

Accelerating Smart Power and Renewable Energy in India (ASPIRE)

WEBINAR ON

Waterless Smart Dyeing and Finishing Technology

for Textile Sector

When: 02 February 2023

Time: 15:30 – 17:00 Hrs (IST) / 10:00 – 11:30 Hrs (BST)



Background:

The India-UK bilateral “ASPIRE” programme aims to strengthen partnerships between UK technology/ solution suppliers and Indian industries to accelerate adoption of industrial energy efficiency and decarbonisation measures. Indian textile industry contributes ~2% to the national GDP accounting for ~4% of the global trade in textiles and apparel. About 168 designated textile units in India together account for ~2.71 MTOE of energy consumption, ~9.27 MTCO_{2e} of emissions and offer energy-saving potential of 0.234 MTOE. Leading textile industries in India have announced several energy efficiency initiatives as part of their decarbonisation and net-zero commitments. In view of this, a one-day sectoral workshop on “**Best Practices in Energy Efficiency & Decarbonisation in Textile Sector**” was organized on 8th December 2022 under ASPIRE programme at Raymond Ltd. (Chhindwara, India).

During the workshop, stakeholders deliberated on various best practices and technology interventions required to accelerate decarbonisation of the textile sector, which is both resource and energy intensive. Amongst the various innovative and new-age global technologies presented during the workshop, Alchemie’s waterless smart dyeing and finishing technology was identified by stakeholders as one of the potential solutions for reducing industrial energy consumption. In view of this, a webinar is being organized on 02 February 2023, with focus on disseminating information on Alchemie’s low-carbon and sustainable **waterless smart dyeing & finishing technology**.

Technology brief: Alchemie Technologies (Alchemie) is a UK-based technology company with a mission to transform the textile industry with clean-tech digital manufacturing solutions that eliminates the environmental impact of polluting textile processes. It’s digital approach to textile dyeing and finishing enables a step towards sustainability. Highlights of the technology is attached in Annexure.

Objectives of the webinar: (i) Share details of the new-age “Waterless Smart Dyeing and Finishing Technology” offered by Alchemie for sustainable textile dyeing process; (ii) Provide insights on the potential of Alchemie’s clean-tech digital manufacturing solution that reduces the environmental impact by eliminating wastewater emissions and enables reduction of energy consumption by over 85%; (iii) Understand views of Indian textile industries on the nature of support required for greater and wider adoption of such innovative industrial energy efficiency/ decarbonisation technologies and solutions

Agenda for the webinar:

Time (IST)	Session	Presenter
15:30 – 15:35	Welcome Address and Introduction	Sanyukta Das Gupta , Smart Power Advisor, FCDO, British High Commission
15:35 – 16:15	Presentation on Waterless Smart Dyeing and Finishing Technology	Alchemie Technology (UK)
16:15 – 16:55	Q&A Session/ Open House (including understanding expectations from ASPIRE)	Moderated by ASPIRE Team
16:55 – 17:00	Closing Remarks & Vote of Thanks	ASPIRE Team

Annexure – Highlights of Alchemie’s Waterless Smart Dyeing & Finishing Technology

1. Alchemie Endeavour™: Waterless Smart Dyeing

Endeavour™ is the world’s first digital dyeing process. It utilises advanced digital manufacturing technology to deliver a breakthrough in the cost structure, supply chain capability and sustainability of fabric colouration. As a digital on-demand process, it reduces minimum run lengths and enables rapid changeovers between colours and fabrics. The process enables a step-change in the sustainability of textile dyeing by eliminating wastewater emissions and reducing carbon footprint by over 85%. Due to the elimination of wastewater, the Endeavour™ system can be installed in water-poor regions and enables on-demand dyeing in garment manufacturers. Endeavour™ process can reduce operational costs by over 50%, with typical capital payback period of 12 months.

Endeavour™ process can also integrate with supply chain management tools to reduce supply chain waste and retail discounting. Endeavour™ utilises an advanced digital colourant application and fixation technology to deliver single pass roll-to-roll solid colours to fabrics. The Endeavour™ digital dye applicator applies liquid colourants to fabrics using a unique non-contact high-energy jetting of nanodroplets, delivering exceptionally homogeneous colour throughout the fabric. The Endeavour process is designed to be compatible with all colourant chemistries used in traditional dyeing. The system can also be used with reactive, acid dyes, Vat dyes and a range of speciality colourants to enable digital dyeing with a wide range of substrate types.

The Endeavour process utilises advanced digital technology for colour matching and is capable of precision colour matching, shade control and can be used with a wide range of fabrics. Alchemie have also developed the ColourHit™ technique for rapid digital colour matching using a proprietary software platform that utilises a database of colour matches. The machines are fully software controlled and connected to enable integration with automated supply chain systems and advanced Industry 4.0 production facilities.



Figure 1: Alchemie Endeavour™

Technical specifications:

Throughput (15 m/min)	>1500 m ² /hr
Maximum web width	1.8m
Substrate basis weight	50 - 500gsm
Substrate	Polyester, cotton, polycotton, nylon
Changeover time	< 15 mins
Dimensions	12.6 m x 6.3 m x 3.5 m
Power requirements	415V 3 phase 50/60 Hz electrical supply

2. Alchemie Novara™: Digital Textile Finishing

Novara™ digital textile finishing technology delivers sustainability with a precision digital application of functional finishes to textiles. Novara™ is a non-contact technique, that utilizes an array of digitally controlled nozzles to deliver precisely defined finishing to the fabric. Delivering finishing only where it is needed, with precision 2D digital patterning and registered two-sided coating. The key benefits of technology include cost reduction, chemistry savings, and energy reduction. The Novara™ precision digital finishing system can deliver cost reductions of over 30% vs pad coating due to the significant reductions in energy and chemistry consumption. Cost saving in excess of 50% can also be achieved in applications where the finish is only required on one side of the fabric.

The Novara™ digital finishing process can reduce energy consumption by over 85% vs traditional padding processes. By delivering finishing chemistry at higher concentrations, targeted to the areas needed, the technology demonstrated that durable water-repellent (DWR) finishes can be delivered to fabric substrates with 85% less energy and 25% less chemistry than pad coating. This technology has demonstrated a wide range of finish functionalities like waterproof, stain resistant, self-cooling, fire-retardant, metallics / visual effects, anti-viral, anti-bacterial, anti-odor, and UV-Protection.

The Novara™ system is fully connected and automated, enabling Industry 4.0 manufacturing platforms to be delivered. The system can be connected to MES/MRP systems, delivering unparalleled supply chain agility and flexibility. The Novara™ system can be implemented into existing production lines and capital investment payback is typically achieved in less than 12 months.

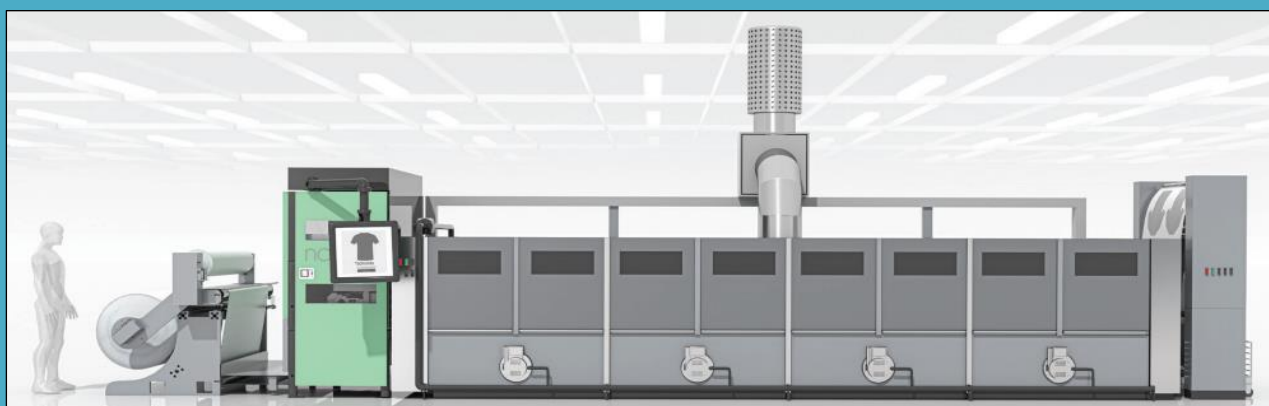


Figure 2: The Novara™ system

Technical specifications:

Throughput	Up to 100m/min
Web width	1.8m and 3.6m
2D pattern resolution	~1mm
Side application	Single or duplex application
Finishing chemistries	Up to 50 cPoise, water-based, up to 50C
Multi-functionality	2D and/or sided patterning of up to two functionalities
Substrate basis weight	50 - 1000gsm
Substrate	Polyester, Nylon, Cotton, Wool, Blends
Changeover time	< 15 mins automated
Dimensions	2 x 2.5 x 2.5 m
In-line drying	IR in-line (optional)
Connectivity	Ready for Industry 4.0
Power requirements	415V 3 phase 50/60 Hz electrical supply

Alchemie's Key Clients/ Partners:



For more information, please join the webinar on 2nd February 2023 <https://www.alchemietechnology.com/>