Overview

Sustainability will be a key theme at ITMA 2015

We are entering an exciting time as bookings begin for ITMA 2015 in Milan, and it’s already clear that sustainability will continue to be high on the agenda for textile machinery manufacturers and their customers. After several weeks in which the world has been horrified by the massive factory collapse in Bangladesh, with its tragic loss of more than 1,000 lives, the spotlight remains on the relationships between the big international textile and clothing brands and their supply chains. There is a clamour for more effective monitoring of safety and other employment standards, and for the brands to take greater responsibility for what goes on in the mills and factories of their suppliers.

The brands and retailers that are now stepping forward to sign a variety of accords to improve the conditions at manufacturing sites are, in many cases, the same ones that have contracted with Greenpeace to eliminate the emission of toxic chemicals, or with the US National Resource Defense Council to cut water, energy and other natural resource consumption. The repeated crises in this area, the publicity and campaigns – as well as the genuine goodwill of those who work in the industry, and their desire to achieve big performance improvements – all mean that the wide range of issues generally grouped under the heading of ‘Corporate Social Responsibility’ will remain a priority for textile manufacturers.

Nothing other than external supervision can correct the practices of managers who are careless with the safety of their workers. But in the area of eco-efficiency and avoidance of waste, simple housekeeping measures can often deliver improvements, as illustrated in the NRDC’s recommendations, reported below. And if those are insufficient, Europe’s innovative textile technology community can increasingly provide the answer.

Charles Beauduin,
President, CEMATEX
www.cematex.com
Fashion brands, including Gap, Banana Republic and Old Navy, have been linked to the dumping of industrial waste water containing a mix of toxic and hazardous chemicals and caustic water in Indonesia. This is according to research by Greenpeace International, which revealed that a ‘chemical cocktail’ is being dumped directly into the Citarum River, West Java, by PT Gistex Group, with which each of the brands does direct business.

The report – Toxic Threads: Polluting Paradise – details how the PT Gistex facility has taken advantage of a system that requires little transparency about its activities and where inadequate laws are failing to prevent the release of hazardous chemicals. A wide range of hazardous substances – including nonylphenol and tributyl phosphate – were identified in the water samples taken from the PT Gistex facility’s discharge outfalls. Many of these chemicals are toxic, while some have hormone-disrupting and highly persistent properties. The investigations also revealed waste water from one of the smaller outfalls to be extremely alkaline or ‘caustic’ (pH 14) indicating that this waste water had not received even the most basic treatment before discharge.

According to Greenpeace Southeast Asia, the textile industry is one of the major contributors to industrial toxic water pollution in West-Java, with 68% of industrial facilities on the Upper Citarum producing textiles.

A new ‘Zero Discharge’ scheme from Bureau Veritas, a global leader in testing, inspection and certification services, may provide a lifeline to textile manufacturers faced with new, challenging water commitments. The new service is designed to help the textile industry clean up the world’s waterways and achieve ambitious targets around environmental performance. Bureau Veritas Consumer Products Services will help companies to improve their performance by establishing policies, environmental auditing, and taking samples for collection and testing with detailed and extensive reporting. The service also includes establishing measures for continuous improvement.

Dr Samuel Wong, Bureau Veritas’s senior director, Technical Consultation Office, Greater China, said: “Our new zero discharge service has been designed to help manufacturers eliminate the pollution of waterways and demonstrate their environmental credentials so they can meet the needs of clients and remain part of the textiles supply chain. “Water testing is one of the pillars of the service, with 11 priority chemicals initially targeted. To implement the service, we are able to utilise our network of specialist labs across Asia, with more to follow in the Americas and Europe.”

Space applications have opened for ITMA 2015, the world’s most important and well established showcase for textile and garment manufacturing technology. ITMA takes place at Fiera Milano Rho, in Milan, Italy, from November 12-19, 2015. A unique exhibition of the latest technologies for the textile and garment value chain – from spinning, nonwovens, knitting and weaving, right through to finishing – ITMA 2015 will have 19 key chapters, with a renewed emphasis this time on Fibre & Yarn, Garment Making and Printing.

Initiatives to reinforce the theme of sustainable innovation include the Research & Education (R&E) Pavilion and a number of forward-looking conferences and workshops. The show is expected to span more than 200,000 square metres of exhibition space and provide a platform for 1,400 exhibitors. Information about participation in ITMA 2015 can be found at www.itma.com.

For exhibitors and contractors, there is also a programme of site visits to the Fiera Milano Rho, which can be found here.
Vlisco Group, the Dutch apparel-fabric producer, is to join forces with Cotton Made in Africa (CmiA) and will be the initiative’s first partner to both produce and market its products to local consumers in Africa. Vlisco’s popular printed fabrics are designed to match African tastes in colour and motif. Initially the partnership will be a traditional sponsorship relationship in which CmiA and Vlisco will share marketing and communication resources.

CmiA is an initiative of the Aid by Trade Foundation (AbTF), which helps people help themselves through trade, improving the living conditions of cotton farmers and their families in sub-Saharan Africa. Last year around 435,000 smallholder farmers from Benin, Zambia, Mozambique, Malawi and Côte d’Ivoire participated in CmiA. Zimbabwe was the most recent country to join the initiative, in November 2012. In training seminars CmiA teaches farmers modern, efficient and environmentally friendly cultivation methods, which help them improve the quality of their cotton, increase yields and so improve income.

Vlisco Group has identified an increasing demand for sustainable African cotton and will be CmiA’s first partner to create a complete textile supply chain on the African continent. The project will encompass its Vlisco brand, designed and produced in The Netherlands, and its Woodin, Uniwax and GTP brands, designed and manufactured in Ghana and Ivory Coast.

Jan van der Horst, director of corporate affairs at Vlisco and responsible for CSR and sustainability, said: “This cooperation fits with Vlisco Group’s policy to increase the use of locally sourced materials in its entire supply chain in the long term. “Based on our local presence in the markets, where CmiA is also active, we want to take it a step further, and approach smallholder farmers and show them how their cotton is sold on the African market through our products.”
The Oeko-Tex Association has recently launched the STeP (Sustainable Textile Production) certification system.

As a development of the previous Oeko-Tex Standard 1000, the new certification tool is designed to provide brands, retailers and manufacturers with an option for modular analysis of all sustainability-relevant factors such as quality management, use of chemicals, environmental protection, environmental management, social responsibility and occupational health and safety.

The aim of the STeP certification is to provide production facilities with targeted support for the continuing optimisation of their manufacturing technologies and working conditions, in the way of more environmental protection, workplace safety and social responsibility.

Assessment of the extent to which would-be STeP certified companies are demonstrating sustainable management is made online after receipt of the application, and the final company audit takes place on-site in the form of a transparent three-stage scoring system.

The STeP certificate issued shows the total score achieved as well as the individual values for each company area as a percentage. The precondition for the STeP certification is compliance with certain minimum requirements, which will be verified during the auditing of the production facilities by one of the Oeko-Tex institutes.

Existing certifications such as ISO 9001, ISO 14001, SA 8000 or OHSAS 18001 can be integrated into the STeP certification, so that the companies do not have to provide evidence twice.

Materials data assessed for Higg Index revision

June 30 is the final date for companies and organisations to submit data on the environmental performance of materials to The Sustainable Apparel Coalition (SAC), for evaluation and possible inclusion in the SAC’s Materials Sustainability Index (MSI).

The MSI’s purpose is to support product design teams in selecting environmentally preferable materials from environmentally preferable suppliers during the sourcing and design processes, as well as helping organisations more accurately to assess the overall environmental performance of their products. The submission period has run throughout June.

The MSI is currently used in the Higg Index 1.0 to evaluate materials, and this includes an environmental score for each material, which is calculated from ‘cradle-to-gate’ life-cycle data.

Ryan Young, Index manager for SAC, said: “For the MSI, we are piloting an open and transparent process to ensure that the most accurate data possible is used to evaluate materials in the Higg Index.”

The timing of the window for submitting new data will ensure that the submitted materials data can be evaluated for inclusion in the revised Higg Index 2.0, the SAC’s measurement tool for environmental and social performance, which is expected to be released this autumn.

GOTS-certified facilities surpass 3,000

The number of textile facilities becoming certified to the Global Organic Textile Standard (GOTS) increased by 11% to surpass the 3,000 mark in 2012. This is according to new data from the GOTS International Working Group, which said the number of certified facilities rose from 2,714 in 2011, to 3,016 in 2012.

GOTS is recognised worldwide as a leading processing standard for textiles made from organic fibres. The certification means consumers are purchasing items certified organic from field to finished product.

The ‘top twenty’ countries in terms of the total number of GOTS-certified facilities are: India, Turkey, China, Germany, Pakistan, South Korea, Italy, Bangladesh, Japan, UK, France, Portugal, USA, Austria, Netherlands, Greece, Hong Kong, Mauritius, Peru, and Switzerland.

Herbert Ladwig, GOTS managing director, said: “Increasingly, consumers are demanding ecologically and socially responsibly processed textiles, and companies are searching for tools to make their supply chains more sustainable. The result is a ‘pull effect’ and more companies becoming GOTS-certified.”
How to save precious resources

A few simple measures can help mills become more efficient and improve their environmental performance

Government and international bodies recognise that access to reliable and clean water resources could be the defining environmental issue of the 21st Century. Water extraction for industry accounts for around a fifth of global demand and the textile industry, wherever it exists, is always a big user. Add to this the irrigation requirements of the world’s cotton crops, and the impact on the environment – and on the availability of water to other users – is significant.

At the same time, the industry is often responsible, through the uncontrolled release of untreated dye and chemical wastewaters, for contaminating the rivers and streams relied on for drinking water by the general population. This problem has been vividly illustrated in a series of environmental scandals affecting China, Bangladesh and several other emerging economies.

The textile industry has long recognised the need to clean up its act in the area of wastewater treatment and regulatory bodies throughout the world have imposed standards for the removal of colour and other impurities – although the policing of these standards is variable and, in parts of the developing world, the imperative for rapid economic growth has sometimes led authorities to turn a blind eye to chronic bad practice.

But for textile processors, a concern for responsible use of water has a commercial as well as an ethical aspect. Water is an increasingly expensive commodity and, in many processes, heating it consumes equally expensive energy. For more than a decade, therefore, efforts have been made to devise processes and machinery that require less water to carry out the essential tasks of coloration and finishing. There has also been a move to conserve water by on-site treatment and re-use.

More recently, this ‘bottom line’ incentive has received added stimulus from the textile industry’s principal customers – the big brands and high street retailers. As environmental matters have risen inexorably up consumers’ table of priorities, many retailers have found it necessary to explain and justify their sourcing arrangements and the practices of their suppliers.

Several of the biggest have signed up to the Clean by Design project, an initiative of the US-based charity, the Natural Resources Defense Council (NRDC). Calculating that textile manufacturing consumes and pollutes as much as 200 tons of water per ton of fabric, NRDC says that if just 100 of China’s small- to medium-sized textile mills implemented a number of recommended improvements, the country would save more than 16 million metric tons of water annually – enough to provide 12.4 million people drinking water for a year.

It’s a message that has been heard by retail giants including Wal-Mart, Gap, Levi, Nike and Marks & Spencer – as well as by the huge buying house Li and Fung – all of which are among the major companies co-operating with the project to improve the performance of their supply chains.

Part of the project was named the Responsible Sourcing Initiative (RSI) and saw NRDC’s team visit more than a dozen Chinese textile mills, selecting five identified as ‘typical’ dyeing and finishing operations for in-depth pollution-prevention assessments.

The assessments revealed ten simple, practical, low-cost, and quick payback opportunities to reduce water, energy and chemical use. Taken together, according to NRDC,
the measures identified can save around 25% of water and 30% of fuel use – and pay for themselves in less than eight months. One mill, Redbud Textile Company in Changshu, adopted just three of these practices at a one-off cost of $72,000 but saved 23% in water use and an 11% in coal consumption, with savings of nearly $840,000 a year.

The measures identified were:
- Leak detection and preventive maintenance
- Re-use of non-contact cooling water
- Re-use of steam condensate
- Reuse of water from the pre-treatment process
- Recovery of heat from hot rinse water
- Pre-screening of coal
- Better maintenance of steam traps
- Insulation of pipes, valves and flanges
- Recovery of heat from smokestacks
- Optimisation of compressed-air systems

Above all, says NRDC, one practice underpins all the others, and should be adopted immediately by all textile mills. It is the installation of meters or measurement software to track water, steam, and electricity consumption at the process and equipment level, as well as for the entire mill.

And the opportunities don’t stop there. An equal or ever greater area for improvement is process optimisation – modifying the pre-treatment, dyeing, and finishing processes themselves to use smaller quantities of water or heat. Processes can be modified to use smaller quantities of chemicals and require less rinsing, for example, and factory production planning can be improved to minimise idle machine time. Most promising is improving ‘right-first-time’ dyeing rates, which improves profitability and on time delivery and substantially reduces the environmental impact associated with re-processing fabric to correct mistakes.

Pressures for water awareness can only get stronger. Even in China – once notorious for its lack of controls – the government has fixed a set of environmental criteria for the dyeing and printing industry, which came into force in 2010. The guidelines say dyeing and printing mills cannot be constructed in areas where water sources are protected or on major riversides and, where the potential to reduce environmental impact is limited, new dyeing development must be linked to the closure of older production facilities. New units must reach international standards and all waste water must be treated in the mill, with at least 35% recycling. Similar tight standards are laid down for energy usage.

NRDC says many mills could take significant and simple steps towards reducing waste and cost by implementing small changes on the factory floor, regardless of whether they are ready to implement its own best practices. These ‘good housekeeping’ measures can be undertaken with little effort but still have big impact—as much as 5 to 10 percent savings in resources in some cases.

www.nrdc.org

| Table 1: Ten Best Practices for Responsible Sourcing from Textile Mills |
|-----------------------------|-----------------|------|----------|
| Percentage Resources Saved | Cost            | Payback Period |
| Leak detection, preventive maintenance, improved cleaning | Water: 2-5%; Energy: 1.5-5% | Insignificant | < 1 month |
| Reuse cooling water: from singeing from air compressor system from preshrink | Energy: 1.6-1.8% Water: 2-5% Water: 2% Water: 1% | $1,500 | < 1 month |
| Reuse condensate | Water: 2-3%; Energy: 0.8-3.2% | Variable | 1 month - 1 year |
| Reuse process water: from bleaching from mercerising | Water: 4% Water: 3% | $3,000 - $30,000 | < 1 month |
| Recover heat from hot rinse water | Energy: 2-12% | $44,000 - $95,000 | 2 - 4 months |
| Pre-screen coal | Energy: 3% | $35,000 | 5 months |
| Maintain steam traps | Energy: 1-5% | Insignificant | < 1 month |
| Insulate pipes, valves, and flanges | Energy: 0.01-0.5% | $4,500 | < 1 month |
| Recover heat from smokestacks | Energy: 1% | $22,000 | 8 months |
| Optimise compressed air system | Electricity: 0.3-3% | Insignificant | < 1 month |

Source: NRDC

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<th>Table 2: Process Recommendations</th>
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<td>Undertake a failure analysis when things go wrong</td>
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<td>Standardise optimal methods and recipes</td>
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<td>Substitute enzyme technology in bleaching pre-treatment</td>
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<td>Investigate opportunities to reduce salt in individual reactive dyeing recipes</td>
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<td>Increase reliance on higher fixation dyes</td>
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<td>Improve machine utilisation</td>
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<td>Schedule colours to minimise extensive cleaning between each batch</td>
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<td>Monitor continuously to check whether implementation of improvements is in place</td>
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Source: NRDC
Sustainability has been a loosely-used watch-word in the past. But today it is a competitive factor: volatile prices for commodities and for energy are obviously worrisome signs for textile manufacturers in almost all countries. Furthermore, sustainability is a subject to which the textile industry is increasingly confronted by legislation, by brands and retailers and by consumers.

More and more textile manufacturers are studying their material flow and their production process under the aspect of sustainability with regard to efficiency, in order to identify savings potentials. But how can efficiency in energy or raw materials increase in a substantial manner? One solution can be found in technology. The latest machinery offers the potential for saving energy and raw material that definitely pays off. Technological upgrading is one of the keys to realising sustainable textile production and so to remaining competitive.

But for textile producers it is not easy to get an orientation, because the market is flooded with sustainability logos – many of them based on highly questionable criteria.

Textile machines are no refrigerators

Machine-based logos and classification of textile machines into, for example, energy-efficiency classes are no solution from a professional perspective. Textile machines are no refrigerators!

VDMA’s sustainability initiative, Blue Competence, therefore defines management criteria and process standards. They apply to all alliance members taking part in the initiative. VDMA has developed the Blue Competence initiative for the whole range of its machinery industry. Blue Competence explains and positions the machinery manufacturers as the technical problem-solvers regarding the requirements of the society of today and of the future in saving energy, material and resources.

Management criteria and process standards

Alliance member companies are responsible for following engineering-design guidelines with sustainability criteria over the entire lifecycle of a machine. They need to show in product documentation and instructions how to operate their machines in a resource-friendly manner. Alliance members have to offer expert advice to customers. This means advice on energy efficiency and resource conservation for the daily operating process.

The effectiveness of products has to be quantified in case studies. Alliance members of Blue Competence are responsible for maintaining a management system, setting and monitoring sustainability and quality targets. And they have to assign sustainability topics directly to a member of the board of management.

Success stories – Sustainability meets profit

The German textile-machinery engineering industry plays a prominent role in developing and realising sustainable solutions. Success stories from member companies themed “Sustainability meets profit” provide concrete examples of how to save raw material and energy and so to realise cost savings. The complete success stories can be read and downloaded on www.machines-for-textiles.com/application-reports.
Textile waste recycling
Margasa has introduced a compact textile waste recycling line, which it has called the Benjamin. The system has only one or two cylinders, compared to the traditional five or six, and the required fibre opening is obtained after just a few cycles. In each of the cycles, the settings adjust automatically to the requirements of the material opening. The resulting end product is said to be comparable to existing practices used in open-end spinning and nonwoven processes. www.margasa.com

Eco-enhanced aramid dyeing
Bozzetto Group’s new dye carrier for processing aramid fibres, Cindye DNK, is said to have ecological as well as performance benefits. Described as a ‘major breakthrough’ with respect to the solvents used, it delivers good colour yield and – due to its good biodegradability – lower environmental impact, according to Bozzetto. It is also effective for hard-to-dye fibres such as PBI and PPS. www.bozzetto-group.com

Corona treatment with spray finishing
Ahlbrandt System GmbH is helping save resources in textile finishing with a system for corona modification of the fibre surface and controlled spray application of chemicals, followed by drying – all in a single solution. The system does away with classic dip tanks, which require large amounts of drying energy because of the immense water volumes. It simultaneously saves energy, water and chemicals, while enabling the one-sided or even double-sided, bi-functional finishing. www.ahlbrandt.de

GOTS-certified inks
Durst has received Global Organic Textile Standard (GOTS) Certification for its Kappa Ink R reactive-dye digital printing inks, developed for the company’s Kappa 180 high-volume fabric printer. The eco-friendly, water-based inks are designed to print on pure or mixtures with at least 60% cotton. www.durst.it

Energy-saving needles
Groz-Beckert’s new EcoStar universal felting needle is the first result of an initiative to assist nonwovens manufacturers, improving end-product surface quality and giving longer needle service life. Benefits are said to include reduced energy consumption and lower penetration force, but the same efficiency. Reduced energy consumption is also a feature of the company’s newly-developed HyTec D Jet Strip for hydroentangled products. www.groz-beckert.com

Low energy coating
A. Monforts Textilmaschinen has introduced the second generation of its Eco Applicator system for the application of liquors or functional chemicals to textiles. Complying with the VDMA’s Blue Competence sustainability initiative, the Eco Applicator soft coating process is said to offer significant energy savings with reduced liquor for a wide range of applications, such as felt finishes, coated materials and medical textiles. www.monforts.com

Waterless dyeing wins big brand support
The novel concept of waterless dyeing has received a boost with the announcement that IKEA GreenTech – a venture-capital company with the renowned IKEA Group furniture business – is investing in DyeCoo Textile Systems, of the Netherlands. DyeCoo has made an impact over the past two years with its technology that uses supercritical carbon dioxide (CO2) as a dye carrier, replacing the large amount of water and chemicals used in traditional dyeing processes. The CO2 is almost completely reusable within the closed system. IKEA Group says the investment will support the delivery of its sustainability strategy, People & Planet Positive, which includes challenging commitments to make its products, operations and supply chain more sustainable.
Christian Ehrenborg, managing director at IKEA GreenTech, said: “DyeCoo’s waterless dyeing technology is a truly innovative system that could bring real environmental and cost benefits for the textile industry by reducing water and chemical use. Through the partnership, IKEA will help to speed up the development and availability of the technology.”

The significant potential of the waterless dyeing process has also been recognised by the leading apparel and footwear brand, NIKE, which invested in DyeCoo in 2012.

Hannah Jones, Nike’s VP of sustainable business and innovation, said: “IKEA’s decision to invest in this technology signals an exciting step in cross-industry collaboration. A key objective for Nike, when investing in DyeCoo, was to scale the technology to benefit consumers, business and the environment. We’re delighted IKEA shares a similar objective to accelerate development of more sustainable materials and manufacturing processes.”

One motive for both companies is to exploit the potential benefits of the waterless technology in Asia, where environmental pollution in the discharges from manufacturing processes is an ongoing problem. By removing the need to use water in the dyeing process, the system completely eliminates the risk of contaminated waste water being discharged. “IKEA strives to have a positive impact on people and the planet. By helping to scale the DyeCoo system for use with larger production volumes, we could help to make a big difference for the environment as well as workers and communities around textile facilities,” added Steve Howard, chief sustainability officer of the IKEA Group.

The first range of machines developed and manufactured by DyeCoo are for the waterless dyeing of polyester fabric. As well as helping to scale the processes for dyeing polyester, the partnership with IKEA will speed up the development of processes and machines for dyeing cotton.

The DyeCoo technology was first introduced to commercial production in 2011 at Thailand’s Tong Siang Co Ltd, part of the Yeh Group. It exploits the fact that when carbon dioxide is heated to above 31°C and pressurised to above 74 bar, it becomes ‘supercritical’ – a state of matter that can be seen as either an expanded liquid, or a heavily compressed gas. One characteristic of a supercritical fluid is a high (liquid-like) density that enables dissolution of compounds such as dyes.

In the DyeCoo system, supercritical CO2 (scCO2) is heated to 120°C and pressurised to 250 bar. In this state it penetrates synthetic fibres, acting as a swelling agent during dyeing and enhancing the diffusion of dyes deep into the fibres. Afterwards the CO2 is gasified, so that the remaining dye precipitates and the clean CO2 can be recycled by pumping it back to the dyeing vessel.