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NO. 10

Wool Road

 YUNSA
CREATION OF FABRICS
— 50 Years —

Wool Road



Yünsa R&D Center publication.

TABLE OF CONTENTS

07 OPERATIONS MANAGEMENT

09 R&D MANAGEMENT

11 PROJECT MANAGEMENT AND INTELLECTUAL
PROPERTY PLATFORM ACTIVITIES

13 SUSTAINABILITY PLATFORM ACTIVITIES

TABLE OF CONTENTS

16 TECHNOLOGY PLATFORM ACTIVITIES

17 NEW PRODUCT AND INNOVATION
PLATFORM ACTIVITIES

20 OUR ACTIVITIES

Dear Stakeholders and Colleagues,

While the crisis and transformation process we are going through has become part of our business, it also continues to be an obstacle in front of us as a more challenging factor than ever before. Whereas in the past the focus of management was on sustainable growth, today it is on managing multiple crises and the VUCA (Variability, Uncertainty, Complexity, Ambiguity) world. As a company, we continue to work rapidly in line with our European Leadership 2025 vision, updating the way we work in every respect.

Having successfully completed the first quarter of the year, we are proud to have launched Europe's most advanced paint facilities after almost a year of investment. We have taken a serious step towards achieving the goals set out in our sustainability roadmap.

After our investment in the dyeing plants, where the consumption of water, energy and chemicals has been reduced and the ergonomics of the employees has been significantly improved by increasing the level of automation, our works and projects that will make Yünsa a leader in its sector are continuing rapidly. After the ITMA2023 International Textile Machinery Exhibition in June, we aim to finalise our investment feasibility studies to ensure the modernisation and competitive advantage of our two weaving, spinning and finishing mills, having studied the latest technologies.

As R&D, we continue to listen to the voices of our internal and external customers. We continue to work on solving the inputs we receive, mainly by using our existing competencies. We are also diversifying the projects of our R&D team to position them in areas that we can shift with our existing competencies and what Yünsa will produce in the future. While we have continued to increase the number of renewable products in our product portfolio, we have also continued to develop our processes and products to overcome the difficulties they pose in terms of quality.

We have accelerated our efforts to recycle textile waste that is used by end-users and has reached the end of its commercial life, and we have developed prototypes for the production of fibres and yarns. We have now intensified our efforts to turn these into commercial products. Our products are one step closer to commercialisation in the areas of filter fabrics used in technical textiles and standard abrasion fabrics used in fabric testing. Under the technology and machine development platform, we are continuing our projects to improve energy efficiency and to eliminate the performance limitations of our existing machines.

We see a more challenging period ahead. Our aim is to continue to succeed in our endeavours by strengthening and increasing our efforts, and we will continue to take important steps to support ourselves in line with our strategic objectives by enhancing our existing knowledge, skills and experience in a way that will add value to Yünsa.

Engin SARIBÜYÜK
Operations Director

... WHY
YÜNSA?

WE CONVERT PET BOTTLES INTO FABRIC!



Dear Stakeholders and Colleagues,

In the first five months of 2023, we continued our activities with respect for the environment with the awareness of transparency, openness, accountability, participation, efficiency, compliance with the law and social responsibility required by good governance.

In line with our Corporate Sustainability Principles, we continued our product and machine-based designs, preferring environmentally friendly chemicals and raw materials, with the aim of creating value for all our stakeholders by considering our social and environmental responsibilities as an R&D centre to provide textile solutions that add value to life in the innovation ecosystem.

According to the life cycle analysis performed with our R-Pet usage rate for 2022 based on product designs to meet the requirements of the Carbon Transparency Project, we avoided 94,406 kg of CO₂ emissions, saved 1,176,796 kW of energy and 310,893 litres of water.

We calculated our GHG emissions for 2022 as R&D in all categories as part of GHG emission verification studies to reduce GHG emissions by continuously raising awareness among all our stakeholders. Our reporting is based on international standards. In March we underwent a verification audit by Bureau Veritas, an accredited institution. The process was certified. As a result, we were entitled to receive the ISO 14064-1:2018 Carbon Footprint Verification Certificate.

The Carbon Footprint Verification Certificate ensures that companies' environmental commitments are recognised by their stakeholders. The document, which also provides a competitive advantage in the marketplace, can minimise costs in many areas by monitoring emission sources.

In 2022, we have certified all of our electrical energy consumption under the Green Energy framework. We were proud to receive our YEK-G (Renewable Energy Resource Guarantee System) certificate, which certifies that the electricity we use is generated from renewable sources, and we have contributed to a carbon-neutral and sustainable future with this certificate. We neutralised 13,284.5 tonnes of CO₂-equivalent emissions within the framework of green energy. In 2023, we will be included in the training programme on water footprint calculations and organised for verification studies.

We commissioned the Chemical Input Control System in the ERP system for input quality control testing of chemicals to be used in Yünsa from January 2023. As Yünsa R&D Centre, which strives to shed light on the engineering mission, we will continue our work in the innovation ecosystem to propose better projects than 2022.

Dr. Duygu Yavuzkasap Ayakta
R&D Center Supervisor

NATURALLY COLORED FABRIC



**No Dyeing
Process**



**No Synthetic
Chemical**



Natural

Project Management and Intellectual Property Platform Activities

Yünsa continues to carry out its R&D projects in coordination with universities, research centres, customers and suppliers, creating a culture of continuous innovation with its employees and leading the way in learning and developing new technologies. Leading fashion trends with innovative products developed with a focus on sustainability, Yünsa responds to increasing comfort expectations with its highly elastic, functional fabrics, while offering a rich variety of colours and patterns that appeal to all ages and styles.

Yünsa, one of Turkey's most valuable brands in the textile industry and Europe's largest integrated woollen fabric producer under one roof, continued to deliver value to its stakeholders in 2022, both in terms of economic value added and investments. Capital expenditure during the period totalled TL 62 million. We continued to make a significant contribution to our country's economic growth and industrial accumulation this year. Our export revenue totalled TL 661 million in 2022. Our total turnover also increased significantly to 1,280 million TL in 2022. Yünsa, whose turnover was positively influenced by maximising customer satisfaction with the collection, service and product quality offered to the customer, managed to increase its net profit by 1222% compared to the previous year and continued to create value for its stakeholders exponentially during this period.

At Yünsa, we are investing in clean technologies and waste recycling practices that will continuously increase energy and water efficiency and gradually reduce our emissions and other wastes at the source. During the reporting period, we did not receive any fines for non-compliance with environmental laws and regulations. Our environmental expenditure in 2022 amounted to TL 2,006,368. In 2022, 6.77% of our total raw material consumption was RWS, 2.47% was RCS and 3.7% was GRS certified fibre.

On behalf of Yünsa, we are proud to be an accredited laboratory by Next, Marks & Spencer, Hugo Bos - on behalf of our customers in 2022. Our certificates are renewed every year and in this process the laboratory and laboratories undergo a very strict audit together with the test methods, materials and calibration of the equipment. Conformity is given through correlation tests.

In 2022, as a result of the correlation studies we conducted with Marks & Spencer and Next, our laboratory received a passing grade and our certificate was eligible for renewal. These certificates are a great source of prestige for Yünsa.

R&D in Figures	2022
Number of Employees in R&D Centre	35
Number of Ministry of Industry and Technology Projects	30
Number of Patent Applications	1
Activities with the Universities	2 Master's Thesis, 7 Project, 4 Articles, 8 Memorandums
Total R&D Expenses (including Capex and Opex)	11.855.435,13 TL



Sustainability Platform Activities



Our GRI (Global Reporting Initiative) approved 2022 Sustainability Report has been published. You can access our report from the link below.



BCI Better Cotton Initiative



BCI (Better Cotton Initiative) is a voluntary programme created to enable millions of farmers worldwide to produce cotton under healthier conditions; it is a certification programme used by ginners, merchants, spinners, other actors in the textile value chain and retailers and brands to certify Better Cotton sourcing activities and volumes.

Quality plans have been established by defining the input quality control tests of the chemicals to be used within Yünsa, ensuring the dissemination of dyes and finishing chemicals in general. Under the guidance of R&D, the chemical input control system was established and implemented.



Regression, which literally means "going to the source", is an analytical method used to measure the relationship between two or more variables. In addition to the departmental regression analysis of our company's electricity and natural gas consumption, regression analysis has been carried out on water consumption, which is our indispensable and non-renewable resource. The regression for water sustainability was organised on a monthly basis. We started our journey with the principle "Water is life!" and we continue our efforts to reduce water consumption and raise awareness among our employees through various R&D projects. In this context, various training videos have been prepared and shared with our valuable employees on various platforms. To reduce water consumption, water guns have been installed on the hoses used for cleaning in the finishing department to prevent unnecessary water consumption.

Sustainability Platform Activities



Yünsa Inventory and Uncertainty Reports for 2022 were prepared by our R&D team in accordance with the training information we received in 2022 within the scope of the goal of creating a sustainable value that sets an example for the textile industry in terms of greenhouse gas emission reduction by constantly raising the awareness of all our stakeholders by considering our environmental responsibility. Our greenhouse gas emissions in all categories in Scope 1,2,3 were calculated within the scope of ISO 14064-01:2018 standard.

A verification audit was then carried out by Bureau Veritas on 9-10 March as part of the accreditation body verification.

The verification by Bureau Veritas has been documented in a verification report (reference number: CERTR.4803702.22.C45).

You can access our verification document at www.yunsa.com



At a time when climate change poses economic, social and environmental risks, the use of natural resources in relation to growing needs, climate risks and increasing awareness has strengthened our commitment to sustainability.

In this context, we share the happiness of having avoided 94,406 kg of CO2 emissions, 1,176,796 kW of energy and 310,893 litres of water thanks to our R-Pet usage rate in 2022.



In 2022, we will have certified all of our electricity consumption as green energy. We are proud of our YEK-G (Renewable Energy Resource Guarantee System) certificate, which certifies that the electricity we use comes from renewable sources.

With this certificate, we are contributing to a carbon neutral and sustainable future, having neutralised 13,284.5 tonnes of CO2 equivalent emissions for 2022 within the framework of green energy..

y **YÜNSA**
CREATION OF FABRICS
— 50 Years —

Technology Platform Activities

Republic of Turkey Ministry of Energy and Natural Resources Efficiency Improvement Project



Our project entitled "Improvement of the Air Handling Unit System", which is being carried out within Yünsa, is being supported by the Ministry of Energy and Natural Resources, Department of Energy Efficiency and Environment within the framework of VAP (Efficiency Enhancing Project) support; the existing axial fans will be replaced with high efficiency aerodynamically designed fans; energy consumption will be reduced by at least 20% at the same air flow rate. In the current work package we are in the automation design phase. Structures to simulate our fans have been installed and optimisation work, measurements and CFD analysis have been carried out for other fans in this context. Fan production has then commenced. Once the fans have been manufactured, they are assembled.

Manufacture of finishing machine cover suction fan drive and suction optimisation

The idea was to adjust the suction pressure of the machines by changing the frequency of the fan motor instead of adjusting the suction pressure with the valve, thus saving energy. The studies were carried out on the sampled paver machine and a saving of 78% was achieved on the fan motor of one machine and 28% on the general power consumption of the machine, and the system is actively used in the related project. Studies are underway to extend the system to other paving machines.

Visual and audible control of "blind spots" in the plant

In terms of the health and safety of our employees, there have been problems in the transition area between the finishing and finished product quality control departments due to forklift trucks remaining in the blind spot. As a result of this problem, negotiations were held with the company Interseye and the forklifts were identified using the image analysis method with newly installed cameras. When the forklift enters the field of view, an alarm is activated for 30 seconds, giving a visual and audible warning. The fork-lift truck has been installed in the direction of departure and return, solving the company's blind spot problem.



New Product and Innovation Platform Activities



The research project entitled "Development of Activated Carbon as a Metal-Free Catalyst and Investigation of its Catalytic Activity in Hydrogen Production" prepared under the academic supervision of Dr. Derya YILDIZ; Dr. Şen. "Development of Activated Carbon as a Metal-free Catalyst and Investigation of its Catalytic Activity in Hydrogen Production" prepared under the academic supervision of Dr Derya YILDIZ; Dr Şefika KAYA"; "Development of New Generation Metal-free Catalysts from Textile Industry Fabric Wastes and Investigation of Electrochemical Performances" and Prof. Dr Hilal DEMİR KIVRAK"; and "Hydrogen Peroxide Fuel Cell Applications of Activated Carbon Supported Catalysts Produced from Waste Fabric" which were prepared under the academic supervision of Prof. Dr Hilal DEMİR KIVRAK. A periodical call was applied. All the projects whose industrial consultancy will be carried out by Dr Neslihan KORKMAZ have been accepted by TÜBİTAK.

New Product Development and Innovation Activities



In line with our sustainability principles, a lighter, chemical-free, soft-touch fabric has been developed in addition to the coat fabric designed with wool from self-coloured sheep, in order to add environmentally friendly fabric developments to the product range by reducing the use of dyes and chemicals. Product family design developments are ongoing.



R&D studies on white wool have started. White, which is always preferred as a trendy colour, is difficult to obtain in wool. In order for Yünsa to gain expertise in this area, a joint study was carried out with Eksoy. First, the whiteness of wool and wool blends was studied and the optimum points were determined. Then the whitening was carried out in different constructions.

New Product and Innovation Platform Activities



Development of Filter Fabrics

As a result of the filtration process, high value particles are recovered and industrial waste is purified before being released into the environment. As part of the development of filter fabrics, the effects of yarn type and fabric structure, which are among the basic production parameters, on the performance of woven filter fabrics have been investigated. Woven filter fabrics were produced using different monofilament yarns (polypropylene, polyester, polyamide) and different construction structures. Performance tests were carried out to investigate the efficiency of the woven filter fabrics produced. The aim of the study is to provide important know-how for the production of high performance filters for the mining sector, by showing the relationships between basic fabric parameters and woven filter efficiency in a concrete way.



Recycle Upholstery Fabrics with Difficult Flammability

With the development of industry, the safety of people has become an important issue. Flame retardant textile industry; production technology is in the form of manufacturing flame retardant fabrics that are environmentally friendly, non-toxic and complementary to the comfort feature of textiles. As an R&D study, the upholstery fabrics currently in use are produced with sustainable raw materials and the flame retardant feature is provided in the desired test standards (BS5852-BS7177-Crib5). Recycled upholstery fabrics with flame retardant properties have been developed within the R&D centre.



Umorefil fibre is a fibre made from fish scales. The word Umorefil is a combination of the Latin words "umor" meaning moisture and "fil" meaning yarn. 750-800g of fish scales are used in 1kg of Umorefil Beauty Fibre. Umorefil Beauty Fibre is biodegradable, deodorising, antistatic, contains collagen peptides, moisturising and non-irritating to the skin, providing comfort for the consumer. At this point, the use of fish scales in textile fibre makes a great contribution to the transition from linear to circular economy in the textile industry and creates an environmentally friendly alternative for our world. Yünsa, a shirt fabric containing 30% Umorefil viscose/70% wool, has been developed using Umorefil Beauty Fibre.



Air Fresh



Anti Odor



Wash Resistance



Air Purifier



Easy to Clean



Extra Comfort

Our activities



From 6 January to 12 February, within the framework of the award we received within the framework of the TechXtile competition, in the Mini-MBA training, whose training coordinator was Ufuk Batum, training was provided on value-added production in all markets, where the competitive environment is increasing day by day with the companies that adapt to the system agilely and quickly by keeping up with the digital age of the globalisation phenomenon and the chance to turn crises into opportunities.



TÜBİTAK (Scientific and Technological Research Council of Turkey) is supporting undergraduate, graduate, doctoral and post-doctoral students in the provinces affected by the 6 February earthquakes through the BİÇABA - Working Together and Succeeding Together scholarship programme. As part of the programme, which allows students directly affected by the disaster to participate as scholarship holders, Yünsa R&D Centre has included 1 Ph.D. and 2 M.Sc. students as project scholarship holders in our project "Development of a Wearable Technology T-Shirt (TrackShirt) and an Artificial Intelligence Based Decision Support System for Monitoring and Improving Athlete Performance", which will continue within the framework of TÜBİTAK support.

On 5-8 February, a study visit to the Netherlands, a pioneer in the field of circular textiles, took place within the framework of the URGE project on sustainable textiles. Within the framework of the visit, institutions, organisations and brands that are active in the field of circular textile production in the Netherlands were visited.



Our activities



On 22 February, H&M organised an online seminar on water management in textile companies. The seminar shared information about water consumption and data management in companies in general. It was also explained that the target for 2030 is to reduce water consumption by 30% compared to 2022.



On 7 March, we attended the HIGG-FEM Level 3 training organised by M&S in Istanbul and led by Ahmet Baba. The training provided information on the issues to be considered when entering HIGG-FEM data.



On 9 March, we participated in Texhibition Istanbul Fabric and Textile Accessories Fair held in Istanbul. High participation was observed in the fair where our company also opened a stand.

Our activities



The 'International Textile & Fashion Congress' was held on 16-17 March at the Gümüşsuyu Campus of Istanbul Technical University. The congress, which brought together academics and industry representatives from many different countries, provided an opportunity for presentations in both engineering and fashion. The theme of the congress, which consisted of 6 main categories, was innovative textile and fashion trends that address global challenges. Yünsa participated in the congress as a sponsor and Engin Sarıbüyük, Operations Director, gave a speech at the opening of the congress.



Our activities

**SOCIAL & LABOR
CONVERGENCE**

On 3 April, we participated in the Social & Labor Convergence Program (SLCP) training held at the Wyndham Grand Hotel. The training was given under the headings of how facilities can successfully complete the SLCP evaluation process, facility management, CSR/sustainability/social compliance.



**ITÜ
SEG CMK**

The Sustainable Ecosystem Days (SEG), which will be held between 7 and 9 April, is a Turkey-wide organisation prepared by the students of the ITU Environmental Engineering Club, where expert speakers will be hosted. Sustainable Ecosystem Days, which is ITU's first carbon neutral congress, includes academics who have worked and are working with the understanding of sustainability, environmental technologies and issues related to sustainable environmental approach.



Between 17-19 April, verification was carried out at Yünsa Çerkezköy factory within the scope of HIGG FSLM (Facility Social and Labor Module) and SLCP (Social and Labor Convergence Program) for 2022. Our score for 2022 is 77 and the verification has been successfully completed.

Our activities



On 3 - 4 May, within the scope of the Maintenance Energy Symposium held at The Green Park Pendik Hotel, the stands were visited and then the conferences where the companies explained their solutions were attended. He gave a speech on Optimisation of Compressor Screw/Motor Maintenance Periods with Predictive Maintenance and a Sample Failure Phenomenon.



On 4 May, we participated in the Solar Energy and Energy Storage Seminar organised by the Solar Energy Industrialists and Industry Association (GENSED) and Istanbul Chamber of Industry (ISO).

The topics emphasised in the seminar;

- The importance of renewable energy sources, the current situation and future targets in Turkey and in the world,
- Technological developments in Solar Energy System (SPP) and energy storage applications,
- Grid integration, legislative arrangements, incentives and financing models,
- The widespread use of renewable energy and reducing our dependence on foreign energy by increasing the localisation rate in the solar energy industry were mentioned.

Our activities



The "Financing Sustainability Conference" organised by the Istanbul Textile and Raw Materials Exporters' Association (İT-HİB) was held on 9 May. In the conference, awareness raising and green financing opportunities related to all stakeholders of the sustainable finance ecosystem in the green transformation process of the fashion and textile industry were examined.



On the 11th of May, within the framework of Total Productive Maintenance (TPM), we participated in the Kobetsu Kaizen Training held by our consultant Vural Kömürcü. First, the projects identified by the pillars were presented by the project leaders.

Our activities



HOMETEX Fair, the largest textile meeting of Europe, USA, Middle East and Africa, which brings together the world's leading textile companies in the home textile sector, was held at the Istanbul Fair Centre on 16-20 May.



The 27th ICCI International Energy and Environment Fair and Conference was organised by Sectoral Fairs and Koje Türk Association with the support of the Ministry of Energy and Natural Resources of the Republic of Turkey and EMRA on 24 - 26 May, and the largest international energy fair of Turkey and the nearby geography, "Sustainable, Efficient Energy Transformation Sensitive to Climate Change" issues were examined with domestic and foreign participants.





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Yünsa R&D Center publication.



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