



HUNTSMAN

Enriching lives through innovation

TextileConnection

Sustainability Shift Gains Momentum

HIGHLIGHTS

Issue 6 - December 2014

PRESIDENT'S MESSAGE

FEATURE: AVITERA® SE

AROUND THE WORLD

EVENTS



Sustainability Shift Gains Momentum

As environmental issues put pressure on firms throughout the global textile supply chain, industry leaders are already on the path to sustainability.

Huntsman Textile Effects has long believed that the adoption of more sustainable practices is an inevitable industry-wide shift. As such, we have helped many mills find practical ways to minimize water and energy use, replace hazardous chemicals, improve productivity and create higher value textile products. That the wider industry is now falling into step with those that have already begun the transition to greater sustainability is a positive development.

The past 12 months have seen even more brands and retailers, industry organizations, mills and suppliers coming together to accelerate change. Major projects such as Solidaridad's Better Mill Initiative in China and the Partnership for Cleaner Textiles in

Bangladesh are gaining momentum. The Zero Discharge of Hazardous Chemicals (ZDHC) Group also reached another milestone during the year with the release of its Manufacturing Restricted Substances List (MRSL).

As an active participant in many initiatives, Huntsman Textile Effects is pleased to be a part of the transition to a cleaner and more sustainable textile industry. Our own MRSL formulation List of ZDHC Roadmap-compliant dyes and chemicals, for example, is now being relied on by a number of major brands. The extension of the AVITERA® color palette has also made a great impact. That so many mills are switching to AVITERA® or planning to do so in the near future, indicates the importance that the industry is now placing on environmental best practice.

The past year has also witnessed a step change in the enforcement of environmental standards legislation around the world. With the political will to address public concern over water quality and pollution, governments in China, India and elsewhere are clamping down on non-compliance, with varying degrees of success. China in particular has been rigorous in enforcing closure notices and stricter penalties. Other nations, including Vietnam and Bangladesh, have the opportunity to avoid escalating pollution problems by building better environmental controls into their developing textile sector as exports increase.

All in all, it is clear that our industry is now on the path to a cleaner and more transparent supply chain and that there is no going back. I would like to thank you for your efforts and support. As a valued partner of Huntsman Textile Effects, you are making a real difference as you seek to develop more competitive and sustainable business practices. It won't always be easy, but I firmly believe that those who make the necessary changes now will be the leaders of tomorrow. By working together and focusing on innovative solutions we will continue to realize previously unimagined benefits for our companies, our industry and our world.

On behalf of everyone at Huntsman Textile Effects, I'd like to take this opportunity to wish you and your family all the best for the coming year.

Paul Hulme
President
Huntsman Textile Effects

FEATURE: AVITERA® SE

AVITERA® SE Gains Momentum

Winning customer approval and global industry awards, AVITERA® SE dyes deliver on Huntsman Textile Effects' promise to help the textile industry achieve economic and environmental sustainability.

Huntsman Textile Effects' revolutionary AVITERA® SE dyes are gaining momentum worldwide as more mills make the switch to achieve cost-effective production, improved textile products and minimize environmental impact.

These unique poly-reactive dyes allow processing mills to dramatically reduce the dyeing and washing-off cycles and increase productivity while promoting a cleaner supply chain. Compared with current best-available technology (BAT), AVITERA® SE dyes:



- **Reduce water consumption by up to 50%**

With AVITERA® SE only 15-20 liters of water are required to dye 1 kg of cotton, versus up to 100 liters for hot dyeing systems and 30-40 liters for BAT.

- **Reduce energy and CO2 by up to 50%**

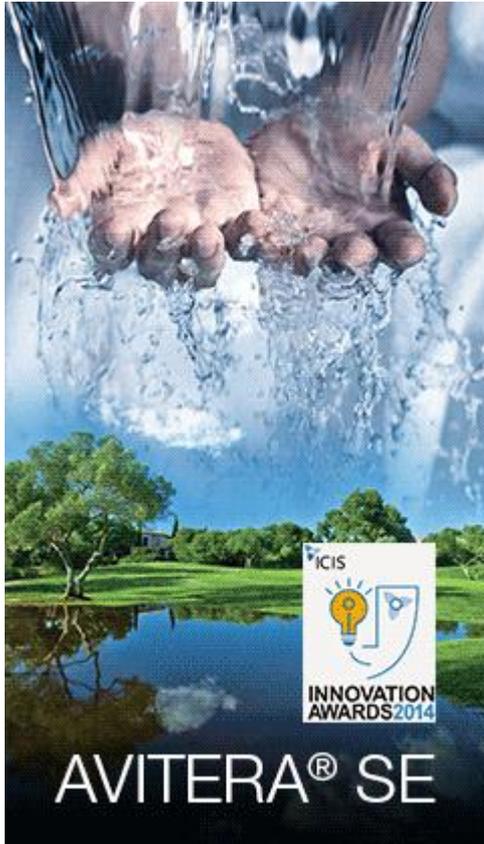
Only 1.7 kg of steam is needed to dye 1 kg of cotton with AVITERA® SE, compared against conventional hot dyeing which uses 9 kg of steam and BAT 3.9 kg.

- **Reduce salt consumption by 20%**

Requiring less salt to fix the dye and with more of it being fixed onto the fiber first time round, AVITERA® SE needs less water and lower temperatures to wash off unfixed dye. Fewer rinsing baths are needed to obtain the required fastness properties and less wastewater is produced.

- **Reduce cycle time by 25%**

Using AVITERA® SE dyes, the dyeing process, including washing off, is completed in 4 hours, compared to 5.5 hours for BAT and up to 9 hours for other conventional systems.



Top honors at the 2014 Independent Chemical Information Service (ICIS) Innovation Awards

This impressive environmental performance was recently recognized in the 2014 ICIS Innovation Awards, which selected AVITERA® SE as the overall winner - Best in 6 categories and the award for Innovation with Best Benefit to Environment or Sustainability. The Innovation Awards' expert judging panel was impressed with how successfully HTE had confronted the textile industry's toughest business challenges with the development of the AVITERA® SE dyes.

ICIS is the world's largest petrochemical market information provider. Its global awards are judged independently against the very highest standards and are among the most sought-after accolades in the international chemicals sector. ICIS introduced the 'Environment or Sustainability' category to the Awards this year to recognize the importance of sustainable green growth to the world today. As the first winner of this new category, HTE demonstrated significant environmental and economic benefits for customers.

"The development of our revolutionary AVITERA® SE dyes is a result of our adherence to the three pillars on which Huntsman Textile Effects is built: sustainability, innovation and collaboration," Paul Hulme, HTE Global President, said. "As a leading supplier of chemicals and dyes, we remain committed to working with our customers and other industry partners to find innovative new solutions that help the industry overcome environmental and competitive pressures."

Continuing innovation

HTE's groundbreaking range of AVITERA® SE dyes has been continuously extended since its launch to deliver improved benefits across a broad color palette. By early 2015, AVITERA® SE will offer a full color palette for the world's most widely used textile fibers.

Among its recent AVITERA® SE technology-powered product launches, HTE introduced its eCool70 dyes to make it possible for mills to produce the vivid fashion-forward colors of the Caribbean, with brilliant yellows, blues and greens. The eCool70 formulation uses significantly less turquoise in the recipe to enable mills to achieve brilliant blues with a vivid greenish cast, compared to classic blues that have a reddish cast.

The new eCool70 dyes also help mills lower their energy consumption and processing costs by allowing dyeing and washing-off to take place at just 70°C (158°F) with a considerably reduced wash-off cycle.





Sustainability breakthrough

Developed by HTE, a leading innovator of textile dyes and chemicals, AVITERA® SE represents the first new reactive dye molecules to be invented for almost 20 years. A new generation of dyes, it comprises complex new molecules with three newly designed active reactive groups.

Huntsman developed the first reactive dyes in the 1950s to offer better wash- and light-fastness than traditional direct dyes while producing a wider range of bright colors. Today, around 65% of the world's annual production of about 30 million tons of cotton is dyed using reactive dyes.

The new AVITERA® SE dyes are poly-reactive dyes that ensure rapid and very high exhaustion and fixation for cellulosic fibers and their blends. More of the dye is absorbed by the fabric, using less salt and lower temperature water, with less than 5% remaining unfixated, compared to between 15% and 30% of conventional reactive dyes. This dramatically reduces water waste. The unreacted dye is also easier to remove at low temperatures, as it is not bound to the fabric fibers in a high-salt solution.

As a result, processing mills can dramatically increase productivity, since the dyeing and washing-off cycles are substantially shorter, while also making significant savings. Less water and salt are required while energy consumption and CO2 emissions are greatly reduced because water used in the dyeing and washing-off process never exceeds 60°C.

“Using AVITERA® SE dyes is therefore a way for mills to meet the environmental standards of the world's best clothing brands while increasing yield, improving productivity and reducing processing costs. The dyes can be used on diverse machinery and do not require mills to make a capital investment. They also offer excellent fastness and consistency across the entire shade gamut and color spectrum,” Mr. Hulme continued.



Huntsman Textile Effects as a proud winner at the 2014 ICIS Innovation Awards

(from left to right): Neil Checker, Partner , Roland Berger Strategy Consultants; Paul Hulme, President of HTE; Athanassios Tzikas, Master Scientist, HTE; Patrice Carreau, Director, Technology – Chemicals, HTE; Carol Piccaro, President and CEO of U.S. Chemicals

Huntsman Opens New Corporate Office in Mumbai



Peter Huntsman, Global President & CEO, Huntsman Corporation (extreme right); Steve Stilliard, Vice President and Managing Director of India Subcontinent (extreme left) and Paul Hulme, President of HTE (2nd from left) with industry officials at the inauguration ceremony

Divisions Come Together to Drive Creativity, Collaboration and Growth

Huntsman has opened a new corporate office for the India subcontinent in Andheri, Mumbai. The seven-floor 220,000-square-foot building will bring four Huntsman divisions under one roof to help drive creativity, collaboration and growth.

The new facility will initially house some 300 Huntsman associates from Textile Effects, Advanced Materials, Performance Products and Polyurethanes, including more than 100 technical staff spread across three floors of state-of-the-art laboratory and research facilities.

Hosting the opening ceremony, Peter Huntsman, President and Chief Executive of Huntsman Corporation, said, "This opening is an important milestone in our continued growth and commitment to the Indian market. Our continued success will depend on the quality and creativity of our local associates and this site will enable better technical, customer service and development opportunities going forward. Many of our products and innovations are unique to the subcontinent's needs. We look

forward to seeing continued growth as this market expands."

Paul Hulme, HTE President and Huntsman Senior Corporate Officer for the region, said, "We are looking forward to welcoming customers, suppliers and other business partners to the new premises. I am confident that the investment we have made in facilities and people will stand us in good stead for many years as we continue to develop strong strategic partnerships with our customers and continue to grow our business across all of Huntsman's business divisions."

Huntsman has been active on the Indian subcontinent for more than 25 years. It has more than 1,000 associates in the region, with manufacturing facilities in Baroda and Ankleshwar in Gujarat, which produce textile chemicals and dyes and surfactants, and in Pune, which manufactures polyurethane systems.

Huntsman Establishes Global Business Center in Malaysia

Continues RM280M+ Investment Program to Strengthen Regional Presence

Huntsman Corporation has opened a new RM7 million Global Business Center in Malaysia. It will serve as the group's primary global IT hub, as well as center for accounting shared services, and is part of a RM280 million-plus investment program that aims to strengthen Huntsman's presence in the country.

The new office is located in Bandar Sunway, a vibrant township close to Kuala Lumpur. Supporting operational, functional and strategic decision making across the Huntsman group of companies, it will initially house 200 employees from Huntsman's accounting, IT, internal audit and treasury functions, and also serve as the Asia Pacific regional commercial center for Huntsman's Pigments division.



Paul Hulme, President of HTE, giving the inauguration address



(left to right) Dato Mizanur Ghani, Chairman of Huntsman Pigments Malaysia; Steve Jorgensen, Vice President of Accounting Shared Services and Internal Controls, Huntsman Corporation Finance; Datuk Dr. Rebecca Fatima Sta Maria, Secretary General of the Ministry of International Trade and Industry; Paul Hulme, President of Huntsman Textile Effects; Maria Womersley, Vice President and CIO of Huntsman Global IT; Peter Huntsman Junior, Director of Marketing & Business Development, Huntsman Polyurethanes

Paul Hulme, President of Huntsman Textile Effects, said, "We see growth potential for both our business and for Malaysia, thanks to the nation's strong infrastructure, backing of technological advancement, and vast, well-qualified talent pool. We remain committed to playing a key role as a leading regional player in Malaysia."

Huntsman is also investing RM275million to modernize and upgrade the manufacturing operations of its Pigments Division at Kemaman, a major seaport on the east coast of Malaysia. The upgrade will introduce new energy-efficient technology to help contribute to a "zero waste" business model.

Innovate Technical Textiles in the Spotlight



Chuck Hirsch, VP of Commercial & Technical Resources and Dheeraj Talreja, Commercial Director for NE/SE Asia presenting on HTE's core strengths and innovative solutions to a full audience at the Taipei Innovative Textile Application Show (TITAS) 2014

durable water repellency solutions and digital printing. All presentations were well received, sparking lively discussion and interest in HTE's solutions.

HTE in Taipei and Shanghai

Huntsman Textile Effects continues to engage with customers and partners as the leading expert provider of rain and stain management solutions, flame retardants and other sustainable textile effects.

Huntsman Textile Effects Technical Forum (Taipei, Taiwan)

More than 180 people, representing leading textile mills and distributors and global apparel brands, joined the HTE technical forum on October 15, 2014. Organized with the support of Taiwan Textile Federation, the forum was held during Taipei Innovative Textile Application Show (TITAS) 2014, the only professional textile trade show in Taiwan and the most important innovative textile exhibition in Asia.

A number of senior HTE executives shared their expertise at the event, covering trends and developments in polyamide dyeing, presentations were well received, sparking lively discussion and interest in HTE's solutions.



Visitors attracted to HTE's technical textile competencies and our booth buzzing with customers at Techtextil China

Cinte Techtextil China 2014 (Shanghai, China)

The daughter show of Techtextil in Germany, Cinte Techtextil China has become Asia's leading biennial trade fair for technical textile and nonwoven products. Held from September 24-26 as a stand-alone event, it attracted a record attendance of almost 12,500 visitors from 61 countries and regions and 459 exhibitors from 22 countries and regions.

As a first-time participant, Huntsman Textile Effects used the fair as a platform to reinforce our status as a reliable global partner for the creation of high-tech technical textiles. We emphasized our industry-leading coloration solutions and our ability to help customers differentiate themselves with high-performance protective and non-woven fabrics and innovative textiles for the transportation sector.

Sustainability was a hot topic among the many mills, retailers and converters who visited the 36-square-meter HTE booth. Both existing and potential customers were focused on achieving oil and water repellency, especially for C6 and non-fluorochemicals. Our oil and water repellents PHOBOL®, Teflon® and PHOBOTEX® attracted a great deal of positive attention, as did the PYROVATEX® flame retardants and our products for carpet dyeing and printing.

Demonstrating our expertise in Digital Inks technology

SGIA Expo 2014 (Las Vegas, USA)

SGIA Expo is the only marketplace in North America to showcase the full spectrum of specialty imaging, from wide-format and grand-format to finishing and installation. This year's show, held from October 22-24, set two attendance records, attracting 25,500 visitors and 541 exhibitors, and was notable for its increasing focus on textiles, with several fabric suppliers exhibiting.

The Huntsman Textile Effects display saw brisk traffic throughout the three-day event, with many digital service providers and industrial machinery purchasers visiting the team and providing positive feedback.



Our LYOSPERSE® GP inks featured in the Mutoh printer being exhibited by ITNH



Our TERASIL® XKS industrial inks featured in the JP7 model machine being exhibited in the MS booth

“Pigments for dry processing and direct and transfer disperse inks are key in the North American market, with our LYOSPERSE® GP pigment inks, TERASIL® XKS direct and TERASIL® TS/Subli XKS transfer inks generating interest across a variety of market segments. HTE is recognized not only for the quality of our solutions, but also for our ability to offer a complete range of inks and solutions to suit all textile fibers, print heads and machines,” said David Clark, Sales and Business Development for Ink Jet.

HTE’s collaborations with machine partners were also in evidence in Las Vegas. Our Lyosperse® GP inks were featured in the Mutoh printer being exhibited by ITNH, printing on Pacific Coast Fabrics’ textiles, and our Terasil® XKS industrial inks were featured in the JP7 model machine being exhibited in the MS booth.

EVENTS

See You There!

With a global presence that ensures we can serve you wherever you are, Huntsman Textile Effects actively participates in key industry events around the world.

Date	Location	Event
15-17 April, 2015	Shanghai, China	Interdye 2015 At this integral exhibition for the textile industry in China, Huntsman Textile Effects joins a global gathering of dye and chemical manufacturers in presenting the latest developments in the dyestuff manufacturing sector. Visit this show to see how our comprehensive range of products can help drive sustainability for your business!
4-7 May, 2015	Frankfurt, Germany	Techtextil 2015 Join us at Techtextil 2015 to explore our wide range of products to boost the functionality and coloration of your technical textiles for work wear, automotive applications, nonwovens and more!

The **TEXTILE CONNECTION** newsletter is intended for Huntsman Textile Effects' customers and business partners. Copyright© 2014 by Huntsman Corporation. All rights reserved. All trademarks mentioned are either the property of or licensed to Huntsman Corporation or an affiliate thereof.

Statements in this newsletter that are not historical are forward-looking statements. These statements are based on management's current beliefs and expectations. The forward-looking statements in this newsletter are subject to uncertainty and changes in circumstances and involve risks and uncertainties that may affect the company's operations, markets, products, services, prices and other factors as discussed in the Huntsman companies' filings with the U.S. Securities and Exchange Commission. Significant risks and uncertainties may relate to, but are not limited to, financial, economic, competitive, environmental, political, legal, regulatory and technological factors. In addition, the completion of any transactions described in this newsletter is subject to a number of uncertainties and to the negotiation and execution of definitive agreements among the parties, and closing will be subject to approvals and other customary conditions. Accordingly, there can be no assurance that such transactions will be completed or that the company's expectations will be realized. The company assumes no obligation to provide revisions to any forward-looking statements should circumstances change, except as otherwise required by applicable laws.

While the company tries to ensure that all content originating from the company is correct at the time of publication, no responsibility is accepted by or on behalf of the company for any errors, omissions or inaccuracies. The company shall not be liable for any loss or damage that may occur as a result of any reliance on or use of such content. You are advised to contact your usual Huntsman representative should you wish to rely on or use any of the company's content.

Any opinions, advice, statements, services, offers, or other information or content expressed or made available by third parties are those of the respective third parties and not of the company's. The company neither guarantees the accuracy, completeness, or usefulness of any content, nor its merchantability or fitness for any particular purpose.

To the maximum extent permitted by applicable law, neither the company nor its affiliates will be liable for:

1. A) Any loss of production, loss of use, loss from business interruption, loss of profit, loss of business, loss of goodwill or reputation, or wasted expenditure; or

2. B) Any incidental, indirect, special, consequential, or punitive cost, expense, loss or damage of any kind, arising in connection with the contents herein.

Editor: Christina Koh, Global Communications Director, Huntsman Textile Effects Division

Contributors: Christopher Lim, Mindy Chee, Gemaine Goh

Design & Graphics: Cris Rene Denopol

If you have any questions or suggestions, please contact:

pr@huntsman.com

Huntsman (Singapore) Pte Ltd

Textile Effects Division

152 Beach Road, #29-00 Gateway East, Singapore 189721

UNSUBSCRIBE | UPDATE YOUR PROFILE