needs of clients. This has worked well for Revolution Fibres in markets such as the United States. According to Hosie, “Our biggest opportunities are the ones that are in the service platform. To us, services means that we can keep the door open for the new uses and treat it like a business unit.” However, the company faces a challenge with this approach in Asia, where there is not much acceptance of a “customizable product as service” model.

Partly as a consequence, about 60% of the company’s overseas revenue comes from sales of the ActivLayr™ product, which is almost exclusively sold in Asia. The company expects that in the near future, international revenues might be closer to 80% for this product. In Asia collagen is seen as a premium product, whereas in Europe, collagen is more viewed as an animal product that is being phased out of the market.

There is clearly potential for Asia to play an even larger role for the company. The Asia-Pacific region, one of the largest and fastest growing markets globally for the beauty and personal care industry, has become a driving force in establishing trends for the future. The region currently holds 32% of the global beauty and personal care marketplace and has an expected CAGR growth of 6.7% over the next five years. The anti-ageing market within the region is competitive, but has high growth potential. Premium anti-ageing products are expanding throughout the region where younger consumers are beginning to show increased interest in integrating anti-ageing products into their beauty routines

together with an increase in demand for natural products.

Product specific challenges

One of the key challenges for the company’s ActivLayr™ was that consumers cared more about the ingredients rather than the actual technology behind the masks. “The ingredient is what sells it, so differentiation is hard,” says Hosie. Currently, the company is building up its own ActivLayr™ brand, but Hosie hopes that “it will still be sitting under a large, more hero brand” and therefore is offering white-label formulation and packing services to complement the ActivLayr™ brand. For the time, the ActivLayr™ brand is not fully established. Consolidating the brand remains a challenge.

Finding the right distributor is also a challenge, since distributors need to have the specific capabilities to sell the technology effectively. Furthermore, Revolution Fibres needs to manage the relationship with their existing distributor in Hong Kong carefully. They cannot tell their innovation story of ActivLayr™ across the Hong Kong and China markets due to competitive market dynamics because their distributors clients are nervous about their competitors asking for exactly the same product. In China the collagen mat is also not called ActivLayr™. It is called MiMing and Proye, and it is used by partners that have their own brands in their respective channels.

Building loyalty and commitment can be a challenge in the business-to-business market. For example, in the cosmetic market, Revolution Fibres tried to provide exclusive market distribution rights in order to form a strategic partnership with a very strong cosmetic brand that would help drive their R&D efforts further, according to Hosie. However,

they later discovered that it was not done in the industry as the market has evolved to become very commoditized, with brands often relying on ODM/OEM manufacturers to innovate and source new technologies.

Tyranny of distance

Being a small company located far away from main markets such as Asia, it was difficult for Revolution Fibres to learn about new market opportunities in other countries and different industries. Revolution Fibres did not have technical staff on the ground in the overseas market and the biggest hurdle facing the field of new materials was educating industry on possible applications of the new nanofibre technology. Hosie noted, “The challenge from doing it so far away is that we just don’t get that practical hands-on, face-to-face interaction.”

In Asian markets in particular, the company lacks channels to engage with clients. Hosie says, “We really feel the pinch in New Zealand for being too far away to be able to engage properly and see what is going on. One week in Korea, for example, opened our eyes as to what is possible in these markets and that is just one week -- imagine what we could have done if we had someone in Seoul every day of the year.”

Communication with Asian partners also posed some initial challenges to the company. To support their existing partners, Revolution Fibres tried to use alternative methods such as video instructions explaining how to handle the nanofiber textile, to unroll it, or put it into components. These videos were hosted on YouTube and worked in markets like the United States but cannot easily be viewed in China due to internet censorship, leading to missed business opportunities.

STRATEGY

Building successful partnerships in Asia

Hosie commented that many of their products have become niche products, taking a long time and much effort to sell. The opportunities in the future are to co-innovate with larger companies. This way, Revolution Fibres can leverage its strong customer focused R&D capabilities and manufacturing capabilities, and customers can leverage their brand and channels to sell the products.

To succeed in Asia, Revolution Fibres has given their partners the freedom to customize their respective business models and to use different channels to reach consumers. In Southeast Asia, ActivLayr™’s success started in Singapore. Characterised as a highly influential market where online presence, brand and ethics are important considerations, the Singapore market appreciated the innovation story behind ActivLayr™. Interestingly, in Hong Kong and Singapore, the “New Zealand story” in conjunction with a high-tech product is well-received and appreciated. ActivLayr™ builds on the New Zealand story, in a market that was on the lookout for New Zealand natural products. “New Zealand natural ingredients are really powerful,” says Hosie.

Hosie describes the company’s partnership in Singapore as “non-traditional and different from the traditional American partners.” They adopted a strategy of using social media channels and allowing the online community to drive sales. In Singapore, having an online presence is important; it provides an opportunity to engage with end consumers, who want to know the story behind the product – which includes the company behind the product as well as the company’s ethics. The Singapore partnership was noted to be al-

most like a hybrid between an offshore marketing resource and an agent, and although it was a new space to be in, the company could ship the product quite cost effectively to Singapore.

Revolution Fibres remains committed to some of its niche products. One product line in Southeast Asia includes air pollution face masks. In this line, they have partnered with Meta-Masks located in Bali, Indonesia, offering an organic, handmade face mask with great urban designs. The company uses a filter medium based on materials developed by Revolution Fibres. One of the Meta-Mask team is a New Zealander, who read about Revolution Fibres in the NZ Herald online. Revolution Fibres ships the fabric rolls to Bali, where they cut out different shapes for the face masks.

This is a niche market which could be further developed for Revolution Fibres. Demand for anti-pollution masks has soared in the Southeast Asian region as a result of the increase in air pollution, smog and haze caused by Indonesian forest fires and other sources such as coal power plants, construction, forest clearing, burning of crops, firewood and waste. Polluted outdoor air claims about 3 million lives globally each year according to the World Health Organization, and Southeast Asia and the Western Pacific accounts for 2 million of those. The face mask industry in Asia is thought to be worth around NZD\$2.8 billion and Revolution Fibres embarked onto this growing market through its partnership with Meta-Mask, who had the vision of allowing millions of people to enjoy daily protection of up to 99.9% from toxic air pollution in the most comfortable and stylish way possible.

Overcoming the tyranny of distance

Realizing the importance of language and cultural competency, the company has someone at the board level who travels to markets in Asia and has relevant language capacity. The company also draws staff who are native speakers of local languages, particularly for technical discussions, after realizing the difficulties of translation and usage of chemical names in other languages.

Revolution Fibres recognises the importance of being at closer proximity to their key markets as part of their international business development strategy. Having a strategy and plans to bridge the distance from key markets is important. As summed up by Hosie, “We are going to miss so many great opportunities by being exclusively in NZ, so we are looking at ways in which we can co-locate or at least have business development arms throughout strategic points in Southeast Asia so that we have got a better ear to the ground.”

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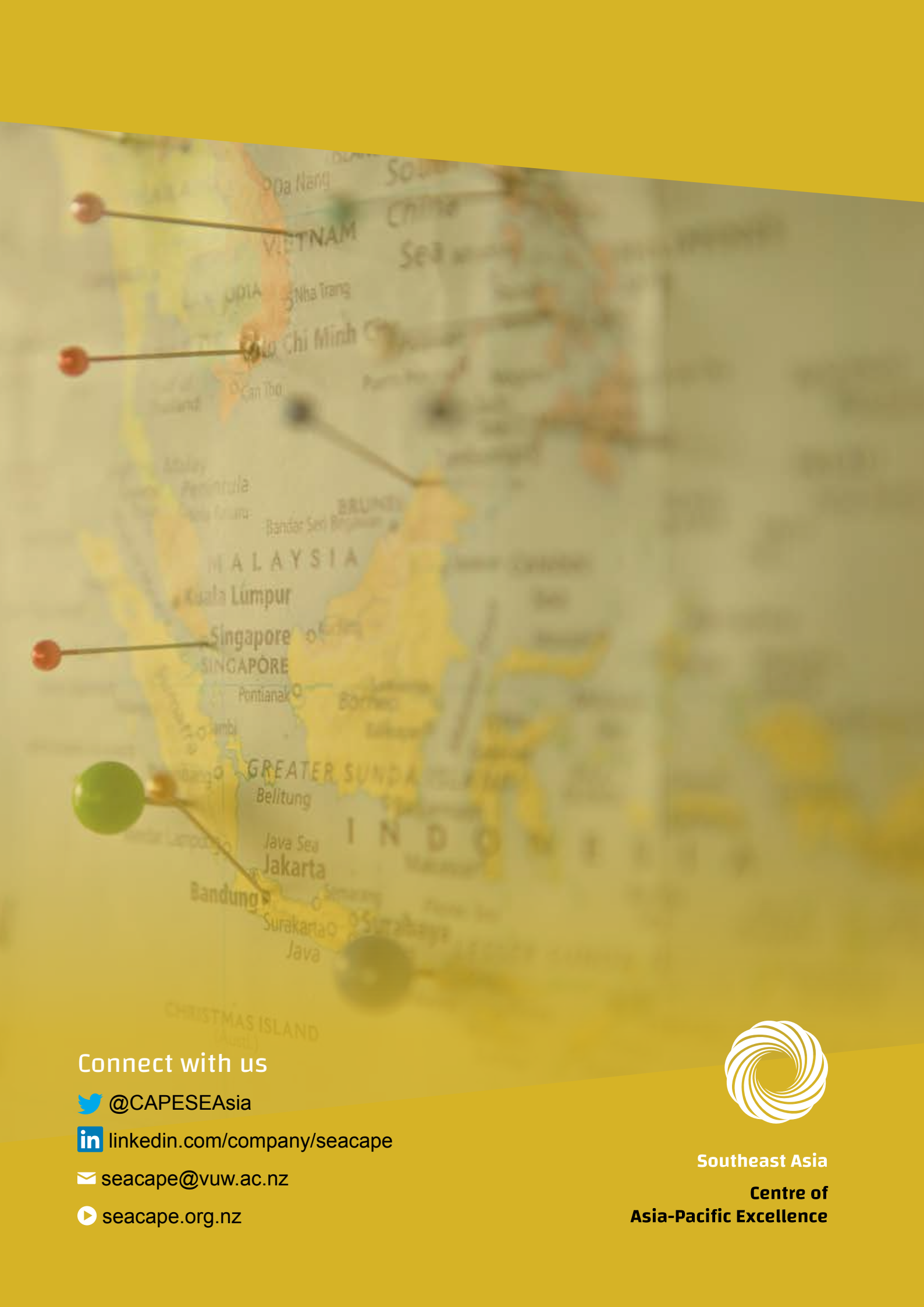
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