Imerys acquires secretive anode tech from Japan

Simon Moores
A bigger future in batteries is looking increasingly likely for Imerys Graphite & Carbon following the acquisition of Japanese anode materials producer, Nippon Power Graphite.

The takeover, which was completed in Q1 after agreeing terms with majority owners Nippon Coke Engineering Co Ltd, gives Imerys the critical spherical graphite coating technology that allows the company to serve the lithium ion battery market directly.

Key to Nippon Power Graphite’s anode materials is a carbon coating technology that adds the finishing touches to either natural spherical graphite or synthetically produced material. The technology to apply this coating has been a closely guarded industry secret, predominately by Japanese producers, for some time.

Nippon Power Graphite uses chemical vapour deposition technology (CVD) – a common manufacturing method in today’s world, used to coat everyday items such as sunglasses to the production of hi-tech materials like graphene.

However, its application and, most importantly, materials used as the coating, is lesser known in the battery materials space.

Nippon Power Graphite produces anode material at Hibikinada Industrial Park close to Kitakyushu city, in the southern prefecture of Fukuoka. The company was established in 2010 as a joint venture between Nippon Coke Engineering and Sumitomo Corp and has become a supplier to major electric vehicle (EV) battery producers.

This acquisition is strategic... as a key player in the growing lithium-ion battery market, particularly in EVs

Hugues Jacquemin, VP/General Manager, Imerys Graphite & Carbon

“This acquisition is strategic,” Hugues Jacquemin, Vice President and General Manager of Imerys Graphite & Carbon told Benchmark Mineral Intelligence.

“It represents a step forward in our positioning as a key player in the growing Lithium-ion battery market, in particular for EVs.”

“This CVD technology, now fully owned by Imerys, complements the company’s wide portfolio of graphite anode materials and enhances its offering in this market,” he added.

This is the missing link in the supply chain for the company which produces both natural flake graphite - the precursor to spherical graphite anode material - and synthetic graphite which can be either coated or used directly in lithium ion batteries.

Imerys has quietly strengthened its graphite portfolio in recent months after years of searching for the right targets.

It announced in October that it will be developing a new 20,000 tpa flake graphite mine in Namibia, a jv with Gecko Namibia, a junior development company in Africa.

This mine, which adds to the famous Lac-des-îles operation in Quebec, is set to begin production in Q2 2017 and will provide the company with an additional source of feedstock for their new anode acquisition.

Gecko’s project in Namibia was chosen because the graphite has very similar characteristics to that of Lac des Iles, the company told Benchmark.

Imerys also produces synthetic graphite from Bodio in Switzerland.

“We have been making consistent investments in high-quality mineral resources and the new natural flake graphite mine in Namibia complements our Canadian production,” Jacquemin said.

“Along with our own sources of natural flake graphite, we also have the processing plants that allow us to implement different types of value added processes, including shape and surface modification.”

“The sense behind the strategy of owning raw material sources, processes and cutting-edge technology, and having a team of experts involved in R&D and technical support, is to provide our customers with a broad portfolio of bespoke solutions designed to fit their specific needs,” he added.

Location was another rational behind the move.

While Imerys has had a global graphite presence for some time, its coverage in Asia has been limited to sales offices in Shanghai, Tokyo and Seoul.

The company has relied in partnerships with agents and distributors, such as Shanghai Haiyi Scientific Trading Co Ltd in China and KB Corporation in Korea, to sell product into Asia’s key target markets.

“From a geographical point of view, we have increased our production capacity in Japan...”
Secret sauce

There are a number of secretive ways that anode producers can coat their graphite material in order to sell to battery manufacturers.

This CVD process is one of the more common methods which vaporises a selection of chemicals together with a carbon material which coats a mist onto a desired surface.

The process begins by placing uncoated graphite material into a vacuum chamber. Outside of the chamber are tanks of chemicals and materials that will create a vapour – one of these chemicals is known as the initiator which starts the chemical reaction, while one or more additional tanks contain the coating materials, one of which is a form of carbon.

The blend of these materials together with the expertise to evenly coat the product is highly guarded intellectual property.

Once the machine is turned on, the chemical reaction is initiated and the materials are vapourised. They are then sucked into the vacuum chamber and the hot gas forms a coating on the colder surface of the substrate.

This is new ground for Imerys and scaling up CVD capacity will be of the biggest challenges it faces.

WHERE DOES IMERYS GRAPHITE & CARBON OPERATE?

HQ: BODIO, SWITZERLAND
In the south of Switzerland, close to the Italian border, lies the hub of Imerys Graphite & Carbon. While Bodio is a sales, logistics, marketing and administrative centre for the division of Paris-based Imerys SA, it is also an active manufacturing plant that produces primary synthetic graphite, graphite powers and silicon carbide. Bodio has also been an R&D centre for the business since 2000. The site is certified ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007.

PLANT: WILLEBROEK, BELGIUM
In 1982, Imerys established a carbon black manufacturing plant in Willebroek, Belgium, a small town equidistant between Antwerp and the capital, Brussels. The plant produces specialty carbon black products, a lower purity carbon powder, that is used in conductive polymers and electronics. The plant is ISO 9001:2008 and ISO 14001:2004 certified.

LAC-DES-ÎLES, CANADA
Imerys’ flake graphite mine, located in Lac-des-îles, in the Canadian province of Quebec is the company’s most famous asset as the only commercially operating graphite mine in North America. Acquired by Imerys in 1989, Lac-des-îles operated at a peak flake graphite mining of 20,000 tpa in the mid-2000s. While production levels have fallen since, it is still operational and serves a nearby processing plant, Terrebonne, and Bodio in Switzerland for further value added processing. Lac-des-îles is ISO 9001:2008 certified.

TERREBONNE, CANADA
The Terrebonne plant is located in the northern suburbs of Montréal, Canada. The value-added processing plant is one of the newer assets of the Imerys Graphite & Carbon portfolio after it was established in 2002. It processes raw material predominately from the Lac-des-îles mine into a wide range of flake sizes, micronized and purified graphite powders. The Terrebonne site is also a logistical hub for the businesses operations North and South America. The site is certified ISO 9001:2008.

OKANJANDE, NAMIBIA
A newcomer to Imerys’ graphite portfolio, the Otjiwarongo flake graphite mine was developed over the past 12 months with a low profile. The operation is located 20km south west of the largest nearby town, Otjiwarongo. A separate processing plant has been developed at Okorusu – a famous site originally for used for fluor spar processing – which is 60km from Otjiwarongo. The mine is expected to become the flagship source for the business.

PLANT: KITAKYUSHU, JAPAN
Imerys’ new acquisition gives the company the much sought-after coating technology for lithium ion battery anode material. Located in the southern prefecture of Fukuoka, the purchase of Nippon Power Graphite gives the company added capacity and key CVD technology to coat anode materials. The processing plant was established in 2010 and has since been expanded to 1,000 tonnes/year capacity in 2011. It has a number of mainstream battery and electric vehicle customers in Asia which gives Imerys a boost in the region.

Building a new flake plant in Namibia