What challenge is the textile industry facing?

The worldwide textile industry is under enormous pressure. It holds the fourth position in terms of negative environmental impact and its contribution to climate change. The fashion industry contributes significantly to waste production, generating 2.1 billion tons annually. Only 1% of the clothing produced is recycled into new textiles. By 2030, the consumption of clothing and footwear is projected to increase by 63%, reaching 102 million tons.

The need has been recognised also from the EU. In 2022 the European Commission developed a strategy in order to counteract the environmental effect. The overall goal is to transform the industry into a more sustainable one by 2030.

To tackle the environmental impact of the textile industry, the EU is implementing a range of measures. The result is the implementation of regulations and innovative solutions. For instance a digital product passport is being developed to provide comprehensive information on a product’s environmental impact. Information dissemination on truly sustainable textiles is promoted through EU labels. Additionally, extended producer responsibility is emphasized, encouraging reusability and recycling of textile waste, fostering a circular economy.
Sustainability – the dominant topic at ITMA

This year’s ITMA was characterised by the challenge of reducing the environmental impact. Exhibitors at ITMA unequivocally recognised the urgent need to address the pressing concerns, signaling a significant shift in the industry’s mindset and priorities.

The leading topics at ITMA can be summarised into six major areas, which closely align with the strategic goals of the European Commission. These areas reflect the industry’s commitment to sustainable practices and exemplify the collective effort to address the pressing concerns of sustainability and circularity in the textile sector.
Leading aspects of sustainability

Adoption of Sustainable Fibres: There is a growing interest in the use of sustainable fibres, such as organic cotton, recycled polyester, hemp, as well as new fibre development.

Recycling and Upcycling: The textile industry is exploring ways to reduce waste and increase circularity through recycling and upcycling. This involves repurposing textile waste into new products or using recycled materials to create new textiles.

Chemical Management: The industry is also working to reduce the use of harmful chemicals in textile production and improve chemical management practices. This includes the use of safer chemicals and processes, biobased materials as well as better waste treatment and disposal.

Reduction & Savings: Companies in the textile industry are generally focussing on reduction in for example time, energy, water or CO₂ emissions.

Circular Business Models: Companies are exploring new business models that prioritise circularity, such as rental and resale programs, which can extend the life of textiles and reduce waste.

Transparency and Traceability: There is a growing demand for transparency and traceability in the textile industry, with consumers and stakeholders calling for greater accountability and disclosure regarding the environmental and social impact of textile production.
Our highlights from the ITMA

Several companies presented their innovative concepts at ITMA, establishing a standard for a more sustainable future in the textile industry.

These firms introduced notable advancements and developments that showcased their commitment to sustainability. In the subsequent slides, we highlight some of the major innovations showcased at the event.
NOOSA is an innovative and circular textile fibre company founded in 2019. They invented a technology to help reduce waste by collecting clothes at their end-of-life to recycle them back into a 100 % virgin fibre.

- The fibre is made from corn that can be used in different applications
- They have a high demand on the market, because they are producing a sustainable fibre from Europe which is not hemp, linen or jute.
- They are building up a production in Belgium starting in the near future.

Learn more: http://www.noosafiber.com/
Intelligent Fabric Defect Identification and Digital Mapping

- Identification of stains on the fabric
- Classification of “good” and “not good”
- Current development of a digital twin for production so that the cutting patterns don’t include the stain
  → Patterns explicitly omit errors

Learn more:
https://www.apparel4tech.com/
Haelixa’s traceability solution ensures that the products bought or sold are actually made from the specific material specified in the transaction documentation, supporting standards, certifications and mass balance systems.

Mark

The DNA identifier is supplied as a ready-to-use liquid formulation for application by local personnel using automated spray systems. The application will be audited on request.

Verify

Haelixa (or a partner laboratory) tests the product, and a report is generated in the Haelixa database. The customer is given access to the digital reports, which can be uploaded to any ERP or blockchain.

Communicate

The ingredient label “Marked and Traced by Haelixa” communicates that there is a trustworthy technological traceability solution. One option is to add a QR code which directs to a consumer-facing page with supply chain data, maps and/or test reports.

Learn more: https://www.haelixa.com/
COLOURizd™ is a technology that ensures a sustainable dyeing process of cellulosic yarn based on spray application.

Some benefits are:

- Spray application with concentrated dye stuff solution
- No complete penetration of the dye stuff
- Similar to stone washed effect
- Water and energy savings
- Lower CO₂ footprint

Learn more: https://colourizd.com/
NTX presents several different application technologies.

One specific technology is the NTX® Cooltrans® solution, a waterless textile colorization technology. The NTX Cooltrans solution can be applied for example on denim fabrics. That means white fabric is being colorized and then cut and sewed.

Some benefits are:

- Water and energy saving
- Lower CO₂ footprint
- Dyeing process with highly concentrated liquors
- Mainly kiss roll application with engraved rollers

Learn more: https://www.ntx.global/
ITA Augsburg – Recycling Atelier

The ITA Augsburg is an internationally renowned research and education institution specialised in textile engineering and technology.

In particular they focus on recycling technologies for textiles of all kinds (mainly mechanical recycling), the digitalisation of the textile processes and on the development of products according to design for Recycling principles.

One specific project is the “Walk4Recycling”. It is a cooperation of different machine producers for the recycling of CO and CO/PES clothing.

Learn more:
Colourtex

Colourtex is the largest dyestuff company in the Indian subcontinent for textiles and leather. The products are GOTS approved, Oekotex compliant and the company is just like RUDOLF a bluesign partner.

With the sustainable coloration solutions called “CoraCARE EF” Colourtex offers reactive dyes for a sustainable textile processing for all types of fibres.

Some benefits are:

- Banned Amine free
- DETOX 2020/ZDHC
- Shortened dyeing cycle
- Water and energy savings

Learn more:

http://colourtex.co.in/product-category/textile-dyes/cellulosics/coracare-ef/
FibreTrace invented a solution of mapping the global textile supply chain digitally.
FibreTrace is a cloud-based SAAS platform that tracks and verifies fibres at every stage of the textile supply chain - from raw fibre to store.

“We can provide textile supply chain transparency with either one of our products – FibreTrace Mapped or FibreTrace Verified”

Learn more:
https://www.fibretrace.io/
Pure Loop offers a solution for PET Recycling.

Within the EREMA GROUP, PURE LOOP stands for highly efficient recycling of clean production waste using shredder-extruder technology. The shredder-extruder converts the waste into recycled plastic pellets. The technology used makes the machines from PURE LOOP real all-rounders when it comes to materials. Recycling is possible regardless of the weight, volume or tensile strength of the materials.

Learn more:

https://www.pureloop.com/de/home/
TwineX4 utilises an innovative digital dyeing technique that eliminates the need for water. This process makes TwineX4 energy-efficient, consuming approximately 2.7 times less energy per kilogram compared to traditional dyeing methods.

By enabling in-house dyeing, customers are able to produce precise lengths of thread and yarn, reducing waste by eight times compared to external supplier MOQs. This approach aligns with the adoption of waste-to-landfill reduction policies, minimising the environmental impact.

In addition, in-house production of dyed threads and yarns contributes to lower consumption of electricity and carbon emissions by streamlining the supply chain and reducing the need for excessive inventory storage.

Learn more:

https://twine-s.com/ts-1800/
PaperTale

PaperTale is building an ecosystem that gathers and verifies real-time supply chain data.

PaperTale creates a supply chain app used by the craftsmen to ensure payment and monitor contracts/worked hours. It tracks material movement using NFC-tags.

Brands/factories access environmental and social impact data, including payments to workers, via the PaperTale Network. All data is registered on a public Blockchain for increased trust.

The PaperTale Consumer App allows consumers to scan garments, view their journey, environmental impact, and confirm lawful payments. It also enables users to show appreciation to craftsmen with a smiley.

Learn more:
https://papertale.org/impact/
RUDOLF’s contribution to ITMA 2023
At ITMA 2023, RUDOLF presented a strategic perspective that maximizes synergies between advanced product innovation and a tangible reduction of overall environmental impact through a process of "REDUCE, REFOCUS and RETHINK".
REDUCE
Rigorous reduction of hazardous substances

REFOCUS
Focus on bio-based and recycled raw materials

RETHINK
Rethink established processes
REDUCE

BIONIC FINISH® ECO - An idea borrowed from Mother Nature. Based on proprietary dendrimer technology, RUDOLF strengthens the extended family of unique non-halogenated, APEO-free, fluorine-free DWR formulations suited for different materials and designed for different applications and needs.

Cycle-free silicone softeners manufactured through RUDOLF’s best technology and that contain less than 0.1% silicone cycles.
From Mother Nature we borrowed the idea of dendrimers, molecules made of multi-functional branches that interact among themselves, co-crystallise, and self-organise into highly ordered, multi-component systems. They optimise the whole structure, attach to the textile and embed fluorine-free water repellent performance.

BIONIC-FINISH® ECO, based on proprietary dendrimer technology, comes as a family of unique non-halogenated, APEO-free, fluorine-free formulations suited for different materials and designed for different applications and needs.

Find our products at https://rudolf.de/technologies/bionic-finish-eco
REFOCUS

A completely new and vastly leading approach to bio-based performance and process chemicals. The perfected BIO-LOGIC® range is a step forward and the common denominator is functionality provided by natural, sustainable and renewable raw materials. A few examples of product innovations that are part of this new approach:

- RUCOFIN® GST series (silicone softening with bio-based content)
- RUCOGEN® RCUD (Universal washing agent)
- RUCO®-STAB RCPF (Bleaching stabiliser for cellulosic fibres)
- VEROLAN® RCSQ (Sequestering agent)

RUDOLF continues its commitment to CYCLE-LOGIC®, the upcycling of post-consumer, disposable and non-returnable plastics into valuable textile chemistry. Recycled PET becomes the raw material for the manufacturing of textile auxiliaries without attacking new, virgin resources.
As a result of our scientific expertise, we are able to present high-performance products from a wide range of applications with a high biobased carbon content. By increasing the use of renewable raw materials in chemical production, we are laying the base for a sustainable future.

The increased development, procurement and use of bio-based products reduces the need for petrochemicals and helps to reduce the negative impact on the environment. RUDOLF technologies guarantee our customers an optimal combination of performance, durability, protection, wellbeing and sustainability.

Find our products at https://rudolf.de/bio-logic
Recycled PET bottles, in the form of washed flakes, can now be the raw material for the manufacturing of some of our textile auxiliaries without attacking new, virgin resources.

This tremendous innovation falls under the CYCLE-LOGIC® brand, part of RUDOLF Aspirational Chemistry® and a new horizon for the textile and apparel industries.

RUDOLF continues its commitment to CYCLE-LOGIC®, the upcycling of post-consumer, disposable and non-returnable plastics into valuable textile chemistry. Recycled PET becomes the raw material for the manufacturing of textile auxiliaries without attacking new, virgin resources.

Find our products at https://rudolf.de/cycle-logic
RETHINK

A new generation of systems designed to simulate, analyse and measure the environmental impact of a given industrial textile process to then provide insights into the optimisation of resources, costs and CO2 emissions.
Service solutions

At RUDOLF, we don’t only sell products, we provide services. As a service-oriented company, we go above and beyond to support you in each individual step of the textile value chain. We ensure specialists in R&D, product management and technical sales in all fields of application from pretreatment and dyeing, finishing, coating to garment solutions.

Our expert team is dedicated to ensure your satisfaction throughout your journey with us. We understand that every customer is unique, and that’s why we offer personalised assistance tailored to your specific needs. Our commitment to excellence is reflected in our well-equipped technical application laboratory facilities. Only in our headquarter in Geretsried, Germany we have eleven laboratories where we can develop, evaluate, and analyse customer solutions to guarantee the highest level of quality and precision. Whether you prefer on-site evaluations at your location or conducting trials in-house, we have the flexibility to accommodate your requirements.

We firmly believe that customer satisfaction is the cornerstone of our success, and we strive to build long-lasting partnerships based on trust and mutual growth. We look forward to serving you and exceeding your expectations.
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Sources

https://eur-lex.europa.eu/resource.html?uri=cellar:9d2e47d1-b0f3-11ec-83e1-01aa75ed71a1.0013.02/DOC_1&format=PDF
RUDOLF | Better chemistry
http://www.noosafiber.com/
https://www.apparel4tech.com/
https://www.haelixa.com/
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https://papertale.org/impact/
Rudolf GmbH
Altvaterstraße 58-64
82538 Geretsried
Germany

ph + 49 8171 53 - 0
fax + 49 81 71 53 - 191
info@rudolf.de
rudolf.de