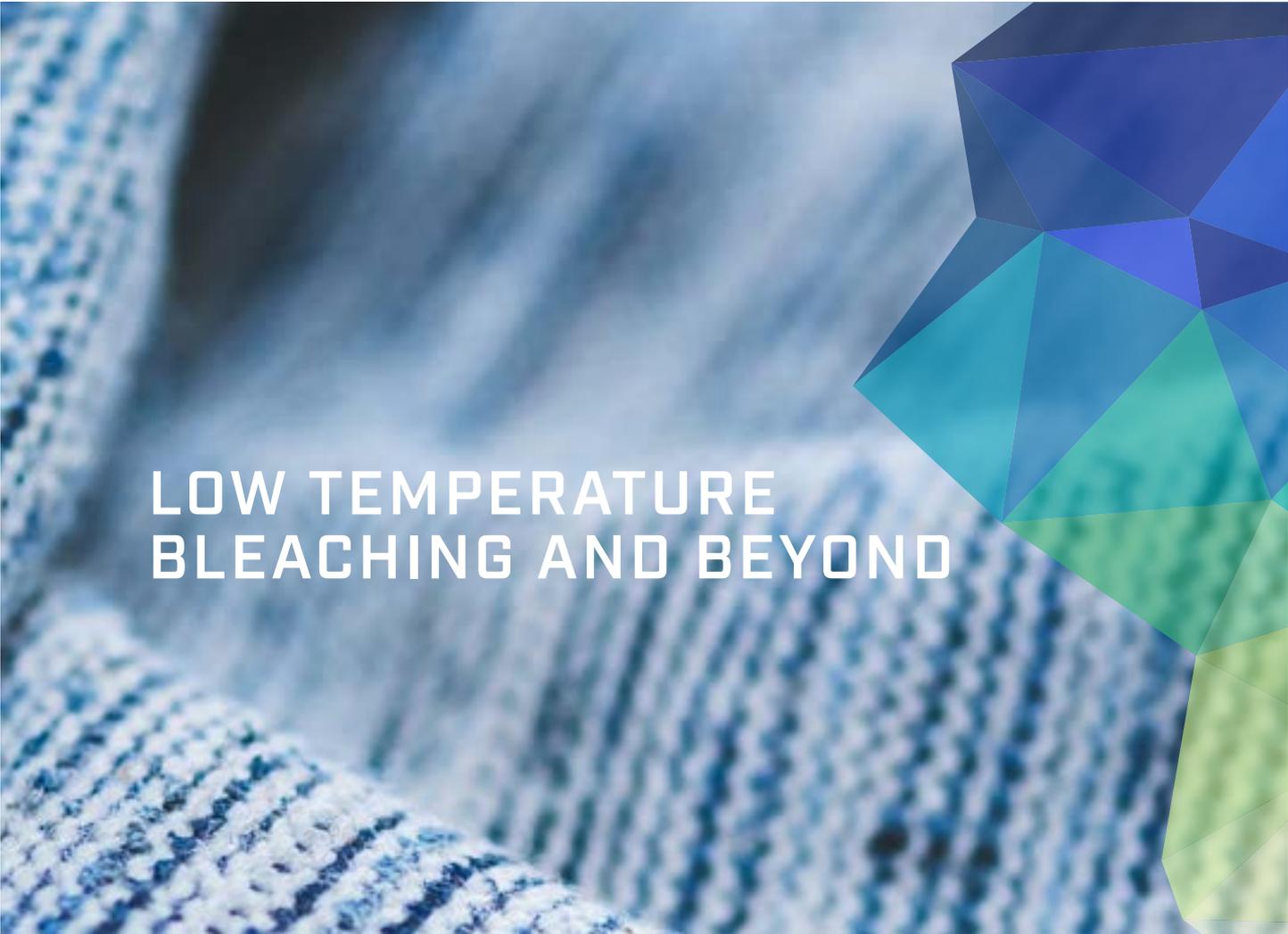


# TEXTILES CASE HISTORY



# LOW TEMPERATURE BLEACHING AND BEYOND

## **How Pegasus Approved Systems are supporting the textiles sector in 'doing more with less'**

A growing number of textile businesses are harnessing the use of Catexel's transition metal catalysts to activate hydrogen peroxide and achieve lower temperature bleaching and a range of other important benefits.

In doing so they are reporting tangible cost savings through substantial energy efficiencies, greater asset utilisation and higher throughput. Consider also the additional benefits of an improved environmental profile and a better handle end product and it is clear to see why Catexel's Pegasus platform has become one of the sector's most widely used best kept secrets.

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**MAY 2016**

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**THE CHALLENGE**

The rising cost of energy and raw materials, coupled with growing environmental concern regarding industrial processes with high chemical loads and heavy water usage, have presented textile mills and their technology suppliers with a need to find solutions that can support more sustainable operations. These issues have been ongoing drivers in the research and development of additives and auxiliaries that promote cleaner and faster processes, while delivering additional performance and cost-in-use savings.

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**THE CATALYST FOR CHANGE**

When a catalyst demonstrating superior stain removal was discovered, that could achieve cleaning at lower temperature wash cycles for household laundry, the lead research team saw an opportunity to maximise its potential in industrial applications.

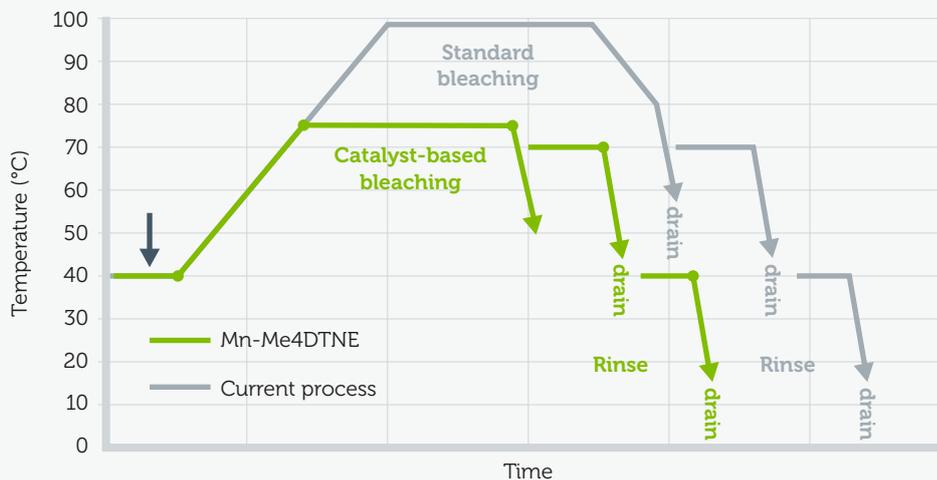
The real catalyst for change came when Catexel – the oxidation catalysis experts that first commercialised this technology for low temperature bleaching (LTB) of cellulosic substrates – identified another, more interesting product in its extensive library of manganese and iron catalysts, accelerators and activators. That product was Pegasus (Me4DTNE). While sharing a very similar chemical structure to the original Dragon technology used in detergent applications, it demonstrated a much wider combination of hard performance benefits and “soft” aesthetic benefits, which results in highly predictable activity and much less likelihood of fabric damage through improper use.

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### THE SOLUTION

For the majority of customers, operating in some of the most ecologically sensitive parts of the world, there are certain production issues to contend with and so any 'drop in' solution needs to be suited to a wide range of processing conditions. Considerations such as water quality can be overcome with a product that is proven to consistently perform where typical processes are followed. Perhaps the ease in which Pegasus can be adopted and the predictability of its behaviour offer some of its biggest benefits in accommodating a variety of systems established in widely different territories. This consistent delivery is a result of the highly stable, highly selective nature of the chemistry and the savings in time and consumables that can be achieved are clearly evidenced in the figure below:



**Figure 1:** Low temperature catalyst-based bleaching vs. standard high temperature process. Catexel's partners are able to apply the Pegasus systems across a wide range of operating temperatures, from 65-80°C, and at reduced levels of alkalinity to generate tangible savings in time and consumables.

Pegasus' ability to activate hydrogen peroxide at reduced temperatures and pH (alkalinity) also offers textile auxiliary houses the opportunity to promote the technology as an important point of difference across the value chain – particularly from an environmental perspective.

As well as achieving high bleaching performance at more moderate temperatures, the technology can be used to shorten the process cycle for fabric treatment and, in some cases, to treat wastewater streams. For those forward-thinking textiles businesses seeking to make positive change to their existing processes these all-important, incremental steps towards a more sustainable future carry a clear corporate social responsibility message.



### THE OUTCOME

Processes incorporating Pegasus Approved Systems are evidenced as being more energy efficient, cost effective, environmentally acceptable and quality assured.

Indeed, users across the 65% of the market that relies on hydrogen peroxide processes to achieve full whites or produce a consistent light colour for subsequent dyeing (half-bleach), consistently observe:

- Reduced chemical load, which contributes to cost savings and supports improved environmental profile claims (some TAHs report being able to reduce caustic soda by 30%, for example)
- Up to 15% unit cost savings per tonne of cotton bleached, taking into account energy, chemical load and increased cotton yield
- As much as 15% in heating cost savings and 10% in electricity savings due to lower temperature bleaching activity
- Increased asset utilisation and higher output due to shorter bleaching, heating, cooling and rinse cycles

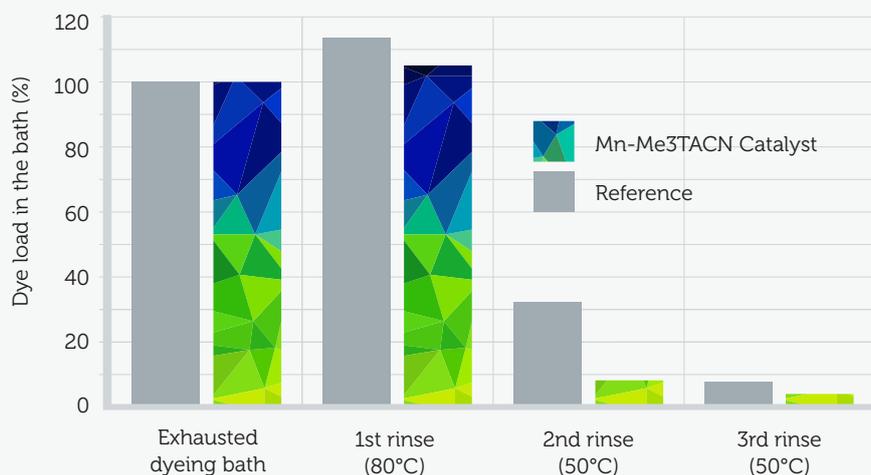
These impactful statistics show how Pegasus has already helped promote positive change through direct financial and operational benefits - or by creating a more benign and better handle end product. Its adoption by textile processors across the globe as the low temperature bleaching process of choice is, as much testament to the chemistry at play, as it is the pioneering management team that developed and commercialised the platform. But, ultimately, these "greener" technologies are being introduced thanks to the commitment and reach of the textile auxiliary houses (TAHs), acting as the strategic go-to-market partners of research and development companies, like Catexel. By providing critical technical service, support and advice TAHs are the chief facilitators helping the industry to forge a more sustainable and, actually, more cost efficient future.

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### THE OPPORTUNITIES

Up to now, Pegasus' potential has only been fully leveraged for exhaust bleaching processes and yarn bleaching. Cold-pad batch and continuous methods offer interesting development opportunities. For the former, the main benefit would be the cost savings possible through reduced chemical load. In cold-pad batch, chemical reduction would also be a factor and the potential for time savings an attractive proposition.

Innovations beyond low temperature bleaching applications are too being tested with industry. A small number of other activators and catalysts in Catexel's portfolio have been identified in the treatment of wastewater streams from the reactive dyeing of cotton and the chart below shows how effective this application is proving in field tests and the time and cost saving benefits it would bring.



**Figure 2:** Example of soaping process. The catalyst is used with H<sub>2</sub>O<sub>2</sub> during the 2nd rinse (red bars).

When considering the effluents from the bleaching stages, already with the waste streams from the dye baths, it is clear how only very small quantities of catalyst could have a big impact at every stage involved in the industrial treatment of cotton.

For further information on how Pegasus Approved Systems can support you in addressing your technical, commercial and regulatory challenges [download the product data sheet](#).

Or [contact us](#) to request a sample.