

STRENGTH

reimagined



DOWAKSA

S U S T A I N A B I L I T Y R E P O R T 2 0 2 1

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ABOUT THE REPORT

DowAksa, Turkey's only carbon fiber manufacturer, was formed in 2012, combining the strengths of two world-class companies, Dow, a global leader in providing materials science solutions, and Aksa, the number one producer of acrylic fibers. The 50:50 joint venture provides fully integrated solutions including product (from precursor to carbon fiber to resin), engineering, technology, and knowledge to carbon fiber and carbon fiber intermediates needs of industrial markets. As DowAksa, we started to work to carry out our activities in line with the United Nations Sustainable Development Goals, global trends and increasing customer sustainability requirements. We aim to integrate environmental, social and governance best practices into our corporate decision-making and culture.

We are happy to share our first Sustainability Report, which documents the work carried out and shows our sustainability journey, with our valuable stakeholders. The 2021 DowAksa Sustainability Report, which we prepared in accordance with the "GRI Core Standards" covers the period between January 2021 and December 31, 2021.

Based on a materiality analysis, our report reflects the sustainability issues most relevant to DowAksa and our value chain. In the report there is detailed information about our systematic and comprehensive projects that we have realized in different fields from environment to investment, from R&D to employment.

With the aim of creating sustainable positive values for all our stakeholders and carrying these values into the future, we will continue to carry out our projects without interruption and present the steps we have taken to our stakeholders in our Sustainability Reports.

We attach great importance to the opinions of our valued stakeholders in all our processes. In this context, you can contact us at the e-mail address below for all your contributions, suggestions, feedback, and questions.

info@dowaksa.com

MESSAGE FROM THE CEO

As DowAksa – a company that aims to integrate the best practices in the fields of environmental, social and governance into its corporate decision-making process and culture – we are pleased to present our first Sustainability Report.

DOUGLAS PARKS, CEO

DowAksa Carbon Fiber Composites



[→ MESSAGE FROM THE CEO](#)

Dear Stakeholders,

I am delighted to present to our stakeholders and to the wider public our first Sustainability Report covering the year 2021 and the ensuing Global Reporting Initiative. Since its foundation DowAksa has been conducting its business in a sustainable way, aiming to find a balance between social and economic development and environmental impact. Now the time has come for DowAksa's development to be aligned with United Nations Sustainable Development Goals, global trends and increasing customer sustainability requirements. We want to integrate best Environmental, Social and Governance practices into our corporate decision-making and culture.

During 2022 we aim to develop a robust and long-term Sustainability Strategy and Vision, leveraging our ability to create advanced composite materials for a better world.

We believe that we already make an impact in reducing global carbon footprint by delivering effective solutions to the wind industry, but there is much room for us to improve in terms of waste management and recycling as well as emissions reduction.

Through the whole lifecycle of our products we will contribute to CO₂ emission reduction and help the world become carbon neutral by 2050.

In this respect, we publish our first Sustainability Report 2021, following the Global Reporting Initiative standards, which portrays our history and where we stand in the continuation of our Sustainability journey.

Yours truly,

DOWAKSA AT A GLANCE



ABOUT DOWAKSA

Türkiye's first and only, and the world's leading, carbon fiber producer: DowAksa

Offering composite solutions, and with the experience and power of world giants behind them since 2012, DowAksa continues to contribute to the reduction of Türkiye's current account deficit with its high value-added exports, and ensures the needs of strategic sectors with its local production capability.

Established back in 2012, DowAksa is a 50:50 joint venture between Aksa, the world leader in acrylic fiber, and Dow, a leading global materials science company. It offers integrated carbon fiber composite production and solutions for different applications - especially in energy, transportation, defense and infrastructure industries. DowAksa has succeeded in becoming the single brand in the sector by taking its place among the world's leading carbon fiber producers, thanks to the combined benefits of Dow's knowledge, experience and power and Aksa Akrilik's strong infrastructure, which creates an environment conducive to growth. DowAksa is now one of the few fully-integrated solution providers in the market and has placed Türkiye among the few carbon fiber manufacturing countries in the world.



→ ABOUT DOWAKSA

High value added and strategic products

Carbon fiber, produced first - and only - by DowAksa in Türkiye, is a highly strategic material with a wide range of uses in sectors such as aviation, defense, civil engineering, automotive and renewable energy. Carbon fiber substitutes for metals such as steel and aluminum thanks to its low weight and high strength characteristics, and is a product with high added value that offers innovative solutions for the most important challenges facing the world such as increasing energy production by wind turbines, decreasing fuel consumption in automobiles and strengthening infrastructure and structures and extending their life. This important product is produced by DowAksa in its world-class Yalova plant equipped with advanced and innovative technologies. With a total of 651 employees in locations in Türkiye, USA, Netherlands and Russia, the company also offers engineering solutions and technical services as well as products to the global composite sectors that rely on carbon fiber as a raw material.



[→ ABOUT DOWAKSA](#)**SOLUTIONS PRODUCED AND EXPORTED BY DOWAKSA**

DowAksa exports its products to increase Türkiye's competitiveness to many countries of the world. Some of these products include:

Polyurethane-based CF pultruded profiles for new generation wind turbine blades.

Fast-curing (<3min) resin-based EMC with superior leading properties for automotive series production.

Lightning protection solutions and adhesive films used in defense and aerospace industries.

Various prepregs (carbon fiber, e-glass fiber, s-glass fiber, silica, quartz, copper) with a wide range of fabric/UD options produced in our ISO 9001:2015 and AS9100D certified prepreg production facility in Yalova (UD, Woven, NCF).

CarbonWrap®, the structural reinforcement system that stands out as a cost-effective and innovative solution to restore the world's infrastructure.

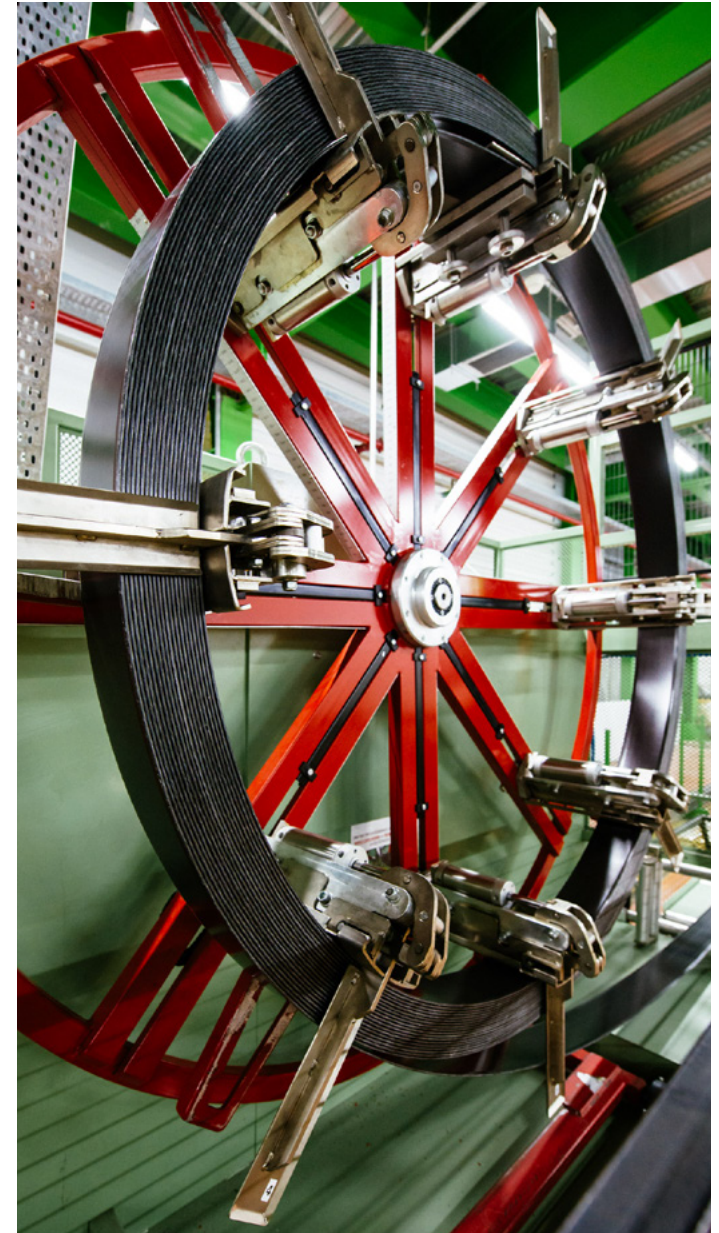


→ ABOUT DOWAKSA

Efficiency in energy, automotive and infrastructure sectors depends on DowAksa

Ongoing global competition in sectors from energy to automotive is pushing producers to look for ways to increase efficiency. DowAksa offers innovative solutions to the emerging wind energy and automotive markets which have targets of rapid growth to meet increasing demand. These solutions help clients to reduce carbon footprint and increase efficiencies by providing energy savings in many sectors.

DowAksa plays a critical role in creating the efficiency improvements that producers increasingly need by offering carbon fiber composite solutions in all sectors - especially energy, transportation, defense, and structural reinforcement sectors. DowAksa also aims to develop high-performance products for the defense and aerospace sectors, focusing primarily on Türkiye's domestic requirements.



→ ABOUT DOWAKSA

Carbon fiber increases efficiency in electric vehicles and wind turbines

Carbon fiber is a product four times as strong as, and one third the weight of, steel and is corrosion resistant. It plays an important role in the automotive sector in mitigating vehicle emissions by reducing fuel use. In this way, emissions are reduced to regulatory set limit values. Carbon fiber is indispensable for the environmentally friendly electric cars soon to be produced in Türkiye. Furthermore, carbon fiber is also used in the manufacture of turbine blades for the renewable wind energy plants that are rapidly increasing in number in Türkiye and the rest of the world. Thanks to the strength, lightness, and non-rusting features of the product, around 7 percent efficiency can be achieved by reducing the blade weight while extending its length.



→ ABOUT DOWAKSA

Possible strengthening instead of demolition with carbon fiber

The area where carbon fiber most provides significant efficiency and energy savings and prevents environmental pollution is in structural reinforcement. Because of economic and environmental impacts, it is more sustainable to strengthen existing building structures as well as historical ones with carbon fiber instead of demolishing and rebuilding them. 40 percent of the approximately 19 million houses in Türkiye are not at the desired performance level in terms of earthquake resistance. The demolition and reconstruction of these buildings is impossible for economic reasons alone. Thanks to the strengthening of these structures with carbon fiber, high costs, natural resource consumption and environmental pollution may be avoided.

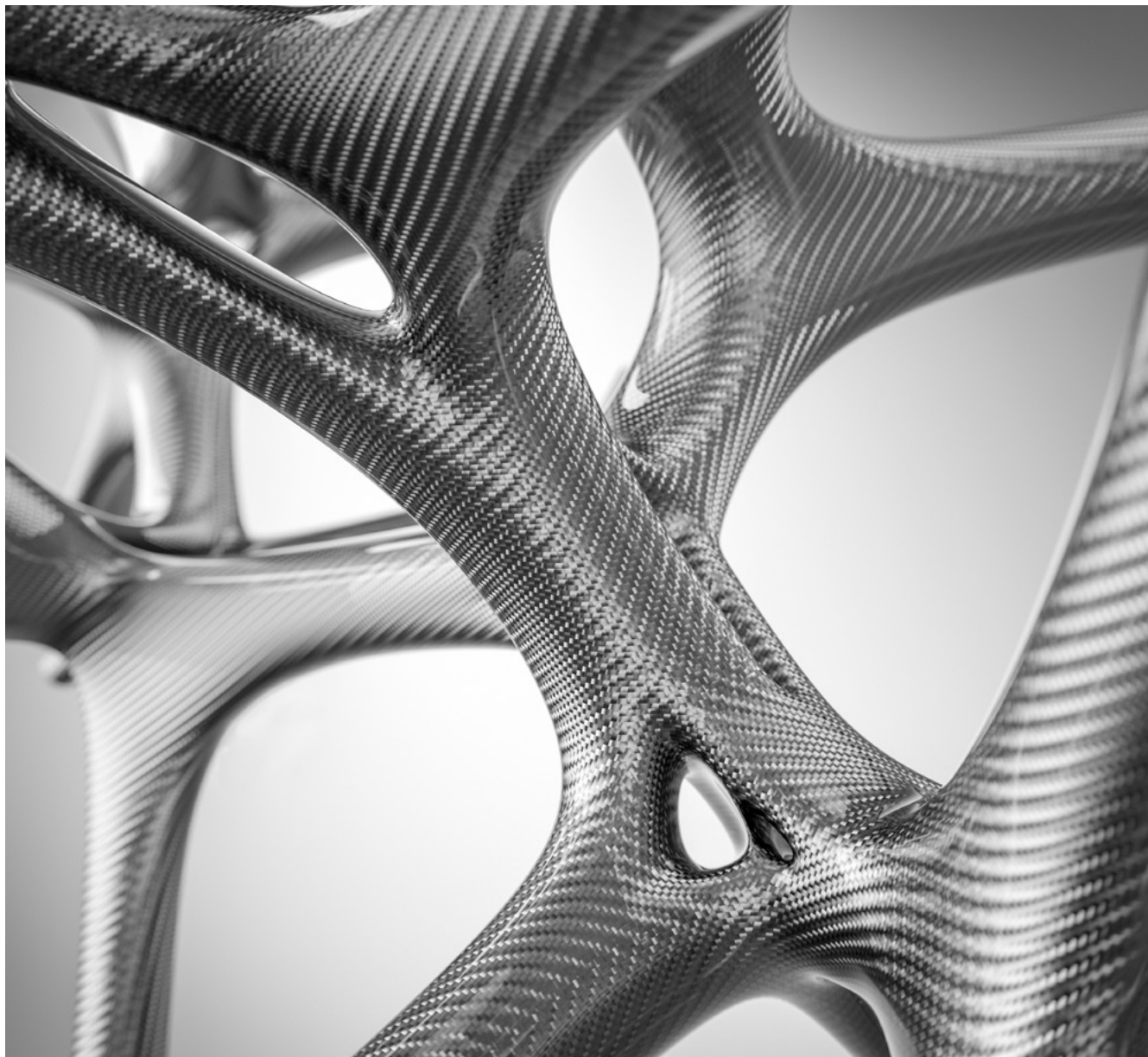


→ ABOUT DOWAKSA

Continuous increases in competitiveness with R&D

The most ambitious and distinctive feature of DowAksa is its continuing non-stop R&D investments. With its strength in R&D and innovation, DowAksa differentiates itself from the competition by providing carbon fiber and composite solutions through integrated production capabilities.

The raw material needed to produce carbon fiber includes acrylic fiber. DowAksa is a joint investment between Aksa Acrylic, which is the largest acrylic producer under the one roof, and Dow Inc., which is a world-leading company in innovative material science. The experience, strength and innovative mindset of these two world giants, and the importance given to R&D by DowAksa since its establishment in 2012, provide solutions with increased added value in many sectors, resulting in large-scale productivity increases.



Increased performance of wind turbine blades

Revealing the first success of its R&D capabilities with its high-performance solution for the blades of wind turbines, as of 2016 DowAksa has significantly increased the performance and efficiency of the carbon fiber it produces. It has released high performance laminated plates designed for wind turbine blade carrier beams by processing the carbon fiber in the pultrusion production process together with the resin developed for that particular application. Thanks to the demand for this product, it has grown far faster than the general carbon fiber market.

Development of more advanced and innovative carbon fiber and carbon polyurethane resin laminate production technologies by DowAksa, with competitive cost and performance levels, attracted very high demand from international customers. By accelerating investments to increase its capacity to meet this demand, the company will increase its total production capacity by 3,150 tonne to 9,350 tonne with an investment which will come into operation in the 2023.

This R&D-oriented success and the resulting new pultrusion-based business model provided DowAksa the opportunity to grow in the wind energy market far faster than the general growth rate of the market. The company believes that its R&D competence will open wider and exciting areas of growth in the future, and is operating accordingly.

→ ABOUT DOWAKSA

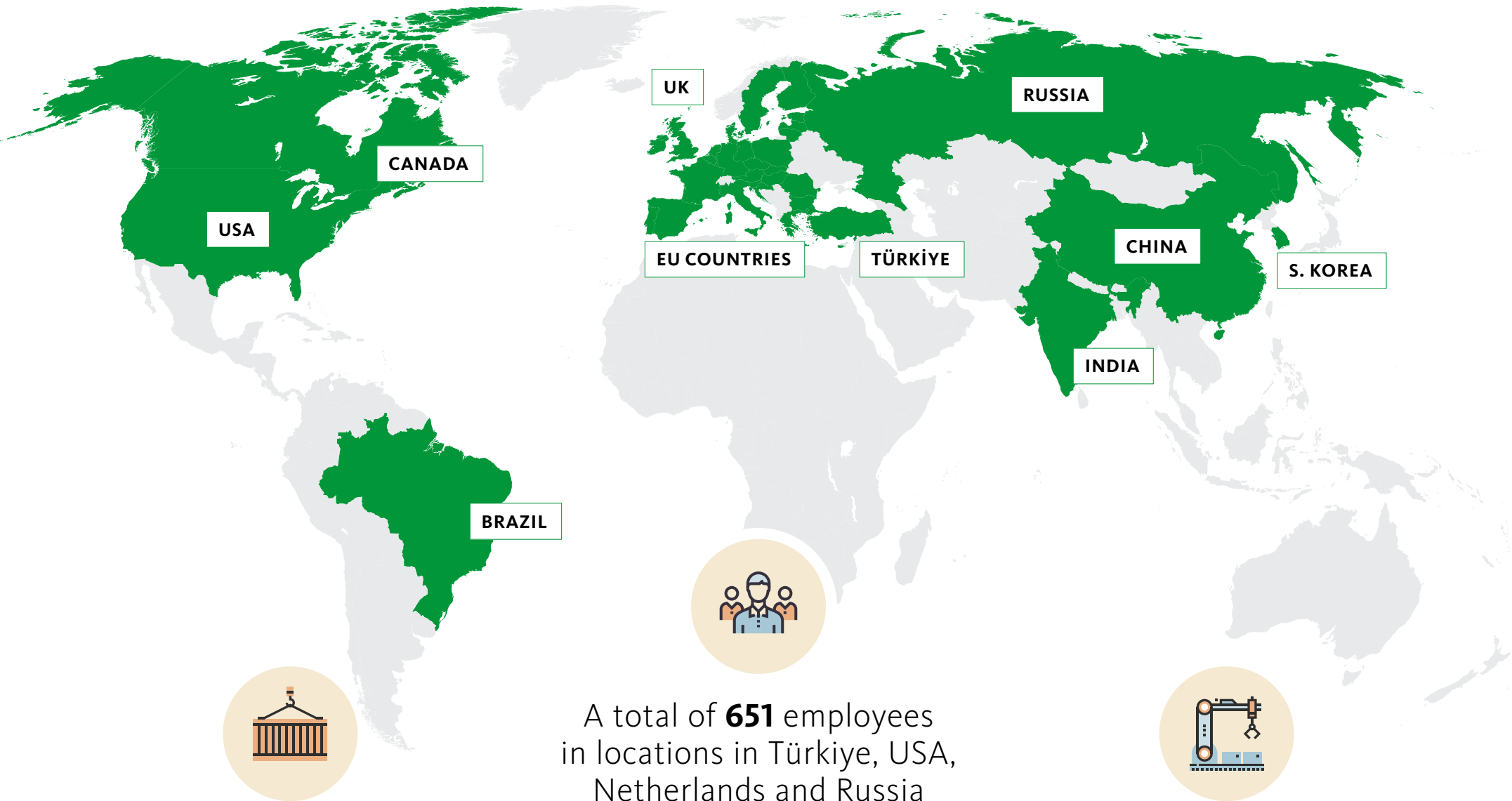
Increasing export rate

DowAksa, which is among the top 1,000 exporters in Türkiye and one of the few integrated solution manufacturers in the composite industry, with its exports in 2020 rose to the 269th place in the list of largest exporters, according to data from the Turkish Exporters Assembly (TIM).

Wind energy - the driving sector in the growth of the company - is growing rapidly globally. A small number of global wind turbine manufacturers serve vast geographies and work with few suppliers. As DowAksa gains the competitiveness to service these companies, it is increasing its role in the worldwide supply chain, expanding into the markets where major turbine manufacturers go, and creating a supply chain in this direction. In this way, it recently added India and Brazil to the countries it exports to.



OPERATION MAP



Continuous export
to the **EU** and **8** countries.

A total of **651** employees
in locations in Türkiye, USA,
Netherlands and Russia

A total of **629** employees
are in Türkiye alone

6,200 tonne of
production capacity

"At Dow, we identified focus areas and priorities where we believe we can make the biggest difference and drive industry-wide change. These global priorities represent areas where we innovate and use our science, extensive experience and capabilities across our value chains to seek and create shared opportunities and collaboration to meet our sustainability goals and targets. We value the contributions of our partner DowAksa to the circular economy thanks to new investments and strategic product development that provide innovative solutions to help make a positive difference in the environment and life better for everyone. Through our valued partnership, we continue to support DowAksa in their journey towards providing safer materials for a sustainable planet and improve performance in natural resource efficiency, environment, health, and safety."

**LUCIANO POLI**

President of Dow Middle East,
Africa & Turkey, and Board Member/
Chairman of DowAksa

DEVELOPMENTS IN 2021

2021: the wind in our sails

Despite the pandemic, supply bottlenecks and increasing raw material costs, DowAksa, which ended 2021 with 30 percent growth, added India to its export markets. The year 2022 will be the cornerstone for growth with the new integrated facility investment to be established on an area of 117,000 square meters.



30%

Growth rate
in 2021



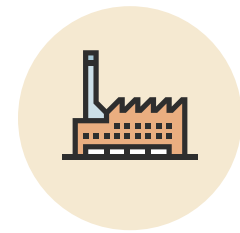
90%

Share of exports
in total revenue



150

Jobs created
in 2021



117
thousand m²

New integrated
facility investment

→ DEVELOPMENTS IN 2021

30 percent growth with additional employment in 2021

Generating 90 percent of its income from exports, DowAksa added India to its export markets in 2021. India has the world's largest wind energy installed power capacity and is one of the countries with the most future growth potential in the sector. Despite the increase in raw material costs, the company managed to close 2021 with a 30 percent growth thanks to the improvements and developments made in production processes. Approximately 166 new employees have been added to its workforce.

2022 is the turning point for the company's growth strategy

The 10th anniversary of DowAksa in 2022 will also constitute an important milestone in the company's growth strategy. In the first quarter of the year, the company has started construction works for the new 120 million US dollars integrated production facility to meet increasing demand. Aiming to grow by 30 percent in 2022 with investments and process improvement efforts, DowAksa plans to grow rapidly to meet the increasing demands of the emerging wind energy and automotive markets, as well as to develop high-performance products for the defense and aerospace industries, primarily focusing on Türkiye's local market needs.

DowAksa ranked among the top 100 companies with its corporate culture

In the "Corporate Culture 100" survey conducted by Fast Company magazine, which aims to highlight company culture in Türkiye, DowAksa became one of the top 100 companies in Türkiye in 2021.

Almost two thousand managers and employees participated in the research, which was carried out in cooperation with Fast Company magazine and Kariyer.net, Türkiye's largest human resources website. From the online survey, companies were graded on aspects of corporate culture such as teamwork, transparency and respect as well as on their preparation for the post-pandemic period. The ranking was determined from the responses that emerged and were most selected when the respondents selected the best three companies for each criterion.

DowAksa joined the best companies in Türkiye in terms of corporate culture and was ranked 58th.



Production was stable in pandemic

From the very beginning of the COVID-19 pandemic, DowAksa has taken care to identify risks, minimize them and keep them out of the lives of its employees. By taking early precautions, the company was able to protect its employees and their families and, as a natural consequence, the continuity of its activities.

Protecting its workforce by adhering to the directives of our Ministry of Industry, DowAksa has switched to a home-working system for its non-production personnel in order to reduce the number of employees in the factory and to minimize the risks for employees who play a critical role in the production of products demanded by its customers.

All types of precautions were taken, and necessary support was provided for DowAksa members who could not work from home due to the demands of their jobs. Social distancing was increased by increasing the number of employee commuting, and teams were divided into different color groups to keep track of which employees were in contact with which others in the face of a possible virus threat. Food and hygiene packages were distributed. A comprehensive and staggered system of health screening has been established to reduce the risk of exposure to the virus. Thanks to all these measures, DowAksa continued to work, produce and export largely without interruption. In doing so, DowAksa continued to provide economic support to Türkiye and Yalova in this difficult period by completing the investments it had previously planned.

MISSION AND VISION

MISSION

Provide fully integrated carbon fiber based products and solutions.

Meet or exceed all quality requirements for the target industries.

Deliver profit to our shareholders.

Operate safely, environmentally friendly to the benefit of all stakeholders.

VISION

Drive our stakeholder's return by producing high quality, low cost carbon fiber and carbon fiber intermediates for the industrial, aerospace and defense industries.

QUALITY POLICY

As DowAksa Advanced Composite Materials Industry Limited Company:

- › We abide with the conditions of Quality Management System; accordingly we set and promote approaches and goals, review them and thus improve our performance continuously.
- › In order to be one of the leading company, we commit to fulfill the requirements and conditions of our customers, provide unconditional customer satisfaction, and meet the related conditions of the legal regulations.
- › According to our principle of continuous improvement and development, we aim at continuous improvement of our all processes by using new technologies to enhance the quality and reliability of our products.
- › Based on our Quality Management Philosophy, we raise the awareness of all our stakeholders, we plan and improve the training programs continuously to make sure our quality policy is adopted as a life style by our employees.

MILESTONES

■ 2012

The DowAksa partnership was established between Aksa and Dow.

■ 2013

The company purchased the CarbonWrap business unit, which provides carbon fiber composite solutions in the field of infrastructure and construction.

■ 2014

The company signed a US\$4.3 million triple joint venture with Rusnano and Composite Holding (HCC) for the Composite Nanotechnology Centre (NCC).

DowAksa participated in the “Open Hybrid Lab Factory”, which aims to develop environmentally-friendly hybrid cars.

The Silk Project – to produce and develop thermoset resin prepreg material in Türkiye to be used in the aviation industry – was started with the Turkish Aerospace Industries (TAI) and the Presidency of Defense Industries.

DowAksa USA was established.

■ 2015

The company made an R&D agreement to work for carbon fiber production which is affordable and suitable for high-volume automotive applications

DowAksa was one of the companies that helped launch the Institute for Advanced Composites Manufacturing Innovation (IACMI), a public/private partnership of industrial, governmental and academic institutions that aims to accelerate the adoption of carbon fiber composites.

■ 2016

The company inaugurated the DowAksa Global Composite Centre which has advanced technology and was designed to develop carbon fiber and advanced composite material in Türkiye.

DowAksa signed a joint study with Istanbul Technical University to do an earthquake simulation on full-scale buildings in Yalova using carbon fiber reinforced polymer (CFRP) technology.

■ 2017

DowAksa signed a long-term supply agreement with Vestas, one of the top companies in the global wind energy industry.

With its earthquake experiment on full-scale buildings in Yalova, DowAksa brought the top prize in the JEC Innovation Awards to Türkiye.

The IPEK Project, carried out jointly with Turkish Aerospace Industries Inc. (TAI) and supported by the Undersecretariat for Defense Industries (SSM), was deemed worthy of the “2017 Defense Industry Technology Development Special Award” given by SSM within the scope of the “2017 Defense Industry Special Awards” organized by the Defense Industry Manufacturers Association (SaSaD).

■ 2018

DowAksa was included in the “Project Based Incentive System”.

■ 2019

DowAksa joined the list of “The Top 1,000 Exporters of Türkiye”. DowAksa rose from 974th to 539th place by surpassing more than 400 companies in a single year with its exports.

■ 2020

Despite the pandemic, which disrupted production and supply chains all over the world, DowAksa continued to work, produce and export uninterrupted thanks to the measures taken within the framework of occupational health and safety policies. By completing its previously planned investments, it continued to provide economic support to Yalova and Türkiye during the difficult pandemic period.

■ 2021

DowAksa received an export permit to India.

SUSTAINABILITY



SUSTAINABILITY STRATEGY

We aim to create
sustainable positive
values for all our
stakeholders

→ SUSTAINABILITY STRATEGY

DowAksa aims to create sustainable positive values for all its stakeholders in the environmental, social and governance spheres of influence in its sector, and to carry these values into the future.

Since its establishment, DowAksa has been carrying out its activities with a sustainable approach that carefully considers the balance of social, economic development and environmental impact. The Sustainability Department within the company was created to place and systematize the works in line with the United Nations Sustainable Development Goals, global trends and increasing customer needs, and to make sustainability part of the company culture. It also aims to integrate best practices into corporate decision-making in environmental, social and governance (ESG) fields.

With its targeted approach, DowAksa has started to create a sustainability roadmap to encourage and increase efficiency in all areas of operation, to create social benefits, and to expand its governance spheres of influence. Studies initiated under the leadership of Sustainability Department employees are prioritized and embraced by the CEO and all DowAksa employees.

DowAksa's Goals

To manage sustainability impacts and environmental, social and managerial responsibilities beyond laws and expectations within the scope of important and priority issues for DowAksa and its stakeholders.

To carry out its activities in line with the Sustainable Development Goals.

To create sustainable value with R&D, innovative ideas, investments and products.

To work together with all its employees to achieve sustainability goals and to keep all communication channels open.

Periodically to review and improve its targets and performance.

To use all its resources to carry out the actions determined to achieve its sustainability goals.

To continue working with the idea of positive contribution to life. In this context, to undertake product life cycle analysis studies and detailed follow-up of the effects before and after production.

To regularly publish a sustainability report.

Sustainability Targets for Pultrusion Production

100% Renewable energy use by 2030

50% Reduction in waste 2021–2030

92% CO₂ scope1 and scope2 emission reduction 2021–2030

Carbon-neutral by 2030

Sustainability Targets of DowAksa

Zero incident rates

Zero landfill and combustion without energy recovery by 2040

25% diversity in leadership and middle management by 2025

"Sustainable development plays a large part in the future perspective and strategies of Akk k Holding and its group of companies. As a signatory of Global Compact since 2007, we aim to create value in the sectors in which we operate. DowAksa, our 50/50 joint venture with Dow, operates in an industry that has the potential to find solutions to the world's biggest problems. DowAksa's game changer solutions for the renewable energy already created high demand from leading wind turbine OEMs. The capacity increase investments to address this demand will continue in 2022 contributing to T rkiye's export and employment numbers.

As Akk k Holding, corporate governance, characterized by openness, transparency, and accountability, is a significant element guiding our operations. Therefore, we strongly believe that this report will become a new milestone in DowAksa's sustainability efforts, adding value to its stakeholders and to the world."



AHMET CEMAL D RD NC 

CEO of Akk k Holding and
Chairman of the Board of Directors of
UN Global Compact T rkiye

MATERIALITY INDEX

DowAksa carried out a prioritization analysis in 2022 to reveal environmental, social, managerial and economic issues that will create impact and value for both the company and its stakeholders, in line with the company's business strategy. The titles determined within the scope of the study were evaluated by sharing them with internal and external stakeholders through online surveys. A matrix was prepared by determining the material issues and sustainability targets in line with the survey results.

VERY HIGH PRIORITY ISSUES

- 01 DATA SECURITY
- 02 SUPPLY CHAIN MANAGEMENT
- 03 ENERGY MANAGEMENT
- 04 R&D AND INOVATION
- 05 COMPLIANCE WITH NATIONAL AND INTERNATIONAL LEGISLATION
- 06 ETHICS AND TRANSPARENCY
- 07 LABOUR RIGHTS
- 08 WASTE MANAGEMENT
- 09 BRAND VALUE
- 10 EMPLOYEE ENGAGEMENT AND WELLBEING

HIGH PRIORITY ISSUES

- 11 OPPORTUNITY EQUALITY
- 12 OCCUPATIONAL HEALTH AND SAFETY
- 13 SUSTAINABLE PRODUCT DESIGN
- 14 CIRCULAR ECONOMY
- 15 COMMUNICATION WITH STAKEHOLDERS
- 16 WATER MANAGEMENT
- 17 EMISSIONS AND CLIMATE CHANGE STRATEGY
- 18 WOMAN EMPLOYMENT
- 19 EMPLOYEE TRAINING

MEDIUM PRIORITY ISSUES

- 20 GENDER EQUALITY
- 21 CONTRIBUTION TO ECONOMY
- 22 CONTRIBUTION TO EMPLOYEMENT
- 23 COVID-19 EFFECTS
- 24 INVESTMENT TO TALENTS
- 25 BIODIVERSITY



RESEARCH & DEVELOPMENT





DowAksa uses its R&D power
to make a difference in
all sectors it serves

By using its R&D power and competencies, and with integrated production approaches for all sectors it serves, DowAksa's different carbon fiber and composite solutions provide significant added value to issues such as yield increase, energy consumption and reduced carbon footprint.

DowAksa approaches R&D projects with a holistic perspective and works on new formulations by continually researching global literature to increase the performance of composite products and, at the same time, adopting new technologies to improve production process and adapt them to new products. DowAksa diversifies the expertise of the R&D team by developing it in this direction.

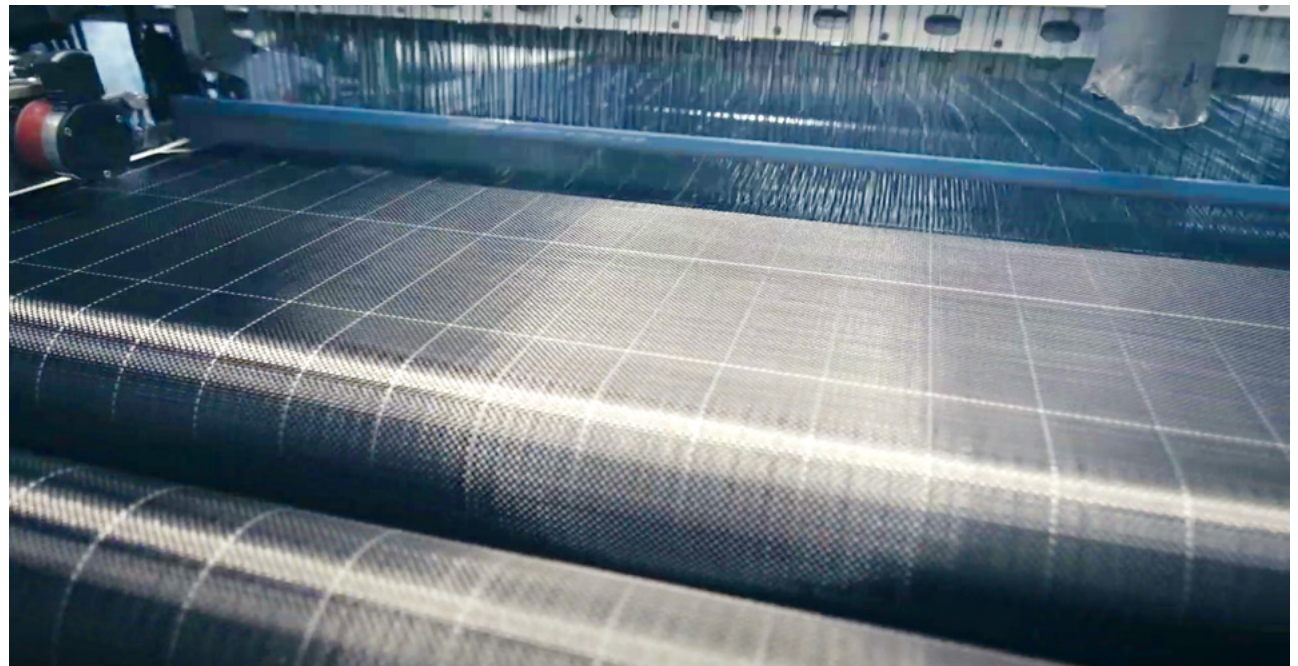
DowAksa's R&D research is carried out by a team of 23 people, 15 white- and 8 blue-collar, expert in the fields of chemistry, machinery, textiles, polymers, process development and materials science. 9 of the team have master's degrees, 6 have bachelor's degrees, 7 have associate degrees and 1 has vocational high school qualifications; they also have expertise in the effective use of data-analytics, lean 6 sigma, 6 sigma in design and advanced experimental design applications.



Courtesy of Vestas Wind Systems A/S

Performance, quality, cost and sustainability

The backbone of all R&D projects consists of performance, quality, cost and sustainability. As well as manufacturing products that will best meet customer expectations in the optimum way, DowAksa aims to produce these products sustainably and efficiently. Many of the R&D projects are focused on capacity and quality improvements in carbon fiber and composite production, and DowAksa carries out many studies of this nature for the wind energy, automotive, aviation and construction sectors. Focusing on wind energy in its R&D studies, especially given the increasing demand and new investments in recent years, DowAksa's mission is to continuously reduce the offcuts and wastes generated during the processes while achieving its capacity and quality improvement targets.



Research and development activities

Dow Akso's R&D activities form a wide portfolio to cover innovation, continuous improvement, and waste reduction activities. In this context, among the R&D activities carried out in cooperation with many national and international institutes and private sector partners are the following:



Capacity and quality improvements.



Cost reduction.



Development of new prepreg products and resin formulations for the aerospace and automotive sectors.

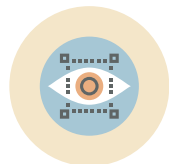


Image processing technologies to detect poor quality in advance.



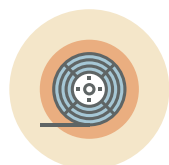
Pultrusion resin and profile flue reduction.



Computerized flow-modelling to create digital twins of related processes.



Development of carbon fiber alternative auxiliary raw material.



Plasma technology for fiber surface coating.



Improvement of new pultrusion profile products for the wind sector.



Studies to develop data analytics so that the root causes of problems can be solved much faster.

\$3,943,000
R&D budget for 2021

Specialization in chemistry, machinery, textiles, polymers, process development and materials science

14
white collar employees

6
blue collar employees

SECTORS AND PRODUCTS

DowAksa has become known for its efficiency increases with the innovations it has brought to sectors such as structural strengthening, aviation and defense, and especially in the wind energy and automotive sector.

→ SECTORS AND PRODUCTS

WIND ENERGY

EFFICIENCY-ORIENTED TECHNOLOGY

Demand for carbon fiber in wind energy sectors increases daily, to produce wind turbines that operate at equivalent or lower cost than that of the traditional energy-production technologies such as thermal power plants (coal, natural gas) or hydropower plants. As the blade lengths of wind turbines increase, the strength, stiffness and lightness required for more robust, yet efficient wind turbines become important. DowAksa produces carbon fiber reinforced polyurethane resin based pultruded profiles/ laminated plates for the carrier beam parts (spar caps) used in the extended blades for the new generation wind turbines in the rapidly developing wind energy sector.

These laminates are manufactured with a specially developed pultrusion production technology at DowAksa's production facility in Yalova with a focus on reducing cost while increasing performance. With its 'downstream' integration model, DowAksa is also helping Türkiye raise the bar of creating local content in wind energy projects by locally producing the significant amount of laminates required for carbon fiber spar caps in wind turbine blades. Before DowAksa was established, these parts were imported to Türkiye from other countries.

This R&D-driven success, and the resulting pultrusion-centric new business model, gives DowAksa the opportunity to grow in the wind energy market at a rate well above that of the market leaders. The company believes that its R&D competence will open wider and exciting growth areas in the future, and pursues activities to this end.



Courtesy of Vestas Wind Systems A/S

→ SECTORS AND PRODUCTS

AUTOMOTIVE

DRIVING AHEAD

When working with standard materials such as steel and aluminum, it is very difficult to meet the fuel consumption and related emissions values required by the automotive sector to accelerate investment in electric vehicles. This is where carbon fiber comes in. Carbon fiber is five times stronger than steel and twice as stiff. Though carbon fiber is stronger and stiffer than steel, it is lighter than steel, making it the ideal manufacturing material for many parts. These are just a few reasons why carbon fiber is favored by engineers and designers for manufacturing. DowAksa, offering the advantages of carbon fiber to industrial markets, also uses this technology which provides new potentials (XForge™ Prepreg and VORAFUSE™ Fast Curing Resin Technology) in the automotive sector.

CLASS-LEADING MECHANICAL PROPERTIES

- › Fast parts production process (<3 minutes).
- › Technology for the reuse of process trim parts.
- › Low investment cost.
- › Storage at room temperature (>50 days).
- › Easy separation from mold.

- XForge™ is a trademark of DowAksa.
- Vorafuse™ is a trademark of The Dow Chemical Company ("Dow") and its affiliates.



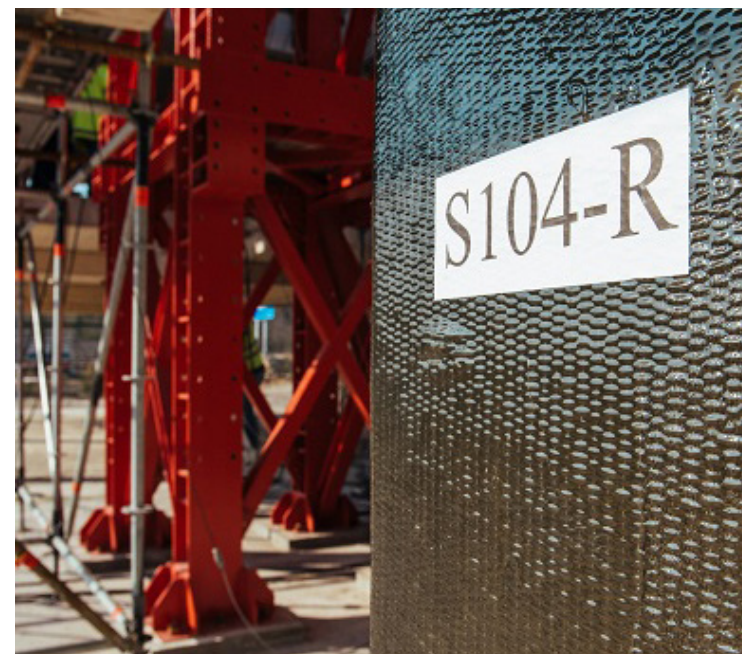
→ SECTORS AND PRODUCTS

STRUCTURAL REINFORCEMENT

STRENGTHENED STRUCTURES THAT SUPPORT THE ECONOMY

Old and damaged buildings are a common problem in developed parts of the world. Roads, buildings, bridges and pipes are the infrastructure that allows the region's economy to thrive, but they can also damage the economy if they are not repaired or properly cared for. Factories also need to take care of their infrastructure and buildings to avoid slowdowns or even pauses in their operations. Historical buildings may face the danger of disappearing completely over time. Carbon fiber reinforced materials emerge as a cost-effective solution.

Structural strengthening with carbon fiber reinforced composite materials has been developed as an alternative to traditional retrofitting systems. The biggest advantages of such composite materials, which have greater tensile strength than steel, are that they are lightweight, do not corrode and can be easily applied. Another remarkable feature of DowAksa's CarbonWrap™ solution is that structures can continue their normal functions throughout the strengthening works carried out by the experts in the field. Unlike traditional improvement or reconstruction techniques, which require the demolition and reconstruction of some or all of the weak structures, CarbonWrap™ can be applied just above the existing substrate. In this way, it saves a significant amount of installation time and costs.



AEROSPACE AND DEFENSE

VALUE-ADDED INNOVATION

An area where the use of carbon fiber makes an important difference is in the defense and aerospace industries. The superior strength-to-weight ratio of carbon fiber reinforced polymers frequently makes these materials the preferred product for applications in these industries. DowAksa develops high-performance products that focus on local needs for the defense and aerospace industries. DowAksa offers these industries carbon fiber fabric and prepreg (carbon fiber, glass fiber, copper) solutions produced with advanced technology in its ISO 9001:2015 and AS9100D certified production facilities in Yalova, Türkiye.



CORPORATE GOVERNANCE

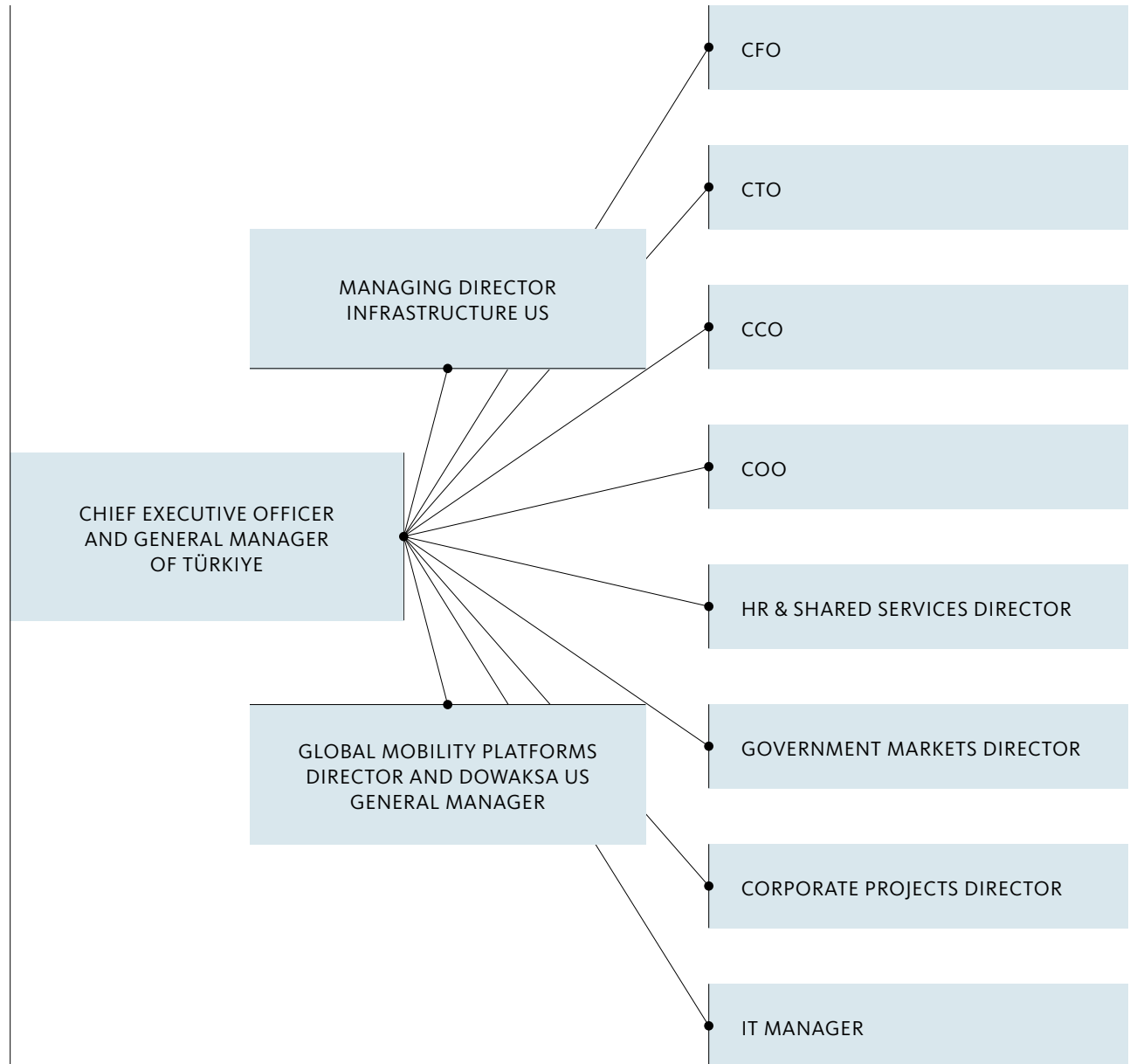


MANAGEMENT STRATEGY

As a global company and industry leader, DowAksa undertakes every operation in its worldwide organization within a legal and ethical framework. The health and safety of employees, care for the environment and people, and diversity, integrity and honesty are DowAksa's indispensable values when carrying out all its activities transparently, with accountability to its stakeholders, and with the awareness of its corporate responsibilities. DowAksa's values and the management strategy it has built in this respect also form the basis of DowAksa's Ethical Principles and Policies.



ORGANIZATIONAL STRUCTURE



ETHICS AND TRANSPARENCY

“Health and safety of its employees, care for people, and diversity, honesty and integrity” are among the indispensable values for DowAksa, which, as a global company and industry leader, carries out all its operations worldwide within a legal and ethical framework.

DowAksa carries out all its activities in line with the DowAksa Code of Conduct, which complies with global standards. In addition to the Ethical Principles, which must be observed in all business processes by all employees and business partners, compliance with laws, regulations, legislations, guidelines and good practice standards regarding safety, quality and research is among DowAksa's priorities.

High ethical and honesty standards in all business processes

DowAksa carries out research, development, and production activities in accordance with high ethical and honesty standards in all its activities. In this framework, DowAksa does not tolerate any behavior that does not comply with ethical rules. All employees regularly undergo compulsory training on ethical rules, and take part in awareness-raising activities.

DowAksa's Legal and Compliance Directorate guides the company and employees in matters related to ethical principles. The e-mail address etik@dowaksa.com is used for complaints and notifications on ethical issues. Complaints and notifications are reviewed by relevant department in confidential and diligence manner, and necessary actions are then taken.

DowAksa's internal audit activities are carried out by the internal audit manager under the Legal and Compliance Directorate, and regularly reported to the Audit Committee of the company's board of directors. Audits are also carried out by the company's partners, Dow and Aksa.



Please see the full [DowAksa Code of Business Conduct Policy](#).

SUPPLY CHAIN MANAGEMENT

Sustaining its relations with all its business partners within the framework of ethical values such as honesty, integrity, fairness and transparency, DowAksa considers criteria such as quality, savings, safety, ethics, and the protection of society and the environment in its purchasing and supply processes.

DowAksa adopts a proactive approach in supply chain management. In this direction, all sales and production plans are created annually, based on the predictions received from customers, and periodically monitored to be up-to-date. The MRP program has been developed to create supply plans that are integrated with sales and production plans, with software that works according to minimum-maximum stock parameters for the supply of consumables.

Count of supplier

Local TR: 809 (89%), Local Yalova: 101 (11%), Total: 911

Of the 911 suppliers we worked with in 2021, around 89% were local TR and around 11% were local Yalova, TR.

As volume

As of volume we worked with in 2021, around 54% were local TR and around 22% were local Yalova TR.

Long term and sustainable collaborations

DowAksa attaches great importance to the selection of suppliers and the development of business processes, and long-term and sustainable collaborations are important to us. We pay utmost attention to the our suppliers' compliance with laws, regulations and ethical rules in the field of health, safety and environment.

Customer forecasts, production parameters, and data on purchasing and storage constraints are needed for us to maintain healthy supply chain activities. For the sustainability of the supply chain, we also carry out projects to replace consumables with recyclable alternatives.

Purchasing, storage (raw material, intermediate product, product, investment, auxiliary parts), planning, sales operation and import units are directly involved in the supply chain management of the company..



STAKEHOLDER RELATIONS

Believing in the importance and influence of stakeholders in progress in the field of sustainability, DowAksa communicates effectively with all its internal and external stakeholders and shapes its business processes with the feedback it receives.

Stakeholders and Communication Methods

Stakeholders	Communication Methods
Employees	Stakeholder engagement program, email, phone and face-to-face meetings, intranet, meetings, trainings, social club activities, sports events, volunteering, workers council, text information (SMS), suggestion system, orientation program, career development program, performance interviews
Customers	Email, telephone and face-to-face meetings, customer satisfaction surveys, visits, meetings, conferences, fairs
Investors, business partners	Email, telephone and face-to-face meetings, visits, meetings, conferences, fairs
Suppliers	Email, phone and face-to-face meetings, supplier schedule, visits, audits, evaluation system
Government agencies and relevant public authorities	Email, phone and face-to-face meetings, meetings, conferences, audits
Associations and non-governmental organizations	Email, phone and face-to-face meetings, project partnerships, memberships, meeting attendance
Media	Email, phone and face-to-face meetings, press conferences, press releases, interviews, special news work
Society	Corporate social responsibility projects, social contribution studies, sponsorships
Local Communities (Local Communities & Grievance Mechanism Communication)	Email, phone and face-to-face meetings, meetings, conferences, audits

CUSTOMER RELATIONS

Attaching great importance to customer relations, DowAksa prioritizes customer loyalty, customer value, customer satisfaction and customer relationship management. In this context, it improves and develops its processes by investing in people, processes, and technology.

As a company supplying materials to the global composite industry, DowAksa offers fully integrated, highly affordable carbon fiber reinforced composite material solutions to various industries, especially the wind energy industry.

To meet the increasing demand for carbon fiber-reinforced composite laminate products in parallel with the trend of growth and increasing efficiency in the wind energy industry, DowAksa has decided to place its main business focus on this sector. First, it developed the material to meet the needs of this industry and adapted its operations to changing business conditions. Then it started to work with the industry's leading global original equipment manufacturers (OEMs) with the principle of contract-based and long-term cooperation. Under the roof of OEMs, DowAksa also collaborates with the TIER-1 suppliers suggested by OEMs in their own facilities. These operations are carried out on three continents. In order to support the defense industry sector in Türkiye, DowAksa produces versatile fabrics, woven fabrics and prepreg products and works with the leading OEMs in this sector through long-term cooperation.

DowAksa Market and Sales Group Directorate, our meticulous customer relations Division, consists of five people in two main departments: Sales, Marketing and Business Development, and Customer Compliance/Technical Service. Not only does our customer relations team prioritize understanding our customers' needs and responding in a timely manner, it is also responsible for after-sales services. With the aim of providing absolute customer satisfaction, the entire process - from the customers' order to the final use of the material - is managed and followed by the Market and Sales Group.

DowAksa, always keeps in close communication with its customers a dedicated employee of the Market and Sales Group Directorate is assigned for all material sales locations. With our focus on customer communication, we take fast action on all feedback received. DowAksa makes a difference in sales and after-sales services thanks to its proactive, fast, solution-oriented and innovative approaches.

CORPORATE MEMBERSHIPS



International Investors Association (YASED)



American Enterprise Association (AMCHAM)



KOMPOZİT SANAYİCİLERİ DERNEĞİ
TURKISH COMPOSITES MANUFACTURERS ASSOCIATION

Composite Manufacturers Association



Saha Istanbul Defense Aviation and Space Cluster



TÜRKİYE RÜZGAR ENERJİSİ BİRLİĞİ
TURKISH WIND ENERGY ASSOCIATION

Turkish Wind Energy Association (TÜREB)



Ethics and Reputation Association (TEID)

HUMAN RESOURCES



The key factor in success and leadership: human resources



DowAksa sees its transparent, participatory, sharing culture that values individual leadership, self-responsibility and team play as the driver of the company's success, and designs processes whereby employees, whom it sees as talents, can reveal their potential, and provides an opportunity and environment for their continuous development.

DowAksa has an agile and highly aware human resource department that marries individuals' knowledge, skills and competence development with company goals. The company attaches great importance to the health, safety and happiness of its employees. In this direction, it adopts and implements laws, regulations, standards and contemporary management systems in the field of occupational health and safety, and closely follows technological changes and developments. The company also supports the Turkish economy with active employment policies in line with its growth plans, and aims to expand its human resources coincident with its continuous improvement and development perspective and corporate business culture.

Values of DowAksa

HEALTH AND SAFETY

The health and safety of our employees and the protection of our communities are our highest priorities.

PEOPLE

People are the source of our success and the key differentiating factor in attaining industry leadership.

DIVERSITY

We commit ourselves to a diverse and inclusive workforce, in which individual respect and responsibility provide the platform for personal and team excellence.

HONESTY AND INTEGRITY

We conduct ourselves with honesty and integrity in all that we do.

HUMAN RESOURCES PRACTICES



TARGET

> 25% diversity in leadership and middle management by 2025

DowAksa sees its employees as the source of its success and one of the main factors of being the leader of the sector, and implements practices that will ensure the continuity of human resources that are highly aware and committed, competent, participatory and focused on company goals.

Supporting recruitment and local employment

When recruiting, DowAksa prioritises the inclusion of people with high awareness, who care about diversity, are intellectually agile, are entrepreneurial and passionate about their job; the company also supports local employment in the recruitment process. A large proportion of operational-level employees are recruited through a local employment source. The aim is to ensure the continuity of professional and operational level human resources focused on company goals, to support the use of internal resources and to promote from within.

Gender equality and diversity

In the culture of mutual respect it promotes, DowAksa cares about providing an environment where the similarities and diversities in beliefs, religious practices and other fields are understood and valued among its employees. Adhering to all relevant laws and regulations, the company provides equal opportunity to all its employees and does not allow discrimination in any way in practices such as nomination, recruitment, assignment, promotion, transfer, salary and benefits, training or dismissal. The company aims to provide an environment where everyone can make their voice heard equally and where they can work with passion, and provides training to its human resources department in this field.

Emphasizing the support and employment of women, DowAksa implements a fair and competitive wage system based on regardless of gender, in terms of internal balances within the company.

Human rights

Prioritizing respect for the dignity and rights of all its employees as a key element, DowAksa acts in full compliance with all local labor laws and regulations, including child labor laws, wherever it operates.

Employer-employee relations

There is no organized union within DowAksa. The Representation Committee elected by the employees provides a strong communication structure by sharing the wishes, demands and opinions of the employees with the management.

→ HUMAN RESOURCES PRACTICES

Entrepreneurship and awareness

DowAksa employees act with integrity and honesty and with a sense of respect and responsibility. The company aims to ensure that its employees benefit themselves, their teams, the company and society in general. In this context, DowAksa offers a suitable working environment for entrepreneurial spirits to develop new and creative ideas.

Training and continuous development

In line with the culture of continuous improvement, the development needs of DowAksa's employees are analyzed, and their learning and development processes are supported. In this context, the company aims to develop the knowledge, skills and competencies of its employees with different training and development opportunities prepared by evaluating current and future needs. These developments are followed through the DowAksa Academy.

144

hours training/employee

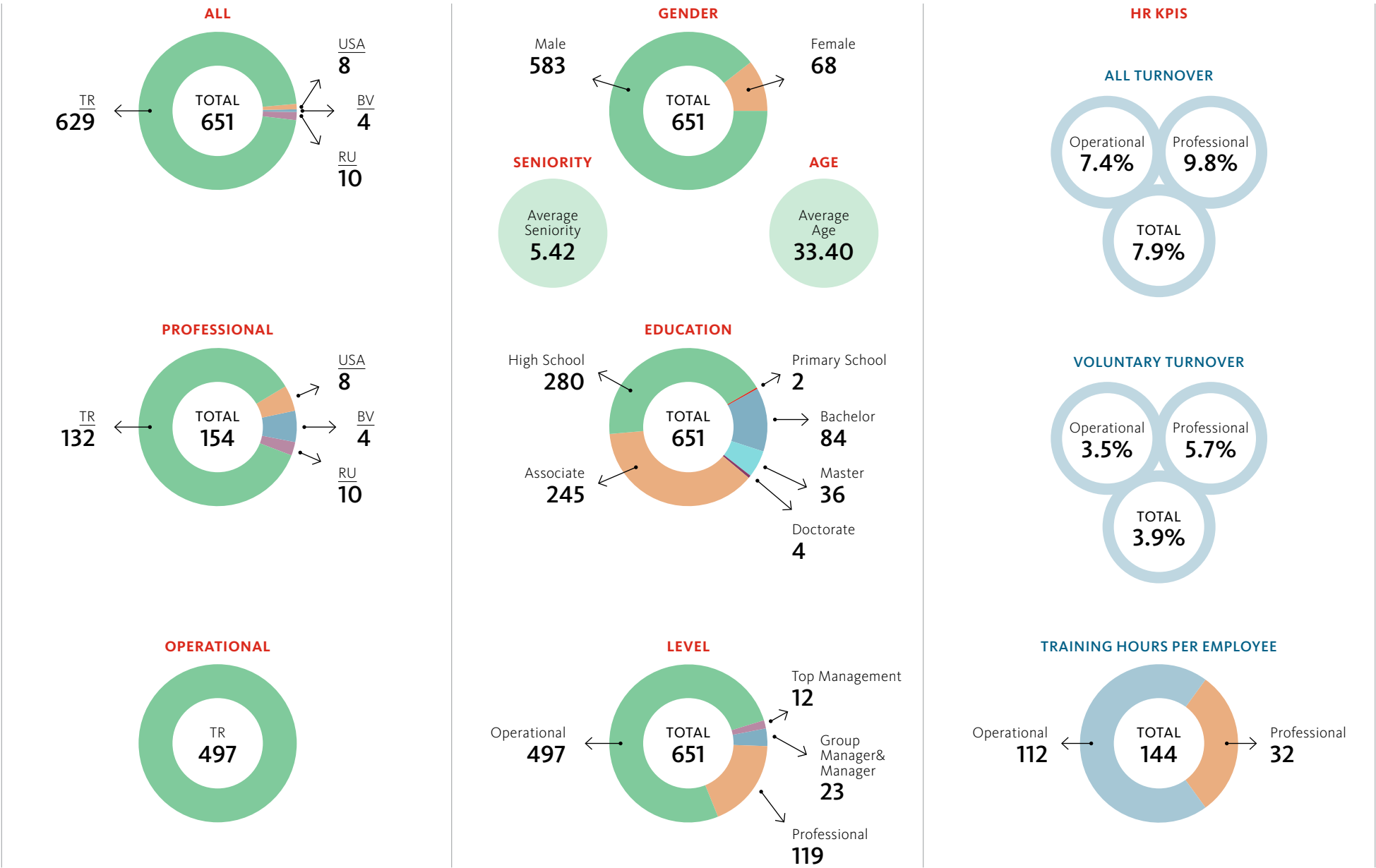
Talent and performance management

As an ever-growing organization, DowAksa aims to recruit potential and passionate talents who will carry the company into the future, realize its ambitious goals, and develop its existing personnel. Within the framework of talent management policies, with an understanding focused on the business results and competencies of the employees, individual goals are structured in an integrated manner with the goals of the company, directorate, and department. It is ensured that the goals of the company are achieved by systematically evaluating the goals and ensuring the continuity of this structure.

As a result of the evaluations made in line with defined job families, roles, competencies and criteria, the career development of employees is guided by behavioral and professional development programs, coaching and mentoring programs, rotations, and assignment practices in different tasks and projects. Succession planning, promotion integrated with the performance system, internal announcement systems and rotation processes are integral parts of HR policies. Company's aim is to evaluate the performance of employees and to plan their development with a holistic perspective, with an understanding focused on individual business results and competencies determined in line with the company's strategy and goals.



HUMAN RESOURCES ANALYTICS (2021)



OCCUPATIONAL HEALTH AND SAFETY



OCCUPATIONAL HEALTH AND SAFETY (OHS)



TARGET

> Zero incident rates

DowAksa attaches great importance to the internalization of OHS culture in all business processes, as well as technical equipment, healthy facilities and equipment regarding occupational health and safety.

Complying with all laws and international regulations and with customer requirements at DowAksa facilities, creating a safe working environment with continuous improvement and employee participation forms the basis of the company's OHS Policy. Occupational health and safety processes are carried out by an HSE team of 12 people.

OHS Policy

As DowAksa Advanced Composite Material Industries Limited Company,

- > We abide by all the Legal Regulations and Standards in all our activities, in line with our health and safety approaches.
- > We aim at preventing potential accidents, injuries and health deteriorations by effective health and safety management.
- > We evaluate all potential risks due to the working environment. In order to reduce the risks to an acceptable level, we implement actions.
- > We believe that processes can be realized successfully only by the mutual effort of all the company employees. We plan, develop and implement training programs and actions in order to make sure that health and safety activities are adopted as a life style.



→ OCCUPATIONAL HEALTH AND SAFETY

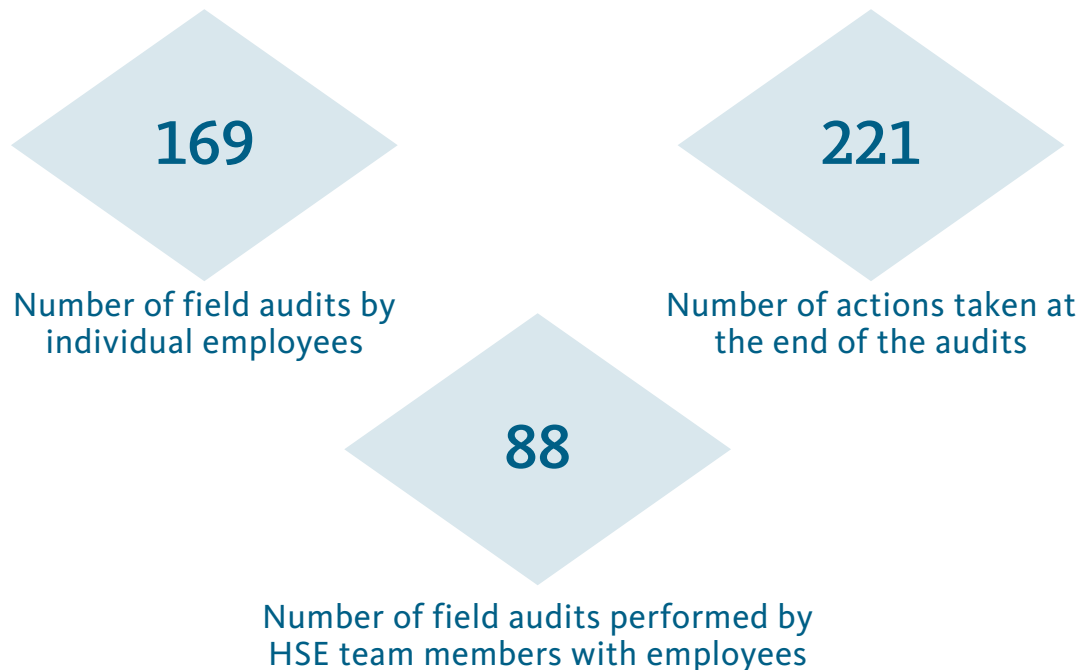
OHS Procedures and Practices

DowAksa raises awareness of dangerous situations and behaviors that may adversely affect people, the environment and the continuity of activities, and ensures the safety of the work environment, with various OHS procedures and practices based on OHS local legislation and international OHS practices.

Trying to raise awareness with different practices every year regarding the detection of dangerous situations and dangerous behaviors, DowAksa conducted field audits in 2021 based on these procedures and practices. This two-stage study was carried out with operational-level employees.

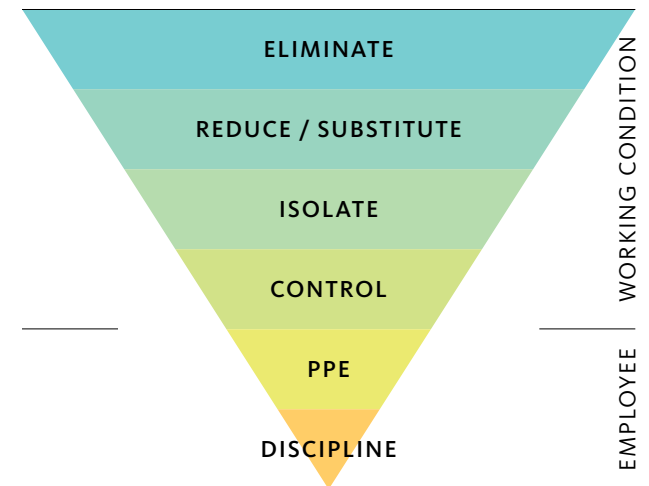
In the first stage of the study, a group of Health, Safety and Environmental (HSE) teams consisting of maximum five employees detected dangerous situations and behaviors by making observations in a department other than their own working area, accompanied by an expert. Each employee who completed the first stage of this study, which is done with a detailed list of questions, was asked to carry out the field audit alone in the second stage.

In this 2021 study a total of 88 field audits were carried out with the HSE team. Employees carried out a total of 169 audits individually. As a result of these audits, 221 action assignments were made.



RISK EVALUATION PROCEDURE

The risk assessment procedure has been prepared in accordance with the Occupational Health and Safety Risk Assessment Regulation, enacted based on the 10th and 30th articles of the law, to cover workplaces within the scope of the Occupational Health and Safety Law. The relevant procedure aims to evaluate the possible negative effects of the hazards within the scope of DowAksa activities on people, the environment and the continuity of activities, to determine the officers and implement practices to ensure that the identified risks remain at an acceptable level by taking precautions.



As seen in the table, the method followed in reducing the effects of risks starts from the source of the risks and progresses to the person exposed to the risk. In risk assessment forms, actions taken against risks are acted on according to the risk hierarchy.

→ OCCUPATIONAL HEALTH AND SAFETY

RISK ANALYSES PROCESS

ASSIGN TEAM (FOR RISK ANALYSIS)

IDENTIFY TASK, ACTIVITIES, WORK PROCESS
(DEFINE WORKING STEPS)GATHER INFORMATION FOR EACH
TASK, ACTIVITIES

IDENTIFY THE HAZARDS

EVALUATE THE RISK

PRIORITISE RISKS

MANAGE RISKS

REVIEW YOUR ASSESSMENT AND
REPORT TO MANAGEMENT**OCCUPATIONAL ACCIDENTS AND
ENVIRONMENTAL ACCIDENTS MANAGEMENT
PROCEDURE**

This procedure, which covers DowAksa employees, subcontractor employees and contractor company employees, aims to determine the principles of the actions to be taken in case of any accident (work accident, environmental accident, fire and near-miss accidents) that may occur at DowAksa.

WORKPLACE HEALTH UNIT PROCEDURE

This procedure aims to ensure that the work of the workplace health unit is regulated in accordance with laws and regulations and that the work and training activities are carried out to a high standard. The procedure aims to ensure that the workplace health unit, which provides 24/7 service at DowAksa Yalova Facilities, operates in line with certain principles.

OCCUPATIONAL SAFETY BOARD

The Board convenes once a month with the participation of employee representatives and relevant department heads. Accidents, near misses and health data are systematically followed up in each meeting. In line with the decisions taken in the Board meetings, relevant persons are assigned to address any deficiencies and nonconformities.

HSE DEPARTMENT

Employees can communicate with HSE Unit employees verbally or in writing (e-mail, message) at any time. In addition, communication between employees and the department is ensured through methods such as communication boards, the QDMS Document Management System, Near Miss and Hazardous Situation Behavior Evaluation Forms, the Suggestion System, Digital Education Platforms, and the DowAksa Portal.

CMT - CRISIS MANAGEMENT TEAM

In DowAksa, the COVID-19 pandemic has been the most important item on the agenda in terms of OHS activities. The most important work within the scope of OHS has been carried out in this context. COVID tests are carried out 24/7 in the workplace health unit, and employees who show signs of illness or are in contact with COVID carriers are detected. The Crisis Management Team (CMT), which was created to control the effects of the pandemic and its effects, has been continuing its meetings since the pandemic emerged. Decisions taken by the CMT continue to be implemented promptly. An occupational physician, who is a member of the CMT, guides the decision mechanism and contributes directly to the process.

Ambient hygiene measurements and the thermal comfort of the working environment are measured by the workplace physician, and action is taken accordingly. Again, with the ergonomics studies carried out by the workplace doctor, employees are observed in the work environment, suggestions are offered, and improvements are made.

In the company's infirmary, basic medical examination services are provided within the framework of preventive health measures. Most of the time, employees can get basic health care and access the drugs they need without going to hospital. In addition to these services, regular health bulletins are used to inform employees and increase awareness.

→ OCCUPATIONAL HEALTH AND SAFETY

OHS Training

COMPULSORY TRAINING

Since DowAksa's operations are classed as very dangerous, employees are required to receive 16 hours of occupational health and safety training every year. This training, the content of which is determined by regulation, was given in the form of distance education during the pandemic period. In order to provide online education, infrastructure and consultancy services were obtained from leading digital companies in the sector.

INTRODUCTORY TRAINING

Induction training is given to every new recruit by the HSE senior engineer or HSE specialist on the day of their employment. Within the scope of the 2-hour training, information about DowAksa's general rules and what to do in case of emergency is shared with the employee.

TRAINING AFTER A WORK INCIDENT

Training including studies and information to prevent the accident from happening again is given to employees after a work accident.

Those who have been away from work for more than six months for any reason are given renewal training prior the start of work.

TEMPORARY AND PERMANENT EMPLOYMENT TRAINING

Within the scope of the training, in the unit where the employee will start their new job, information about previous accidents, special precautions to be taken regarding occupational health and safety, hazards and risks specific to the unit, and personal protective equipment (PPE) to be used in the works to be performed in the unit are provided.

SPECIFIC TRAINING

In line with needs and demands, extra training is organized in addition to the compulsory basic training. For example, due to the Explosion Protection Document, which was updated in the last month of 2021, informative training was organized for operators whose work is within scope of the document. The training, which was planned as 2 hours, was given by the consultant who prepared the training document.

2021 TRAINING SESSIONS

- > 16 hours of online OHS training
- > Yalkim emergency trainer training
- > Toolbox training
- > Employment OHS training
- > Introduction OHS training
- > First aid training
- > OHS training for returning to work after an occupational accident
- > Fire relay team training
- > Psychotechnical OHS training
- > ADR training
- > Environmental legislation training
- > Waste management training

OHS data for 2021

OHS training per employee	46 hours
Working hours	1,322,757 hours
Incident severity rate (ISR*)	16.18
Lost time Incident rate (LTIR*)	0.35
Non-lost time incident rate (nLTIR*)	2.72
Occupational illness rate	0
Number of near-miss cases	26

**per 200,000 manhours*

ENVIRONMENT



Production in line with the international standards with respect to environment

DowAksa observes the principles of efficient use of resources and respect for the environment in all its operations. Beyond fully complying with the rules set by laws and regulations, it manages its facility at international standards in line with the requirements of its certificates.

In its activities, DowAksa focuses on responsible and efficient use of resources, waste reduction, incorporating waste into production with a circular economy model, and protecting biodiversity and ecosystems. By measuring and reporting its environmental impact, it aims to minimize the pressure created by global environmental problems on natural resources with a sustainable development and continuous improvement approach. Environmental activities are carried out by a team of 15 people.



Environmental Policy

As DowAksa Advanced Composite Material Industries Limited Company:

- > We abide by all the legal regulations and other conditions regarding environmental management.
- > All of the natural resources and energy required for our activities are used in the most efficient way possible and are constantly supervised. We implement policies aimed at improving the performance of our environmental management system.
- > In all of our company's processes we aim at sustainable development and use the technologies that are the most appropriate and environmentally friendly.
- > We behave sensitively and efficiently towards preventing pollution. We reduce at the source all effects on the environment resulting from our activities. We aim for the lowest possible effect on the environment by use of recycling.
- > We make every effort to ensure the effective participation of all our employees in our environmental management system and increase their level of consciousness by training. We aim to enhance the awareness of our employees and stakeholders about the environment.

PROJECTS RELATED TO ENVIRONMENT

- > Waste management
- > Emissions, emission modelling, greenhouse gas calculation and verification
- > Soil pollution
- > EIA studies
- > Environmental & Social Due Diligence (ESDD) studies applied in new investments
- > Water and wastewater management
- > Chemicals management
- > Environmental Permit System
- > Exercises
- > Audits
- > Accident and Near Miss Incident Investigations

ENVIRONMENTAL STANDARDS

- > ISO 9001 - 10 years
- > ISO 14001 - 10 years
- > ISO 14064 - 3 years

ENVIRONMENTAL TRAINING

Focusing on carrying its environmental standards to a higher level within the framework of the principle of continuous improvement, DowAksa regularly maintains training programs covering subjects such as standard facility practices, procedures, waste management, recycling and conscious consumption.

- > Environmental management system applications
- > Waste management and zero waste training
- > Environmental legislation
- > Water and wastewater management
- > Industrial symbiosis
- > Greenhouse gas
- > General environmental training

ACTIVITIES FOR REDUCING ENVIRONMENTAL IMPACT

Being aware of the need to prevent pollution, DowAksa reduces all environmental impacts resulting from its activities at source, and aims to have the least impact on environment with its recycling activities. With its systems operated to international standards and new investments in such systems, the company acts to prevent pollution and to minimize impacts on air, water and soil.

In this regard, DowAksa first assesses whether it is possible not to do any activity that creates environmental impact, and adopts waste prevention as its primary goal. For example, the company switched to dry ice instead of using water for cleaning carbon fiber machines and is working on what can be done to reduce the environmental impact in cases where it has to operate. If an emission or waste is generated as a result of the activity, options are investigated to minimize the effect of the activity. If there is a chemical used, the means of replacing it with a harmless alternative is found. DowAksa treats any resulting emissions so that they are not emitted direct to the environment, and gives priority to recycling and reuse options rather than sending wastes to landfill.

In new investments and new activities, environmental impacts are determined before the investment or activity is carried out, and the measures to be taken are evaluated. If there is an environmental impact in the changes made on the system or the organization afterwards, this is also evaluated in line with change management principles.

WATER AND WASTEWATER MANAGEMENT

Evaluating water and wastewater management in a holistic framework, DowAksa focuses on using water in the most efficient way in its activities and realizes project investments that will reduce water consumption.

Water directly affects production processes and is a risk factor in DowAksa's operational geography, and is among the company's top priorities. Aiming to calculate its corporate water footprint on a regular basis, the company sends its wastewater to Yalkim OSB wastewater treatment plant (WWTP) with a connection permit. Yalkim OSB WWTP has the capacity to handle the wastewater flow rate of 15,000 cubic meters per day, and to reduce the pollution load of 34,000 kg chemical oxygen demand (COD) and 5,000 kg total Kjeldahl nitrogen (TKN) per day to the legal discharge criteria specified in the Water Pollution Control Regulation.

The COD value of the wastewater sent by closed pipeline to the Yalkim OSB WWTP is measured online at the start of treatment, and the TKN value is measured manually. The discharge of wastewater, which is treated using physical, chemical and advanced biological treatment technologies, is monitored 24/7 by the online measurement system (SAİS), which is traceable by the Ministry of Environment, Urbanization and Climate Change, Provincial Directorate of Environment.

In the biological treatment unit at Yalkim OSB WWTP, nitrogen is removed using the combined nitrification-denitrification process by applying advanced purification (total nitrogen parameter removal) technology, while the COD is reduced to a technologically-applicable minimum by using additional chemicals (precipitation improvers) and powdered activated carbon suspension. Under these conditions, the discharge values at the end of the pipe are close to inert COD and inert TKN levels, and it is ensured that the effluent remains below the limit values determined by the Ministry of Environment, Urbanization and Climate Change. Legal limits met throughout 2021.

Due to the mucilage problem experienced in the Sea of Marmara in 2021, more than 70 inspections were carried out, with or without prior notice, by the Ministry of Environment, Urbanization and Climate Change and its affiliated organization during the works carried out at the treatment plant. As a result of these inspections, no non-compliance was encountered at YALKİM OSB wastewater treatment plant.

DowAksa has started feasibility studies in a Wastewater Project, which it will carry out jointly with YALKİM OSB, that aims to reduce the chemical and energy consumption of the treatment plant by making improvements in the character of its wastewater.

Adopting a responsible approach to water consumption in its production activities, DowAksa develops projects to reduce water consumption and reuse water. When the annual water consumption data is examined, it appears that the company's total water consumption has increased. However, taking into account the company's capacity increase and production values, it is apparent that, through good practice and improvements, water consumption per product has actually been reduced.

Water Consumption, m³/1 million USD turnover

2020	5,453
2021	4.225

WASTE MANAGEMENT



TARGET

- > Zero landfill and combustion without energy recovery by 2040
- > 50% Reduction in waste generated from the pultrusion production 2021–2030

With its aim of preventing environmental pollution and circulating waste back into the economy, DowAksa separates the wastes generated as a result of its activities at source, recovers them, and disposes of them in accordance with legislation according to waste type.

DowAksa, which carries out its waste studies in cooperation with the YALKİM Environment Directorate and the HSE Directorate, considers “collection of waste separately at the source and prioritizing prevention, reduction and recovery opportunities” as a basic principle in its waste management system.

Waste management system at DowAksa:

- > Determination of sources of waste arising
- > Monitoring of quantities and changes
- > Reducing the amount formed, preventing pollution
- > Recovery, reuse or disposal alternatives
- > Cost-reducing measures
- > Planning of separation, collection and transportation processes at source
- > Arrangement of suitable collecting vehicle/ equipment and temporary storage areas
- > Recording of data related to the installed systems
- > Undertaken as a systems improvement.

DowAksa also has a Zero Waste Certificate, which covers the establishment, dissemination, development, monitoring, financing and documentation of the waste management system initiated by the Ministry of Environment, Urbanization and Climate Change.

At DowAksa, which attaches great importance to waste management, the basic principle in waste management is to prevent waste at its source. In cases where waste cannot be prevented, projects on reduction and separation at source are evaluated. DowAksa adheres to the Industrial Waste Management Plan in waste management; Though the total amount of waste has increased due to the increase in capacity over the years, the company's improvement projects mean that waste has decreased when evaluated by product.

WASTE QUANTITIES

(ton waste/million USD turnover)

Waste Type	2020	2021
Packaging waste	1.89	3.63
Household waste	0.823	0.498
Hazardous waste	17.7	17.8
Non-hazardous waste	3.26	4.65
Medical waste	0.002	0.002
Total	23.7	26.5

ENERGY EFFICIENCY



TARGET

> Using 100% renewable energy sources by 2030 for pultrusion product.

Energy efficiency, which is among the main policies of DowAksa, is maintained with the support of senior management; the aim is to reduce energy intensity continuously with regular improvements.

At DowAksa, energy specific values are monitored on a product basis, and annual targets are set and followed within the scope of budgetary and environmental management. With the energy report, inefficient points are determined and projects that will increase efficiency are implemented.

DowAksa tries to reduce its carbon footprint by constantly researching alternative and renewable energy sources, and not only acts in accordance with all legal obligations but also increases its employees' knowledge and awareness of energy issues through training activities.

In the Yalova plant, which also has 'energy management' in its administrative structure, inefficient operation of machinery is monitored by preventive maintenance practices. By fault tracking and the target setting, it is ensured that the machines operate at the highest possible capacity. Energy consumption is monitored online with industrial automation applications such as DCS and Scada.



→ ENERGY EFFICIENCY

Best practices in energy

EFFICIENCY PROJECTS – ELECTRIC

- > Electricity consumption in furnaces was reduced 5 percent by increasing the flow through VAR and RTO units.
- > Oven and chimney insulations were renewed, and electricity consumption was reduced by 3 percent.
- > Electricity consumption was reduced 4 percent by optimizing the balance of the oxidation furnaces.
- > Fuel electric heaters in the precursor production lines were replaced with steam heaters.
- > Old-style traditional lighting has been replaced with efficient LED lighting.

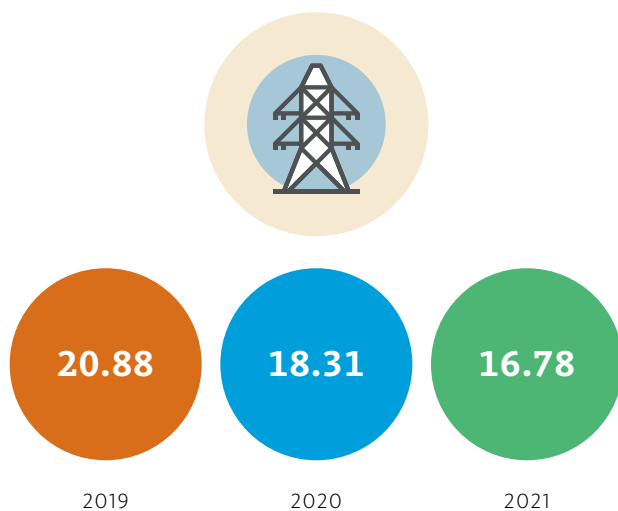
EFFICIENCY PROJECTS - STEAM

- > With the renewals and changes made in the condensate return systems, the energy obtained from the condensates was increased by 12 percent.
- > Efficiency increased by 2 percent by insulating the steam lines.
- > Valve optimization and drying system balancing studies continue.

EFFICIENCY PROJECTS - NATURAL GAS

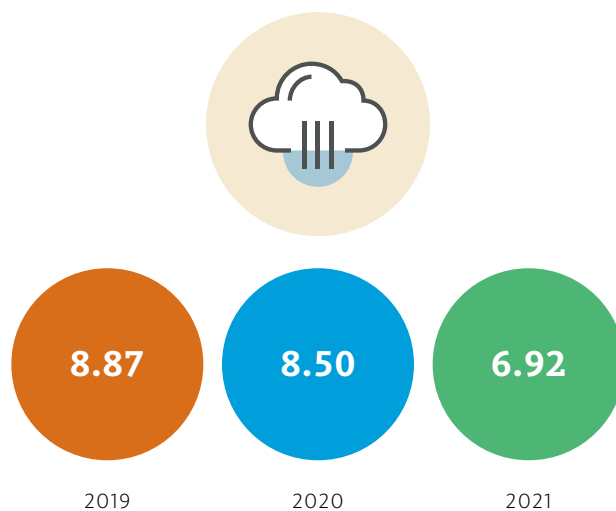
- > 30% efficiency was achieved by optimizing the fresh air valves of VAR and RTO units and changing the PID parameters.
- > VAR boiler insulations were developed and a 4 percent increase in efficiency was achieved.

ELECTRICITY CONSUMPTION (KWh/Kg of CF)*



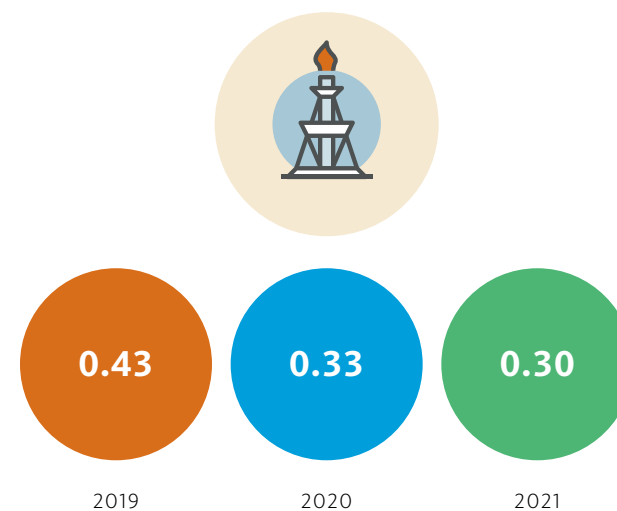
* Electricity consumption per kg of carbon fiber

STEAM (kg/kg PC)*



* Steam consumption per kg of precursor

NATURAL GAS (m³/kg CF)*



* Natural gas consumption per kg carbon fiber

CORPORATE CARBON FOOTPRINT



TARGET

- > Carbon neutral in pultrusion production by 2030
- > Reducing emissions from scope 1 and 2 in pultrusion production by 92% 2021–2030

Believing in the necessity of monitoring and managing the greenhouse gases emitted in order to mitigate the effects of climate change, DowAksa has produced a “Corporate Carbon Footprint Report” for its activities in 2021.

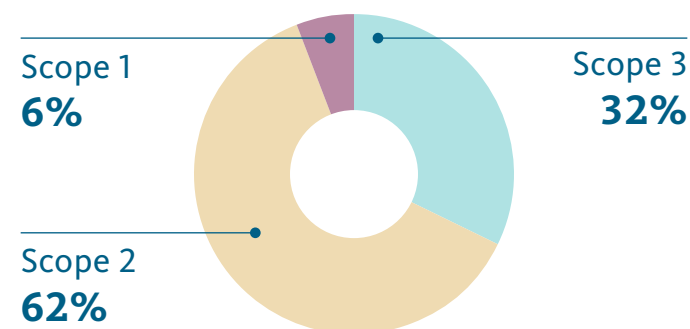
Corporate Carbon Footprint Report details the carbon footprint of DowAksa's indirect and direct activities throughout 2021, calculated within the framework of the ISO 14064 Standard.

Scope 1, 2 and 3 emissions, within the framework of ISO 14064 standard and Greenhouse Gas Protocol Corporate Accounting and Reporting Standards and Corporate Value Chain (Scope 3) Standard determined by ISO 14064 standard and GHG Protocol, refer to Scope 1, Scope 2 and Scope 3 emissions resulting from the economic activities of the company.

The corporate carbon footprint calculation shows that Scope 2 emissions predominate, with a share of 62% among DowAksa's total emissions. Scope 3 emissions, which evaluate the emissions generated in the company's value chain, make up 32% of its total emissions. Emissions from process, stationary combustion, vehicle use and other activities included in Scope 1 make up just 6% of total emissions.

‘Hotspot’ analysis highlights the top three sources as electricity consumption, raw materials and purchased steam/cooling. Efficiency and emissions-reduction projects are being developed for electricity consumption, which is the highest emission source. Projects are carried out by DowAksa's Energy Management and Sustainability Departments. With DowAksa's Sustainability Roadmap, which started in 2021, KPIs and surveys that will enable supplier tracking are determined and projects that will reduce the carbon footprint of raw materials are developed.

Training and workshops have been planned to inform DowAksa employees about the corporate carbon footprint studies and to increase project ownership. It is anticipated that brainstorming between different departments will enable evaluation of emission reduction opportunities.



Hot Spots

Steam and Cooling

22%

Electricity Consumption

40%

Raw Materials

29%

CORPORATE SOCIAL RESPONSIBILITY



Contribution to the Türkiye's economy and social development



With corporate social responsibility (CSR) at the heart of its corporate strategy, DowAksa supports the economy and development of the country in which it operates, as well as social development, with its CSR studies.

In addition to its operations throughout Türkiye, DowAksa attaches particular importance to supporting the social development of the communities in the region where its production facility is located and where it operates. Various studies are carried out to research and increase local employment opportunities as much as possible, to support the development of the local economy, and to support social activities and therefore the social development of the communities through sponsorship. DowAksa senior management attaches importance to supporting the basic needs of local communities and their cultural activities in active communication with its local stakeholders.

According to the Environmental Social Due Diligence Report prepared for the company's newly planned investment, DowAksa has supported the following social responsibility activities so far.

DowAksa supports the Taşköprü Spor

DowAksa renewed its social facilities in Gökhan Güney Stadium, which belongs to Taşköprü Municipality, within the scope of the three-year sponsorship agreement signed with Taşköprü Spor, which competes in the Yalova Super Amateur League.

Taşköprü Sports Club President Samet Ilgaz noted that they highly value the voluntary support of DowAksa, which is one of the most important industrial organizations of the city, and said, "Our biggest goal is to offer better opportunities to our youth in our infrastructure and to rise to higher leagues with our renewed facility. I would like to thank DowAksa for protecting our youth, the future of Taşköprü Spor."

Believing in the value of investments made in sports and young talents, DowAksa sees supporting the development of young people and Taşköprü, where its factory is located, as highly important.



Strong support from DowAksa to Yalovaspor Basketball Team

Continuing its support for Yalova, DowAksa has undertaken the sponsorship of Semt77 Yalovaspor, which represents the city in the ING Basketball Super League.

Continuing its production in Yalova and adding economic power to both the city and Türkiye with its advanced technology, exports and employment since its establishment, DowAksa continues to increase its support for sports.

The value of the sponsorship is praised by Yalovaspor Club President Orbay Tuna as: "With the success of our club, basketball has become one of the most followed sports events among our youth in Yalova. We rely on our youth to reach the points we aim for in the Super League. DowAksa's contributions to our city and club are very valuable."

DowAksa is proud to support the Yalovaspor Basketball Team, which wrote the big story of the small city by sponsoring Semt77 Yalovaspor, which represents Yalova in the Super League.

- › Participation in the blue cap campaign run by the Spinal Cord Paralytics Association of Türkiye (2019-2020).
- › As part of the book collection campaign, collecting the books in the Book Box and delivering them to the needy.
- › Food and leftovers that are not consumed in the cafeteria are delivered to Yalova Municipality Animal Shelter.
- › Sapling donation to Tema Foundation for newborn babies of employees, wreath donation to Turkish Education Foundation (TEV) in case of death of employees' close relatives.
- › Sponsorship of Yalova Orthopedics Sports Club (YOSK).
- › Distribution of food and hygiene packages for employees and their families twice a month during the COVID-19 period.
- › Sponsorship of the DowAksa Earthquake Simulation Center located in Kidzania Istanbul, which aims to raise awareness of children against earthquakes and to give them teamwork, sense of responsibility and awareness.
- › Sponsorship of Historical Fevziye Oil Wrestling held in Altinova district of Yalova.



GRI CONTENT INDEX

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GRI Standard	Page Number/Direct Source
GRI 102: General Disclosures 2016	
GRI 102: General Disclosures 2016	Corporate Profile
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	102-10 7-16, 41
	102-11 https://www.dowaksa.com/doc/DowAksa-Etik-%C4%B0lke-ve-Politikolari.pdf
	102-12 43
	102-13 43
	Strategy
	102-14 4-5
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GRI Standard	Page Number/Direct Source
GRI 102: General Disclosures 2016	Governance
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	102-42 26
	102-43 26
	102-44 26
	Report Profile
	102-45 3
	102-46 3, 26
	102-47 47
	102-48 Since it is DowAksa's first sustainability report, there is no repeated information.
	102-49 Since it is DowAksa's first sustainability report, there is no repeated information.
	102-50 2021
	102-51 The report is first sustainability report of DowAksa.
	102-52 1 year
	102-53 3, 72
	102-54 3
	102-55 68-71
	102-56 Not available.

GRI Standard		Page Number/Direct Source
GRI 200: Economic Standard Series		
	Economic Performance	
GRI 103: Management Approach 2016	103-1	7-16, 38-43
	103-2	7-16, 38-43
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GRI 201: Economic Performance 2016	201-1	38, 18-19
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GRI 103: Management Approach 2016	103-1	39-43
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GRI Standard		Page Number/Direct Source
GRI 300: Environmental Standard Series		
	Materials	
GRI 103: Management Approach 2016	103-1	56-62
	103-2	56-62
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GRI 301: Materials 2016	301-1	32-36
	Energy	
GRI 103: Management Approach 2016	103-1	56-57, 60-61
	103-2	56-57, 60-61
	103-3	56-57, 60-61
GRI 302: Energy 2016	302-1	60-61
	302-3	60-61
	302-4	60-61
	302-5	No data is reported on energy consumption of sold products.
	Water	
GRI 103: Management Approach 2016	103-1	56-58
	103-2	56-58
	103-3	56-58
GRI 303: Water and Wastewater 2018	303-1	Water consumption of DowAksa supplied from Aksa Akrilik Kimya Sanayi A.Ş. and use water is supplied from YALKİM OSB.
	303-2	Water consumption of DowAksa supplied from Aksa Akrilik Kimya Sanayi A.Ş. and use water is supplied from YALKİM OSB.
	303-3	Water consumption of DowAksa supplied from Aksa Akrilik Kimya Sanayi A.Ş. and use water is supplied from YALKİM OSB.
	303-4	There is no recycled or reused water.
	303-5	Given as intensity figure in Water and Wastewater Management section.

GRI Standard		Page Number/Direct Source
	Biodiversity	
GRI 103: Management Approach 2016	103-1	56-57
	103-2	56-57
	103-3	56-57
GRI 304: Biodiversity 2016	304-1	DowAksa does not have operations in high biodiversity areas.
	304-4	DowAksa has no activities in the habitats included in the IUCN Red List.
	Emissions	
GRI 103: Management Approach 2016	103-1	56-57
	103-2	56-57
	103-3	56-57
GRI 305: Emissions 2016	305-1	62
	305-2	62
	305-3	62
	305-4	Other indirect emissions arising from DowAksa activities are included under the corporate carbon footprint but are not reported as intensity figure.
	305-5	62
	305-6	There is no related information within this scope.
	305-7	62

GRI Standard		Page Number/Direct Source
	Wastewater and Waste	
GRI 103: Management Approach 2016	103-1	56-59
	103-2	56-59
	103-3	56-59
GRI 306: Wastewater and Waste 2016	306-1	58-59
	306-2	58-59
	306-3	58-59
	306-4	58-59
	306-5	58-59
	Environmental Compliance	
GRI 103: Management Approach 2016	103-1	56-62
	103-2	56-62
	103-3	56-62
GRI 307: Environmental Compliance 2016	307-1	During the reporting period, DowAksa has not been subject to any fines, in cash or in kind, for non-compliance with environmental laws and regulations.

GRI Standard		Page Number/Direct Source
GRI 400: Social Standard Series		
	Employment	
GRI 103: Management Approach 2016	103-1	45-54
	103-2	45-54
	103-3	45-54
GRI 401: Employment 2016	401-1	49
	Employee-Management Relations	
GRI 103: Management Approach 2016	103-1	45-54
	103-2	45-54
	103-3	45-54
GRI 402: Employee Management Relations 2016	402-1	Minimum notice periods due to operational changes are in full compliance with laws and regulations.
	Occupational Health and Safety	
GRI 103: Management Approach 2016	103-1	51-54
	103-2	51-54
	103-3	51-54
GRI 403: Occupational Health and Safety 2018	403-1	51-54
	403-2	During the reporting period, there have been no work-related accidents that have caused death or serious injury.
	403-3	DowAksa does not have any work procedures that could ex-pose its employees to high-risk diseases.

GRI Standard		Page Number/Direct Source
	Education and Training	
GRI 103: Management Approach 2016	103-1	45-54
	103-2	45-54
	103-3	45-54
GRI 404: Training and Education 2016	404-2	48
	Diversity and Equal Opportunity	
GRI 103: Management Approach 2016	103-1	45-54
	103-2	45-54
	103-3	45-54
GRI 405: Diversity and Equal Opportunity 2016	405-1	47
	Non-Discrimination	
GRI 103: Management Approach 2016	103-1	45-54
	103-2	45-54
	103-3	45-54
GRI 406: Non-Discrimination 2016	406-1	There were no cases of discrimination in the reporting period.

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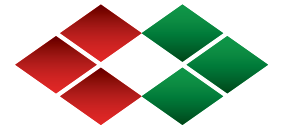
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