NEXAM CHEMICAL

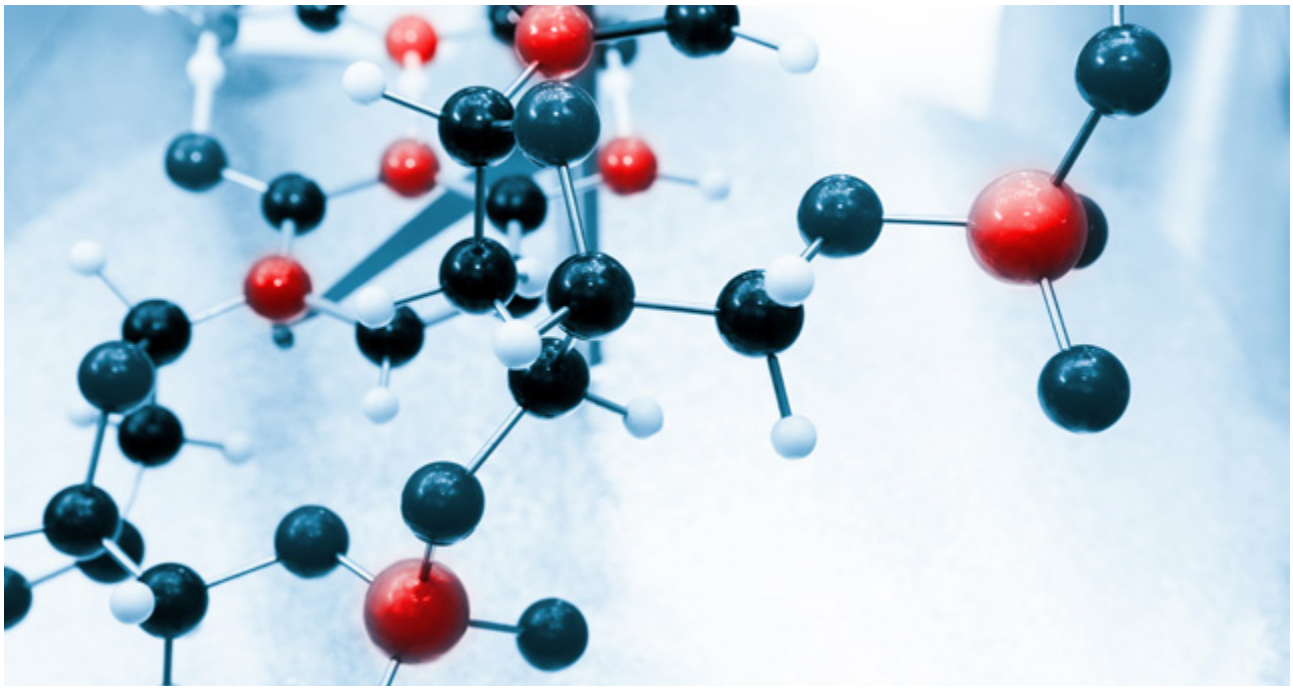
December 2019

Nexam Chemical's newsletter for December 2019 starts with a preamble from our CEO about the past year and ends with a calendar for 2020. The newsletter also includes articles about our exciting collaborations such as with Allotropica, our new company structure and our focus on sustainability – and much more. Enjoy the reading!

CHRISTMAS GREETING

An exciting 2020 awaits after an eventful year

2019 has been a very eventful year for Nexam Chemical. During the year, the company has appointed a new CEO, a new CFO, a new chairman of the board, new customers and, not least - new confidence. Despite, or perhaps thanks to, all the changes we have managed to make the transition from being a hopes company to an expectations company.



2019 began with the announcement that the company would appoint a new CFO, which subsequently became Marcus Nyberg who took office in August. According to his own statement, Marcus thrives best when a lot of things happen and the development is constant - which means that he ended up just at the right place.

The information about the new CFO was shortly followed up with the announcement of who would become the new CEO, and I took office a few days later. My first year as CEO has gone very fast. Although I was not new at Nexam Chemical when I assumed my current role, I have learned a lot during the year - especially about the potential Nexam Chemical has as a company.

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”During the first half of the year we made our best result ever.”

Nexam Chemical has been reorganized in 2019 to meet changing needs. The management team has got new members that reflect the goal of further international expansion. The external structure has also changed during the year, where we now gather all parts of the company under one and the same name - Nexam Chemical. This will also lead to a clearer structure for both customers and employees as well as other stakeholders.

The board also received new members during the year. Ronnie Törnqvist and Mats Persson became new on the board members for Nexam Chemical during the first half of 2019. Mats was then appointed chairman of the board in November, after Lennart Holm passed the torch.

The year has offered both exciting customer collaboration and many deepened relationships. One example is TePe, which has been our customer for long and with whom we developed the GOOD dental series during the year. The series contains 96 % bio-based plastic, where we assist with renewable polyethylene in masterbatch. Another example is Diab, with which our cooperation was extended during the year. Diab is experiencing strong growth in the PET foam segment, generating increased deliveries for products containing our unique NEXAMITE technology. Diab’s success can largely be explained by a strong and growing wind power market. That trend seems to be continuing and also benefits us.

Both of these collaborations are two of many examples of when our products contribute to sustainability and where Nexam Chemical is of great value. The ambition for 2020 is to focus even more on the sustainability aspect of our business, for example by enabling recycling of black plastic.

During the first half of the year we made our best result ever. If 2018 was the year when Nexam Chemical got a proper commercial breakthrough in PET foam, 2019 is the year when we geared up both growth as well as organization. Thanks to the “tailwind” in the wind power market where we have deepened our customer relations, I believe the next few years seem very promising. It gives us, as a company, the confidence to expand and invest. Next year, several of our facilities will be expanded, which will, for example, double the capacity at St Andrews.

At the end of the year, it was announced that Nexam Chemical has received its largest customer order ever. Moreover, we also received our largest order ever from China which regards our high temperature composites. The orders are characteristic of our entire 2019; things are going better than ever for us. It is not only our products that are high-performing - Nexam Chemical as a company is as well, even if a lot of work still remains.

With these words of the year that has passed and a little about the future, I want to thank employees, clients and suppliers for the good work in 2019 and wish everyone who reads this newletter a very Merry Christmas and a Happy New Year.

Johan Arvidsson,
CEO, Nexam Chemical

NEW PARTNERSHIP

Nexam Chemical in Clean Sky project partnership with GKN Aerospace

Nexam Chemical has been selected as a partner and supplier of composites for ProTHiC - Process Simulation and Tool Compensation Methodology for High Temperature Composite Processes. ProTHiC is a project administered by RISE (a Swedish governmental research and innovation institute) and with topic manager GKN Aerospace. The project aims to develop high-temperature composites for aero engines with the purpose of building more efficient engine constructions and reducing fuel related emissions in the skies. The ProTHic project is part of the European Union's project Clean Sky 2 with ambitious targets to reduce noise, carbon dioxide and NOx emissions from the aero engine sector by year 2050. The Clean Sky project targets three of the UN's global sustainability goals, namely regarding industry, innovation and infrastructure (#9), responsible consumption and production (#12) and climate action (#13).

It is widely recognized that traditional metallic materials such as titanium needs to be replaced with lighter materials in order for the aero engine industry to reach the ambitious emission reduction targets set globally. Composites is a promising alternative; however, new composite technologies must be developed primarily regarding how the materials manage high service temperatures. ProTHiC is focusing on developing polymeric materials which can be used at temperatures above 200°C, where titanium currently is the most viable option.

Nexam Chemical will work closely together with RISE, GKN Aerospace and the other project consortium members: Alpex Technologies (Austria) and Technical University of Munich (Germany) in this important research and innovation project and lasts for 36 months.

NEW PARTNERSHIP

Allotropica – enhancing processability of high performance polymers

Nexam Chemical has partnered with US-based Allotropica Technologies, Inc.; a highly innovative R&D company focusing on developing polymeric materials aimed to function properly under exceptionally high temperatures. The technology developed by Allotropica will be specifically aimed towards industries where the quality and properties of polymers can improve performance drastically, such as the aerospace-, oil and gas- and electronics industry.

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”To be a partner to one of the most innovative companies within advanced space chemistry is further proof that Nexam Chemical’s offering within high performance polymers is regarded as top of line.”

Allotropica’s innovation is deeply rooted in NASA’s research where the company’s founders have their background. The polymeric materials - liquid crystal thermosets (LCT), which Allotropica is working with, were developed at NASA by Allotropica co-founder Theo Dingemans. LCT was developed to solve a previously unsolvable problem at NASA; namely, to create a carbon fiber-reinforced fuel tank for the X-33 Reusable Launch Vehicle. Attempts had been made with conventional thermoset resins as the composite matrix had failed. Thus, a completely new set of thermosets would have to be developed and LCT was later part of a rigorous testing regime at NASA and has been exposed to thermal changes in space from 150°C to -150°C while maintaining pristine condition.

LCTs benefit from the themomechanical properties of liquid crystal polymers (LCP) without the limitations associated with high melt viscosity of LCP and the poor resin-fiber interfacial strength of LCP composites. The combination of low moisture absorption, low coefficients of thermal expansion, high operating temperature under load, and wide manufacturing compatibility make LCT highly desirable for replacing metals, ceramics, and other polymers. Allotropica identifies automotive, marine, microelectronics, aerospace and oil- and gas as only some of the many industries which would benefit from LCT in their applications.

Nexam Chemical is supplying Allotropica with its high performance NEXIMID. To be a partner to one of the most innovative companies within advanced space chemistry is further proof that Nexam Chemical’s offering within high performance polymers is regarded as top of line. Nexam Chemical is looking forward to the future with Allotropica and to follow the company’s exciting path ahead.

CHEMISTRY SCHOOL

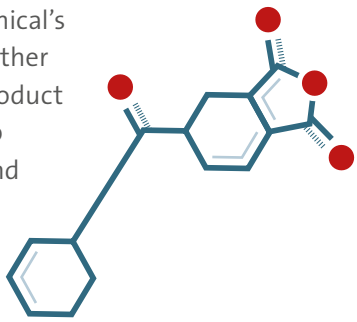
NEXIMID – how does the chemistry work?

Nexam Chemical's chemistry for high temperature composites is based on the ability to couple monomers - basic units in a polymer. The technology is designed to be activated at different temperature ranges. This opens up the possibility of adapting the properties of polymers so that the final product has a strong function and the production becomes efficient. Depending on the amount of NEXIMID used, everything from a thermoplastic to a composite material can be created.

The first generation of polyimides that was created had very good properties but was lacked in tractability. In order to get better processing possibilities, generation two was created from polyimides, but with poorer properties. This is where Nexam Chemical's technology was created through a third-generation polyimide with both good production and material properties.

With the products in Nexam Chemical's NEXIMID portfolio, the length of the polymer chain can be controlled and thus also the processing properties. Many NEXIMID molecules involve short chains. When a NEXIMID polymer, such as MHT-R, is heated, it can be easily injected into a form which is heated. Depending on the NEXIMID product, the polyimides will be activated at different temperature ranges. When activated, they react by connecting with each other. This results in long chains or cross-linking and thus strong end properties.

This is the basis of Nexam Chemical's technology, which has been further developed in the NEXAMITE-product range. It helps our customers to recycle and rebuild polymers and improve properties in different application areas.



CUSTOMER CASE

Union Chemical in Taiwan

Union Chemical is a major player in chemical wholesale distribution, and one of Nexam Chemical's most important clients on the Asian market. Union Chemical operates within three categories of business; trading, fine chemical manufacturing and storage tanks. The company offers chemicals worldwide to the plastics, electronics, textile and pigment industries, among many others. The Union Chemical Group has a turnover of US$ 1 billion and about 860 employees in Taiwan, China and Vietnam.

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”We share experience and knowledge with each other. I believe our partnership with Nexam Chemical will increase in the future.”

Nexam Chemical and Union Chemical has been business partners since 2016. Nexam Chemical delivers NEXIMID and NEXAMITE products to Union Chemical, which goes into electronics, polyolefin and PET applications. The largest project within the partnership focuses on recycled polyester and polyamide fiber combining Nexam Chemicals innovative chemistry for chain extension and extensive knowledge in colors.

The textile industry is strong and growing in Taiwan. However, a global sustainability awareness has also increased the interest in recycled textile products. For recycled polyester, Nexam Chemical’s NEXAMITE in masterbatch is very advantageous for increasing the fibers’ strength. The favorable characteristics of Nexam Chemical’s products is why Union Chemical chose to start importing from Nexam Chemical. Popper Huang, in Taipei at the plastics department of Union Chemical, was asked about Nexam Chemical as a business partner.

– The strength of Nexam Chemical is their knowledge and expertise in chemistry. Therefore, we can have a good and mutual communication not only regarding the applications, but deep into the chemistry of the products. This gives us a stable fundament of our common business. We share experience and knowledge with each other. I believe our partnership with Nexam Chemical will increase in the future, says Popper Huang at Union Chemical in Taiwan.

Popper Huang
Union Chemical, Taiwan

ONE COMPANY, ONE NAME

One company, one name – Nexam Chemical

As of December 1st this year, Nexam Chemical has made changes in the company structure. As the company becomes increasingly international, the organization needs to be adapted. We have production in several different countries and there is a need for all different units to gather under one name.

The change means that the company name Plasticolor ceases to be used. Plasticolor's business will continue to be known as Nexam Chemical. However, Plasticolor will remain as a brand within Nexam Chemical.

Within the framework of a single company, Nexam Chemical, efficiency can increase, and growth can be facilitated better. This change means increased clarity towards customers as well as other stakeholders regarding our entire product range and capacity.

SUSTAINABILITY

Nexam Chemical's sustainability ambitions

Nexam Chemical's sustainability ambitions are based on the United Nation's (UN) widely recognized sustainability goals. The UN's goals envision the world for 2030 and regards all aspects of development related to sustainability; from reduced social inequality to clean water and sanitation. The goals that Nexam Chemical has chosen to focus its sustainability work on are linked to four of the UN 2030 goals; affordable and clean energy (#7), decent work and economic growth (#8), industry, innovation and infrastructure (#9) and responsible consumption and production (#12).

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Nexam Chemical's sustainability work is built on three pillars – through our innovations for sustainability, our products as enablers for sustainable development and through our own sustainable operations.

Innovation for sustainability

Nexam Chemical contributes to sustainable development through innovative solutions. Our clients are world-leading chemical and material companies, which have high demands on our products regarding quality and sustainability. Nexam Chemical's innovative technology can enable completely new properties which lead to better production and improved productivity and process stability. To meet tour clients' expectations, we develop innovative solutions based on identified market potential and our customers' high demands.

Through the applications of our products in renewable energy, such as solar and wind power, we contribute to clean and affordable energy.

Our products as enablers

Through our products, we contribute to both affordable and clean energy as well as responsible consumption and production. Nexam Chemical's products enable clients to produce products with enhanced properties in terms of strength, impact resistance, temperature resistance, chemical resistance and longevity. This creates lighter, stronger, smarter and more durable materials.

Nexam Chemical's technology enables increased recyclability of polymers and simplified use of recycled polymers. Through are products, we increase material utilization, increase productivity and reduce costs. Our technology also enables recycled polymers to regain performance.

Sustainable operations

By adaptions made on our production sites, we contribute to clean energy, decent work growth and responsible consumption and production. Nexam Chemical's production site in St Andrews, Scotland, is accredited according to ISO 9001 for quality, ISO 14001 for environment and OHSAS 18001 for health and safety. Other production sites have ISO certifications on parts of their operations. Furthermore, solar generated electricity and geothermal heating is installed at some sites.

Calendar 2020

2020-02-14	Year-End-Report 2019 2019
2020-03	Newsletter 1, 2020
2020-04-17	Annual Report 2019
2020-04-28	Interim Report January-March 2020
2020-05-13	Annual General Meeting 2020
2020-06	Newsletter 2, 2020
2020-07-17	Interim Report January-June 2020
2020-09	Newsletter 3, 2020
2020-10-22	Interim Report January-September 2020
2020-12	Newsletter 4, 2020