NEXAM CHEMICAL

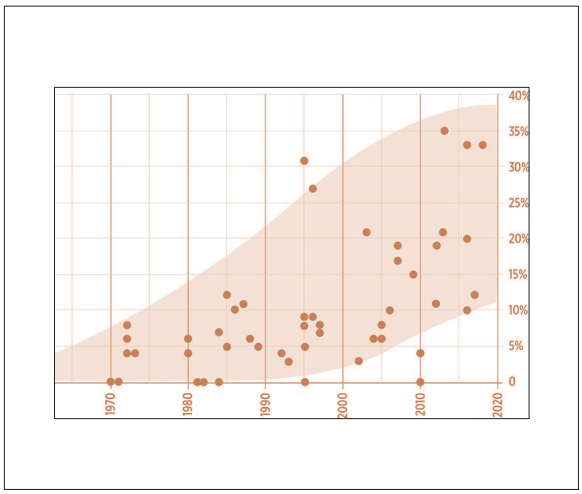
Newsletter

September 2017

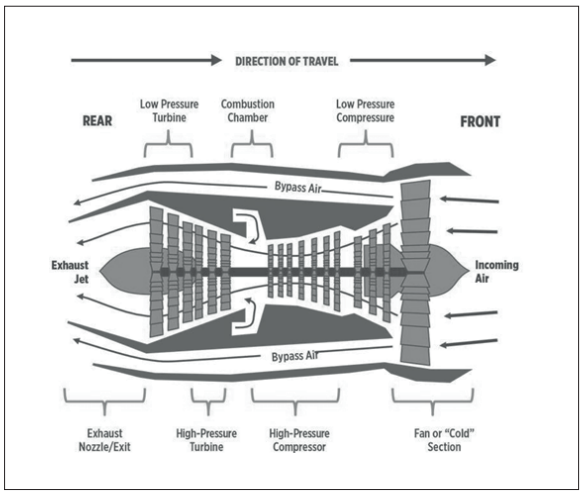
Aviation, jet-engines and composite high temperature resins

Civil aviation and its use of composite materials is moving fast forward. Nexam Chemical has a number of NEXIMID® products that function in demanding applications in the industry where high temperature functionality is a prerequisite.

There are a number of factors driving the use of high temperature composites in aviation – light weight, fuel consumption, design and production together with new regulations. ACARE, Advisory Council for Aviation Research in Europe, together with European Aviation Safety Agency and respectively organizations in North America, has set up Flight Path 2050. Flight Path 2050 stipulates improved performance by year 2050 versus 2000 by reduction of CO2 with 75%, NOx with 90% and noise with 65%. Saving weight means reduction in fuel consumption but also in better design opportunities. The engineers get into a positive weight reduction spiral that opens new design and production options, making the engines more efficient. Today around 35% of a jet engines dry weight is made by composite materials. Next step in the development is to use high temperature composite parts in the hotter zones in the jet engine. Nexam Chemical has building blocks, in our NEXIMID® product portfolio, and resin that fit these demanding applications. The producers of civil jet engines are mainly in North America and Europe and the level of development activity is high.



Turbofan Engine Composite Usage vs. Engine Dry Weight. Composites will continue to account for an increasing share of total turbofan dry weight with commensurate reduction in that total. Source: Composites Forecaste & Consulting



Schematic of typical Jet or Turbofan Engine Configuration. A turbofan generates thrust from incoming air that is directed into its core turbines, mixed with fuel and ignited, and air that is routed around the turbines. The larger the ratio of this bypass air to combustion air, the greater the engine fuel efficiency. Source: Composites Forecasts & Consulting

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Nexam Chemicals high temperature product portfolio

NEXIMID® 100 – 500 polyimide end-cappers and crosslinkers

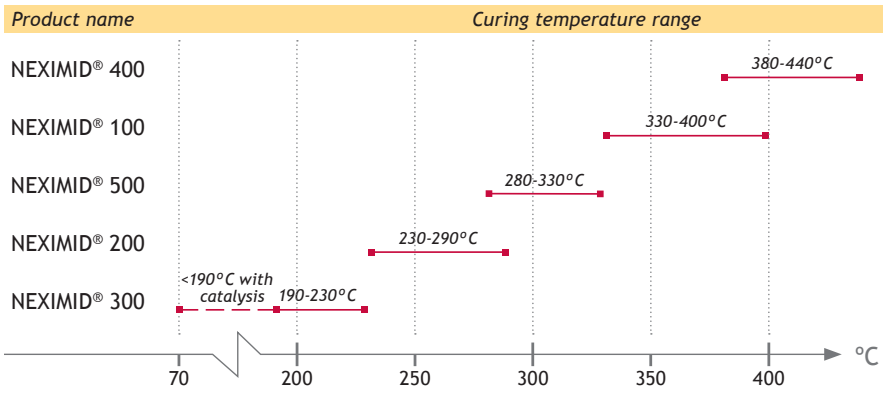
NEXIMID® 100 – 500 is a series of crosslinkers to be used in the formulation of reactive oligomers/ polymers with a restricted molecular weight and latent cross-linking units. These intermediates can be easily processed and properties associated with high molecular weight structures can be reclaimed upon a curing step.

NEXIMID® 800 - polyimide monomers

NEXIMID® 800, is a dianhydride for formulation of polyimide resin application.

NEXIMID® high temperature resistant resin

The NEXIMID® high temperature resistant resin is primarily intended for composites in industries like aerospace, automotive, construction, military and heavy industry. Application example is composites material for jet engine hot zones.



Comment from Johan Arvidssson, COO Nexam Chemical

"Lightweighting of jet engines is long-term the most interesting area within high performance for Nexam Chemical today. The applications fits very well to our product offering. The challenge is the extreme long lead time in the projects. It can take many years to get specified into an engine system, but when you are specified it is not likely that your solution will be replaced."

For more information about composites in commercial aircrafts read more in CompositesWorld.

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Nexam Chemical participates at Stora Aktiedagen on 13 November in Stockholm

On Monday November 13, Nexam Chemical will participate at Aktiespararnas Stora Aktiedagen in Stockholm. Nexam Chemicals business will be presented by CEO Anders Spetz. In connection to the presentation there will be an opportunity for participants to ask questions.

Stora Aktiedagen will be held at Sheraton Hotel at Tegelbacken 6 from 8.00 am to 5.30 pm. Stora Aktiedagen enables smaller listed companies the possibility to present its business and meet interested investors. Both private and professional investors. Approximately 50 companies participates every year in front of 200-300 investors as well as live on the web.

To sign up for Stora Aktiedagen please visit Aktiespararnas website. Nexam Chemicals presentation will be broadcasted live on the web and a recording will later be available on the company's website. Take the opportunity to meet Nexam Chemical on November 13, 2017 in Stockholm.

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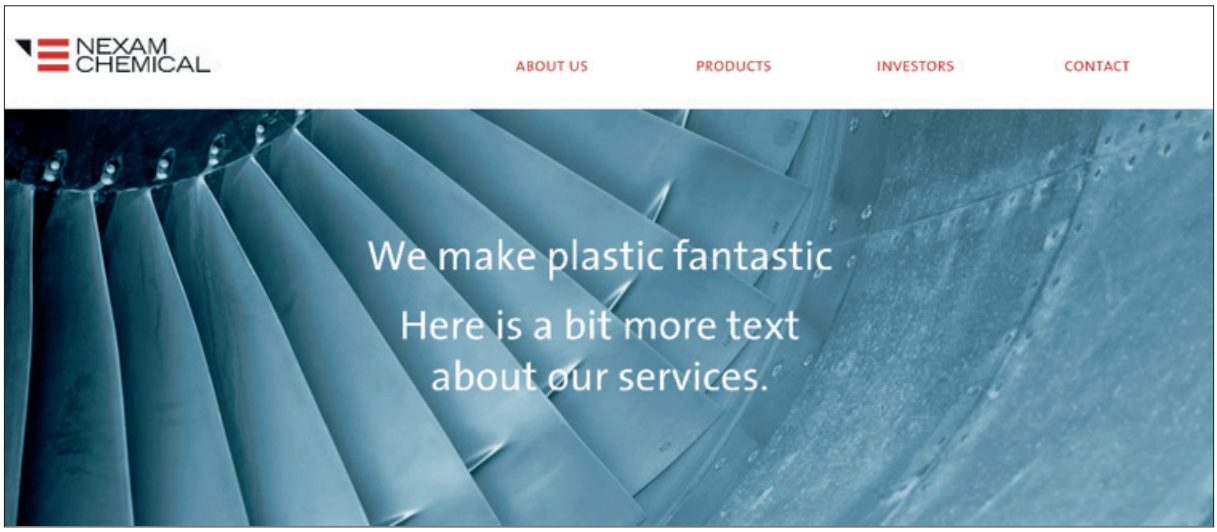
Nexam Chemical launches a new website

Nexam Chemical will launch a new website during October. As a part of increasing the visibility for current and potential customers and partners to find information about our business and products, we have created a website with a clear customer and market perspective.



Information for shareholders and investors are available in a dedicated part of the website. The ambition has been to develop a user-friendly and easy-navigated website that is interactive and optimized, that is, easy to find information for those who search for plastic additives, masterbatch or other key words in our industry. The website shall give the same experience regardless if a laptop, mobile or reading tablet are used. Since the company acts on an international market, the customer- and market-related part of the website is in English, while information for shareholders and investors are both in Swedish and English. More information will follow when the website is launched.