PILLAR 1:
ENVIRONMENTAL IMPACT

Environment Overview

At RAK Ceramics, we are a Group of four companies - Tiles, Sanitaryware, Faucets, and Tableware united in delivering premium ceramic solutions with a strong focus on sustainability. We acknowledge our significant energy and water intensity and the pivotal role we play in energy and water conservation and climate change mitigation. Consequently, we prioritize efforts to reduce our consumption by investing in technologies that enhance the energy and water efficiency of our production processes, as well as waste reduction initiatives.

Faucets: Eco-friendly faucets and bathroom fittings with a strong focus on water-saving technology, offering up to 60% saving on water consumption. In 2024, RAK Ceramics' faucets production achieved a 21.87% increase in production, and despite higher energy demands, we successfully implemented energy-saving initiatives, including the installation of Variable Frequency Drives (VFDs), contributing to a more efficient manufacturing process.

Sanitaryware: Complete solutions provider offering products designed to suit all budgets and tastes with accessories and bathroom furniture. Driving energy efficiency in sanitaryware production, exemplified by a 45% reduction in fuel consumption through our investment in one of the largest tunnel kilns in the industry.

Tableware: Products supplied to over 40,000 hotels in more than 165 countries with clients including JW Marriot, Hilton, Hyatt and Sheraton amongst others. We achieved significant energy and water savings in 2024, including 10.06% reduction in overall energy consumption & 23.47% reduction in fresh water consumption, while earning ISO 50001 certification for our Energy Management System along with Tiles & Sanitary ware.

Tiles: In 2024, we improved energy efficiency by saving 45,880 MMBTU of gas through kiln heat recovery projects and reducing spray dryer production. For water efficiency, we boosted water sustainability by adding a 3,500 m^3/day Seawater Reverse Osmosis (SWRO) plant, cutting external water reliance by 700 m^3/day. For waste and circularity, we reduced fired loss and improved sustainability by increasing recycled material use, launching "Mission 98" to cut fired rejection rates, and reintegrating waste like polishing sludge and Effluent Treatment Plant waste back into production

We implement multiple environmental initiatives to enhance energy efficiency and reduce our environmental footprint. Firstly, we operate two cogeneration plants with gas turbines, maximizing efficiency by utilizing exhaust air for ceramic spray dryers, thereby significantly reducing natural gas consumption and emissions. Secondly, we recover thermal energy from roller kilns using a heat recovery system, minimizing energy loss through flue gas and cooling gas exhaust stacks. Additionally, we piloted replacing chillers with cooling towers to decrease power consumption, and we have upgraded our power plant by replacing heavy fuel oil engines with natural gas engines, reducing carbon emissions and increasing on-site electricity generation. These efforts collectively contribute to our commitment to sustainability and energy conservation.

Between 2023 and 2024, our total energy consumption witnessed a 9.09% decrease from 7.04 PJ to 6.40 PJ, while our energy intensity of sales decreased slightly by 0.19% between 2023 and 2024. We also witnessed a decrease in natural gas, purchased electricity and diesel consumption in 2024.

This reduction in energy consumption and intensity reflects our ongoing efforts to optimize resource use, which is particularly important given the higher energy and water demands of GP tile production. In 2024, RAK UAE achieved a GP production of 26.58 million M2, with a Ceramics:GP ratio of 37:63.

From 2025 onwards, we will intensify our efforts to reduce the resource intensity of GP tile production in response to evolving market trends. This commitment will further solidify our position as a forward-thinking leader in sustainability.

↓ 9.09%

Decrease in Energy Consumption compared to 2023

↓ 8.84%

Decrease in Natural Gas Consumption compared to 2023 (MMBTU)

↓ 5.02%

Reduction in Diesel Consumption compared to 2023

↓ 0.19%

Decrease in Energy Intensity of Sales compared to 2023

↓ 22.80%

Reduction in purchased electricity compared to 2023

We operate 3 Effluent Treatment Plants, 1 Sewage Treatment Plant and 1 Desalination Plant

Our organization has implemented a Closed-Loop Manufacturing System to enhance water and waste management across all production processes. We ensure that 100% of our wastewater is treated and partially reused on-site through our Effluent Treatment Plants, and Sewage Treatment Plant. Additionally, we have a Desalination Plant, all contributing to sustainable and efficient resource utilization.

In 2024, our 3 Effluent Treatment Plants (ETP) treated 938,897 m3, and our 1 Sewage Treatment Plant (STP) treated 190,124 m3 of wastewater.

Impressively, 100% of all our wastewater continues to be treated on-site, ensuring compliance with regulatory standards and minimizing environmental impact. Our commitment to water sustainability is evident in our proactive approach to wastewater and desalinated water management. The total wastewater treated in 2024 was 1,129,011 m^3, there was also a 24.4% rise in the treatment of desalinated water, which reached a total of 2,013,853 m^3 in 2024.

Plant	Effluent Treatment Plants		
Year	2023	2024	% change
Water Treated (m3)	1,035,286	938,897	-9.31%
Plant	Sewage Treatment Plant		
Year	2023	2024	% change
Water Treated (m3)	188,081	190,124	1.09%
Plant	Desalination Plant		
Year	2023	2024	% change
Water Treated (m3)	1,522,420	2,013,853	24.4%

Initiatives for 2025

Water Stewardship: Continue working towards achieving the Water Stewardship certification by SAS Global

↑ 24.40%

Increase in water treated in Desalination Plant compared to 2023

938,897 m3

Of wastewater treated in our 3 ETPs in 2024

1,129,011 m3

Total wastewater treated in 2024

100%

Of all our wastewater is treated on-site.

↑ 1.09%

Increase in wastewater treated in our STP compared to 2023

↑ 24.40%

Increase in desalinated water treated compared to 2023

Tiles

TILES	
Production Process	Sustainability Initiative
Muda	• Use of MUDA materials from Group Companies to formulate a 100% recycled body product
Crushing	• Increase of crushing capacity through modification of existing ceramic clay crusher and installation of new crusher
Atomising / Spraying	• R&D and gradual increment in slip density to reduce gas consumption • Cogeneration of energy, reduced utilization of spray drier with relatively high gas consumption by capacity utilization of Co-generation equipped spray drier • Upgradation of gas turbines • Heat recovery • Upgradation for utilization of kiln hot air
Pressing	• Recovery of powder loss
Firing	• Undertaking of Mission 98 to reduce the fired rejection • Use of fired rejections in fired tiles
Drying	• Installation of bypass line in order to improve the Heat recovery temperature from Kiln to Driers
Polishing	• Recycling the polishing sludge to use in the production
Squaring	• Recycling the squaring powder to use in the production
Packing	• Eco-wrap the carton usage to pack the final products
Electrical Overall	• Variable Frequency Drives (VFD) installations in all plants across different departments • VFDs in sea water pump house • New cooling water installation
Body Preparation	• Water efficiency through waste water reutilization
Slip Preparation	• Reduction in water consumption through increment in slip density

ENERGY EFFICIENCY

As one of the world's leading tile manufacturers, RAK Ceramics recognizes its responsibility to reduce emissions and support climate action. In 2024, total energy consumption for tile production increased by 25% compared to 2023, driven by shifts in product mix and rising demand for Gres Porcelain (GP) tiles. The Ceramic to GP production ratio reached 37:63, up from 61:39 in 2022 and 43:57 in 2023, significantly impacting overall energy usage.

Despite the higher total energy demand, energy intensity for GP tile production decreased by 1.86% due to ongoing efficiency improvements. We also reduced the thickness standardization of key sizes of our Gres Porcelain tiles from 9mm to 8.5mm, achieving a 5.5% reduction in material usage. This change enhances efficiency by lowering raw material consumption, reducing energy use in production, and minimizing environmental impact.

Our sustainability initiatives encompass both energy management and gas reduction strategies. We have upgraded gas turbines and implemented heat recovery systems that capture heat from the kiln and utilize kiln hot air, further improving energy efficiency. In 2024, we executed nine gas reduction projects that optimized heat recovery from kilns and dryers while reducing spray dryer production—one of the most energy-intensive processes—resulting in gas savings of 45,880 MMBTU. Additionally, we completed 21 energy efficiency projects, leading to electricity savings of 758,580 kWh.

In our production processes, we have introduced various energy efficiency measures, including:

- Applying refractory coatings to thermal vessels to improve heat absorption and reduce ambient temperatures.
- Installing auto air regulators and oxygen analyzers to optimize combustion and minimize energy loss.
- Utilizing Vulcan burners and fuel-saving catalysts to enhance fuel efficiency.
- Implementing X-Plate technology to improve combustion efficiency within furnaces.

Furthermore, our research and development efforts have led to a gradual increase in slip density, which has reduced gas consumption during production. The integration of cogeneration energy has effectively decreased reliance on high gas-consuming spray driers, allowing us to reduce energy consumption while enhancing overall process efficiency.

We have also significantly reduced fired rejections through Mission 98, recycling them into new fired tiles to minimize waste and improve resource use. Innovations such as a bypass line to enhance heat recovery temperatures from the kiln to the driers, along with the recycling of polishing sludge and squaring powder for production, have further optimized material use throughout our operations.

Currently, we are advancing three direct energy-saving initiatives. Having successfully implemented smart factory technologies, we are now establishing a high-efficiency sustainable manufacturing unit, reinforcing our commitment to energy conservation and responsible production.

↓ 1.86%

Reduction in energy intensity of GP tiles production compared to 2023 (per GJ/m2)

↓ 5.50%

Reduction in GP tiles thickness

Materials Manufacturing	Gas Consumption Reduction between 2017-2024 (%)	Electricity Consumption Reduction between 2017-2024 (%)
Glazed Porcelain (GP)	36.4%	33.73%
Red Body (RB)	30.55%	26.11%

Tiles (contd.)

ENERGY EFFICIENCY

In 2024, RAK Ceramics continued to make significant strides in sustainability with the establishment of new production facilities, enhancing efficiency, reducing environmental impact, and meeting evolving market demands.

ENERGY-EFFICIENT SMART MANUFACTURING

RAK Ceramics has transformed its tile production process by modernizing operations and adopting a more streamlined approach. Previously, manufacturing relied on four glaze lines and two kiln operations until 2018. By shifting to a single-line operation, productivity increased by 16% in 2023 compared to prior capacity, with an additional 3.8% growth in 2024 over the 2023 average.

Beyond improving efficiency, this modernization has driven substantial energy savings. Power consumption has decreased from 4.18 kWh/m^2 in 2018 to an average of 4.06 kWh/m^2 in 2024, while gas consumption has reduced from 0.097 MMBtu/m^2 in 2018 to 0.084 MMBtu/m^2 in 2024. These improvements reflect a strong commitment to sustainability, reducing both operational costs and the company's environmental footprint.

The new facility has also optimized production by prioritizing high-demand tile formats, particularly Gres Porcelain 60 x 120 cm tiles, which offer better productivity compared to larger sizes. In 2024, the facility expanded its capabilities to include a higher proportion of larger slab sizes, demonstrating adaptability to market trends while maintaining efficiency. This transition to smart manufacturing represents a strategic move towards increased productivity and sustainability in tile manufacturing.

SUSTAINABLE SLAB PRODUCTION WITH ADVANCED TECHNOLOGY

In 2024, RAK Ceramics began developing a state-of-the-art exclusive slab production unit, an ongoing project that integrates sustainability and innovation to enhance efficiency and minimize environmental impact. The facility is equipped with the advanced PCR 2180 system, one of the most efficient technologies for producing larger slab formats, ensuring higher productivity while minimizing resource consumption.

A key sustainability feature is the near-zero fuel horizontal dryer, which utilizes total heat recovery from the kiln. This innovation has led to a 35.97% reduction in gas consumption compared to previous facilities, significantly lowering energy usage and emissions. Additionally, the unit is projected to achieve a 36.84% decrease in power consumption, contributing to both cost savings and environmental sustainability.

The facility also houses the longest European kiln in the Middle East, spanning 300 meters, further enhancing production capacity and efficiency. Additionally, a digital decoration and glazing line enables high-definition designs while minimizing waste, and automated processes, such as an automatic shrink hood wrapping machine, improve operational efficiency and reduce material handling losses.

Through these advancements, RAK Ceramics continues to lead in sustainable manufacturing, integrating cutting-edge technology and energy-efficient processes to drive productivity while reducing environmental impact.

ENERGY EFFICIENCY INITIATIVES SUMMARY

SMART MANUFACTURING UNIT

The installation of this new production facility transitioned from four glaze lines and two kiln operations to a single line operation. It resulted in a productivity increase of 16% in 2023 and an additional 3.8% in 2024, while reducing power consumption from 4.18 KwH/M2 in 2018 to 4.06 KwH/M2 in 2024.

EXCLUSIVE STATE OF THE ART SLAB MANUFACTURING UNIT

The new unit has the advanced PCR 2180 system, a near-zero fuel horizontal dryer, and the Middle East's longest European kiln (300m), enhancing efficiency, productivity, and sustainability in slab production.

ENERGY EFFICIENCY INITIATIVES

In 2024, nine gas reduction projects and 21 energy efficiency initiatives saved 45,880 MMBTU of gas and 758,580 kWh of electricity by optimizing heat recovery and reducing high-energy processes.

POWER SAVINGS

758,580 kWh

estimated savings as a result of 21 power savings initiatives executed in 2024

THERMAL SAVINGS

45,880 MMBTU

savings in gas as a result of 9 thermal savings initiatives executed in 2024

Energy Efficiency Initiatives for 2025 and onwards

- Energy Monitoring Team: Our Team inspects and suggests initiatives to reduce gas consumption in kilns and spray dryers.
- Studying AI Solutions in Kilns: We are exploring AI technology to optimize kiln operations for better energy efficiency.
- Conversion of Red Body Sizes from Wet to Dry Milling: This is planned for 2025 to eliminate spray dryer energy consumption.
- Auto Slab Storage & Picking: We are studying automation for slab handling to minimize damage and improve efficiency.

WATER SUSTAINABILITY

In 2024, we made significant progress in enhancing water sustainability within our tile production processes, with a focus on securing reliable water sources, improving treatment systems, and reducing our environmental impact. Key initiatives included:

SEAWATER REVERSE OSMOSIS (SWRO) PLANT INSTALLATION

We successfully commissioned a 3,500 m^3/day Seawater Reverse Osmosis (SWRO) plant, ensuring a reliable freshwater supply. This new facility has significantly reduced our reliance on external water sources, eliminating the need for outsourcing 700 m^3/day of freshwater and contributing to greater resource self-sufficiency.

Finally, our commitment to water efficiency is reflected in our efforts to reuse wastewater and reduce overall water consumption through innovations like increasing slip density, which lowers water use in the production process.

WATER SAVINGS

45,900 m3

estimated savings through waste water reutilization in Body Preparation

WATER SAVINGS

↓ 8%

reduction in water consumption in slip preparation process

Tiles (contd.)

EFFLUENT TREATMENT PLANT (ETP) ENHANCEMENT

We commissioned an advanced Effluent Treatment Plant (ETP), boosting our wastewater treatment capabilities. This initiative has improved the quality of water discharged from our facility while also reducing the need for tanker trips for white water loading, which has minimized transportation-related emissions and resource use.

INTERNAL AND THIRD-PARTY MONITORING

To ensure ongoing compliance with water safety standards and environmental regulations, we implemented a robust monitoring system throughout 2024. This included quarterly third-party assessments and daily internal evaluations to ensure continuous water quality, efficiency, and long-term sustainability of our operations.

These initiatives resulted in lower consumption of both fresh and treated water in 2024 compared to 2023. Additionally, total water usage decreased, while the use of wastewater in tile production increased compared to the previous year. 45,900 M3 of water saved through waste water reutilization in Body Preparation. Through production initiative of increment in slip density we saved close to 8% of water consumption in the slip preparation process.

Water Sustainability Initiatives for 2025 and onwards

- Planned Upgrade – Aeration System in Sewage Treatment Plant (STP): In 2025, we plan to replace the outdated aeration system in our Sewage Treatment Plant (STP) with a new diffused aeration system. This upgrade will further enhance treatment efficiency, reduce power consumption, and contribute to a decrease in our overall energy usage and carbon emissions.
- Upgraded SWRO Plant: In 2025, we will also focus on upgrading our SWRO plant (500 m^3/day) to improve its operational efficiency and better streamline our water management processes.

WASTE AND CIRCULARITY

We have made significant advancements in our production processes, leading to a notable reduction in fired loss. These improvements were achieved by increasing our use of recycled materials, minimizing leakages, and addressing day-to-day handling losses. By optimizing these aspects of our operations, we have enhanced both efficiency and sustainability across our production lines.

In addition, we have focused on reducing sludge generation from our Effluent Treatment Plants (ETPs). This was accomplished by improving the water recycling process within our ETPs, enabling a more efficient use of resources and minimizing waste.

In terms of packaging, we've introduced eco-wrap cartons for packing our final products, reducing our reliance on traditional packaging materials. To support operational efficiency, we've installed Variable Frequency Drives (VFDs) across multiple departments and plants, including in our sea water pump house and cooling water systems, contributing to both energy savings and enhanced equipment performance.

In terms of recycled content in our products, as part of our commitment to quality improvement, we have launched "Mission 98," a comprehensive initiative implemented across all our plants. This mission has significantly reduced fired rejection rates and improved overall production quality. Furthermore, we have increased the utilization of fired rejection materials, polishing sludge, and ETP waste by modifying formulas through a targeted approach. This innovation allows us to reintegrate the total waste generated back into our production processes, reinforcing our focus on sustainability and waste reduction.

A key achievement is our use of MUDA materials from Group Companies to create a 100% recycled body product. This approach helps reduce raw material consumption while promoting circular economy principles. In line with this, we've made significant upgrades to our crushing capacity, including modifying existing ceramic clay crushers and installing new crushers, which has optimized resource use and enhanced production efficiency.

Out of the 12 different types of generated MUDA from tiles manufacturing operations, we are currently utilizing 119% (out of which 19% consumption is from stock quantity.)

Recycled Input Materials (Generated from Tiles production & ETP only)	2022	2023	2024
ETP sludge	70~75%	85~90%	95%~98%
Fired tiles	90~95%	85~90%	190%~200%
Polishing sludge	85~90%	55~60%	80%~82%
Green tile	90~95%	95~100%	95%~98%
Squaring waste powder	85~90%	95~100%	82%~85%

In 2024, the recycling efficiency of ETP sludge improved significantly, reaching 95–98%.

Fired tiles achieved remarkable efficiency, with recycling rates reaching 190–200%. Also, Green tiles and squaring waste powder maintained high recycling efficiencies, at 95–98% and 82–85%, respectively.

RESOURCE SAVINGS

206,025 TONNES

Total MUDA consumption

RESOURCE SAVINGS

95-98%

of ETP sludge and Green Tile materials are recycled

WASTE AND CIRCULARITY INITIATIVES SUMMARY

INCREASE OF RECYCLED CONTENT IN GPG

The recycled content in GPG has increased by 7.82% in 2024 when compared to 2022 baseline, demonstrating a commitment to enhancing sustainability through higher recycling rates.

REDUCTION IN IMPORTED RAW MATERIALS AND INCREASE IN LOCAL MATERIAL USAGE

The initiative has successfully reduced the import of raw materials by 12.51% in 2024 when compared to 2022 baseline , which helps decrease the carbon footprint associated with transportation. The total local consumption of materials increased significantly, from 36,030 tons in 2023 to 54,838 tons in 2024, which reduces reliance on imported materials and minimizes waste.

THICKNESS STANDARDIZATION OF KEY SIZES

By standardizing the thickness of key sizes in Gres Porcelain from 9MM to 8.5MM, the initiative has led to a optimization in raw material consumption and packing costs, contributing to waste reduction.

CONVERSION OF TRAY CARTONS TO MULTIPACK CARTONS

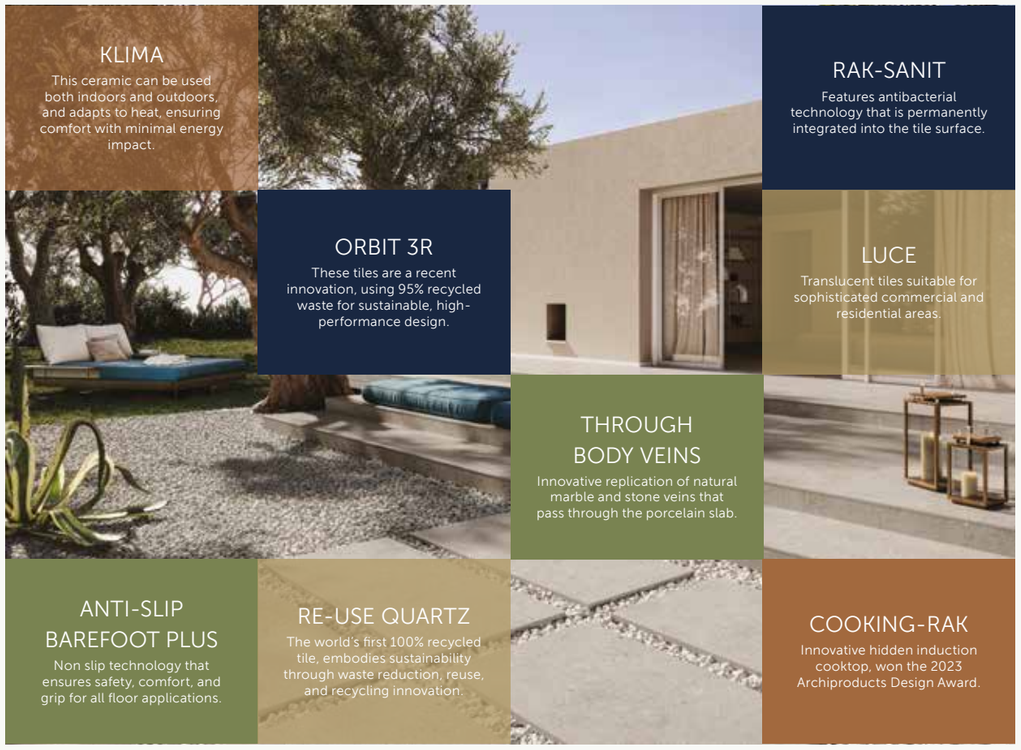
This initiative has reduced packaging consumption by 502.16 tons in 2024, saving approximately 12,052 trees and avoiding water contamination equivalent to 10,040,000 gallons.

FRIT MANUFACTURING PLANT

The establishment of a frit manufacturing plant has reduced dependency on imports. Currently, 40% of materials for frit production are acquired locally.

Tiles (contd.)

TILES SUSTAINABLE PRODUCTS



Waste and Circularity Initiatives for 2025 and onwards

- Resource Intensity: Reduce the resource intensity of our Gres Porcelain tiles.
- Effluent Treatment Plant (ETP): Continue to reduce ETP sludge generation.
- Granulate Production Group (GPG) Recycling: Focus on increasing the recycled content in GPG further, building on the progress made in 2024.

Sanitaryware

SANITARYWARE	
Production Process	Sustainability Initiative
Sanitaryware manufacturing	
Body Preparation	• 100% recycling of greenware rejects. • Recycling of final rejects from manufacturing
Glaze Preparation	• Recycling of waste glaze
Casting	• Utilisation of waste heat from the kilns in drying wares. • Use of High pressure, Medium pressure & Low pressure (Spagless) casting methods to reduce requirement of LNG for drying moulds and to use less water per unit produced.
Kiln	• Recycling of hot combustion air by using waste heat from kilns for energy saving • Use of energy efficient burners
Moulding	• Product engineering for reducing weight (raw material) and process losses.
Sorting	• Use of recycled water for functional testing of finished products
Electrical & Mechanical	• Maximized use of Variable Frequency Drives in plant equipment • Implement energy saving opportunities in the air compressors • Energy efficient motors for higher loads
Toilet Seat and Cover manufacturing	
ABS Seat & Cover	• 100% recycling of greenware rejected materials
Packing	• Use of recyled materials to make packaging products

Sanitaryware (contd.)

ENERGY EFFICIENCY

We are proud to lead the charge in pioneering energy efficiency within the sanitaryware production industry, driven by our commitment to innovation, quality, and sustainability. As we continue to shape the future of bathroom solutions, our focus remains on producing high-end, sustainably crafted products that not only meet the highest standards but also set new benchmarks for energy-efficient manufacturing.

In 2023, we significantly ramped up our efforts to operate more sustainably, undertaking key initiatives aimed at reducing power consumption. Among the most impactful was our investment in one of the largest tunnel kilns in the industry, coupled with retrofitting several of our existing kilns with cutting-edge technologies designed to reduce fuel consumption. These steps marked a significant leap forward in our pursuit of energy efficiency.

Building on this momentum, 2024 saw the introduction of several advanced solutions. We expanded our energy-saving initiatives with the installation of Variable Frequency Drives (VFDs) and the introduction of a new high-efficiency kiln. A major milestone was the transition from gas-fired burners to an indirect water heating system, which now powers our ECS burners. This shift not only improves energy efficiency by using water to transfer heat, but also reduces our reliance on gas, helping to lower overall energy consumption.

Additionally, we implemented a system to capture and reuse hot air from the TK-6 process using a heat exchanger. The recovered heat is repurposed to warm water, which then powers the ECS burners in the HPC cell and the slip tanks, further driving down energy waste and improving efficiency across our production lines.

Our energy reduction efforts didn't stop there. We also introduced smart technologies such as controlled compressors, energy-efficient motors, and blowers for casting, as well as an indirect water heating system for spagless casting cell. Further in-house modifications to equipment, including setters, control panels, conveyors, and moulding plates, allowed us to enhance both the productivity and energy performance of our manufacturing processes. These projects and other maintenance activities helped us achieve a total reduction of 1,671 metric tons of CO_2.

The impact of these initiatives was clear. In 2024, we saw substantial improvements in our energy efficiency metrics. The energy intensity of sales (GJ / 000 AED) increased by 6%, and gas consumption per unit dropped by 28%.

These groundbreaking projects are not only a testament to our leadership in sustainable manufacturing but also underscore our ongoing dedication to pioneering innovative solutions that benefit both our business and the environment.

↑ 28%

Savings in gas consumption in production in 2024

1,671

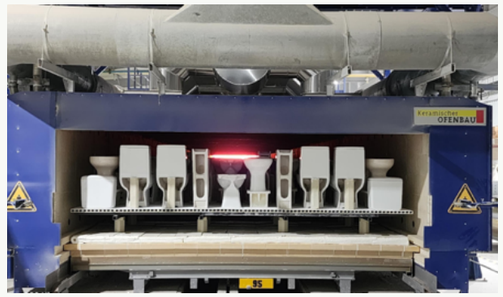
Metric tons of CO_2 saved by enhancing productivity in operational processes

ENERGY EFFICIENCY - WORLD'S MOST EFFICIENT SANITARYWARE KILN

RAK Ceramics is proud to introduce the largest and most energy-efficient sanitaryware kiln in the world. Measuring 162 meters in length and 4 meters in width, this groundbreaking kiln can process up to 1.4 million units per annum. Designed with versatility in mind, it operates with adjustable cycle speeds (16, 18, or 20 hours) to align with varying production demands.

The kiln's specific fuel consumption is 715 Kcal/kg of ware, representing a 45% reduction compared to our existing tunnel kilns and a 70% decrease compared to shuttle kilns. In terms of electricity consumption, the kiln uses just 0.025 kWh/kg of ware, following a similar percentage reduction in energy use. This cutting-edge kiln is also future-ready, with the ability to be converted to 100% hydrogen fuel, further enhancing its sustainability credentials.

This installation marks a significant step in our manufacturing roadmap for a highly automated, high-efficiency plant, driving RAK Ceramics towards even more sustainable and innovative production processes.



Energy Efficiency Initiatives for 2025 and onwards

- Equipment Upgrades: Installation of VFDs, IE5 motors, and cooling tower to enhance energy efficiency.
- Sustainability Improvements: Airflow meters, air dryers, and efficient ceiling fans to optimize air and energy use.
- Energy Optimization: Improved plant lighting and burner runtime adjustments to reduce overall energy consumption.

WATER SUSTAINABILITY

In 2024, we made remarkable strides in advancing water sustainability within our sanitaryware production. Through a series of targeted initiatives aimed at improving efficiency and boosting the reuse and recycling of wastewater, we successfully reduced our total water consumption by 11.98% compared to 2023.

Our ongoing commitment to reducing water intensity in both production and sales remains at the forefront of our sustainability efforts. In 2024, we achieved a significant reduction in the water intensity of production by 15%, showcasing the success of our water efficiency strategies. However, we also observed an increase in the water intensity of sales by 29%.

These results reflect our continued dedication to optimizing water use and promoting sustainability across every aspect of our operations, further cementing our position as a leader in water-conscious manufacturing within the sanitaryware industry.

↑ 11.98%

Savings in water consumption for Sanitaryware production in 2024

↓ 15%

Decrease in water intensity in Sanitaryware production in 2024

Water Sustainability Initiatives for 2025 and onwards

- We will continue to work towards reducing the water intensity of production.
- We aim to further improve the reuse and recycling of our wastewater.

Sanitaryware (contd.)

Recycled Input Materials		2021	2022	2023	2024
Fired Sanitaryware	Re-used Fired Sanitaryware rejects (as % of production)	2%	2%	2%	2%
	Re-used Fired Sanitaryware rejects (Tons)	1,066	1,143	842.5	654.0
	Total Fired Sanitaryware rejects generated (Tons)	4,059	6,593	5,046	4,690
	Re-used Fired Sanitaryware rejects (as % of total generated)	26.3%	17.3%	16.7%	13.9%
Green Sanitaryware	Re-used Greenware Sanitaryware (as % of production)	20%	25%	25%	25%
	Re-used Greenware Sanitaryware (Tons)	13,332	19,210	14,154	12,553
	Total Green Sanitaryware rejects generated (Tons)	13,332	19,210	14,154	12,553
	Re-used Greenware Sanitaryware rejects (as % of total generated)	100%	100%	100%	100%
Raw Glazes	Re-used reclaimed glaze (as % of production)	45.94%	44.14%	40.02%	40.8%
	Re-used reclaimed glaze (Tons)	2,458	2,660	2,001	1,884
	Total reclaimed glaze generated (Tons)	Data not available	2,665	2,164	1,936
	Re-used reclaimed glaze (as % of total generated)		99.8%	92.5%	97.3%

In sanitaryware production: From the total waste generated from the sanitaryware plant, 100% Greenware Waste is recycled and reintroduced within sanitaryware raw material production. 13.9% of Fired ware rejects is reprocessed and reintroduced with raw material production, while the remaining fired wastes moved to Tiles plant process. In 2024, 97.3% reclaimed glaze was used, an increase of 4.8% more compared to 2023.

WASTE AND CIRCULARITY

In 2024, we took bold steps to enhance resource efficiency, minimize waste, and drive circularity within our sanitaryware production.

Our commitment to circularity is evident in the impressive waste recovery rates we achieved. On average to date we recycle 16.2% of the fired rejects we generate through addition into our product. This may go up to 39% after we increase addition, trials of which are in progress.

We recycle all of the clay rejects and 97.3% of raw glaze rejects. The proportion of glaze rejects cannot be 100% as it would affect the manufacturing efficiency due to chances of aesthetic defects in glazes. Our other major process waste is Gypsum (used plaster moulds – about 400 MT per month) which is expected to be used up by a cement manufacturer in a neighboring Emirate. Samples have been sent across for testing at their end.

We also focused on reducing waste at the end-user level. By reformulating our Fireclay products to be “craze” resistant, we’ve helped extend the lifespan of our products, reducing the likelihood of product defects and minimizing waste after sale. Our innovative “RAK Skin” project, which upcycles rejected products into decorative pieces by applying permanent ceramic decal stickers, is another exciting initiative. This project not only reduces waste but also gives new life to materials that would otherwise be discarded.

Through the improvements in our engobe efficiency, we’ve saved an impressive 86.27 tons of waste since 2022. Engobes, liquid clay coatings used for decorative or protective purposes, have been optimized for better performance, significantly reducing material waste during production.

In 2023, we further strengthened our waste reduction efforts by establishing the RAK Ceramics Sanitaryware Training Academy. This initiative empowered our employees with the skills and knowledge to improve yield, reduce defects, and minimize losses. Additionally, the introduction of the 5S improvement system has helped us maintain high standards of Health & Safety while reducing operational losses across the board.

Together, these initiatives represent a powerful commitment to sustainability, waste reduction, and the principles of circularity, ensuring that our products not only meet the highest quality standards but also contribute to a more sustainable future for the industry.

25%

Of total production are re-used Greenware Sanitaryware

↑ 5%

Increase in recycled scrap ABS (Acrylonitrile Butadiene Styrene) and B-grade rejections

Waste and Recycling Initiatives for 2025 and onwards

- We will continue to work towards re-using fired sanitaryware rejects.

Sanitaryware (contd.)

SANITARYWARE SUSTAINABLE PRODUCTS

Tableware

TABLEWARE	
Production Process	Sustainability Initiative
Body & Glaze Preparation	• Recovery of surplus raw materials • 100% production wastewater recycling • Use of finished and semi-finished products (rejections) in specified % for body preparation
Casting	• 100% production wastewater recycling • Rejections (semi-finished pieces) reuse
Biscuit Firing	• Using X-plates to improve the efficiency of firing with lesser energy consumption • Using the heat from hot pipe for aiding combustion (waste heat recovery)
Glazing	• Compliance with regulations for proper use of materials (to remove) • 100% production wastewater recycling
Glost Firing	• Using X-plates to improve the efficiency of firing with lesser energy consumption • Using the heat from hot pipe for aiding combustion (waste heat recovery)
Decoration	• Made to order to avoid wastage
QC / Sorting & Foot Grinding	• 100% production wastewater recycling • 100% of rejections (finished pieces) are recycled and reused
Packing	• Packaging policy in place for use of only recyclable or compostable or reusable materials for packaging • New cartons made from 80% recycled material which are 100% recyclable
Electrical & Mechanical	• Installation of additional Variable Frequency Drive to factory equipment for energy saving • Heat Recovery Systems installed in 3 kilns
General	• Dust collectors with dust filters are installed for dust generating equipment and areas • Dust and Flue gas emission at RAK Porcelain is regularly monitored and tested by third party laboratories to ensure that emissions do not cross the maximum allowed limit as per government regulatory body and international guidelines (to remove) • Optimized use of natural sunlight for lighting the factory. Skylight roofing are placed throughout manufacturing space, allowing natural light to pervade the workspaces and thereby reducing the energy consumption for lights

Tableware (contd.)

ENERGY EFFICIENCY

In 2024, our efforts to improve energy efficiency in tableware production yielded both successes and challenges. There was a significant decrease in total sales and production of tableware; down 6.13% and 11.19% respectively.

In 2024, we reduced our overall energy consumption by 10.06%, with fuel usage down 11.09% and electricity consumption decreasing by 4.36%, highlighting our continued efficiency improvements. Furthermore, we achieved a major milestone with the receipt of ISO 50001:2018 certification for our Energy Management System (EnMS) across Tiles, Sanitaryware and Tableware. This certification reinforces our commitment to improving energy performance and systematically reducing energy consumption across all operations.

Several key initiatives contributed to these results, including the installation of additional Variable Frequency Drives (VFDs) and enhanced heat recovery systems to 3 of our kilns. These upgrades played a vital role in driving energy savings, resulting in 3,797 MMBTU of natural gas savings and 321,840 kWh of electricity savings from these initiatives alone.

While energy intensity increased due to the operational scaling back, we remain dedicated to further optimizing our energy usage, reducing inefficiencies, and driving sustainability through continued innovation in energy management.

ENERGY SAVINGS

321,840 kWh

Savings due to installation of VFDs and other energy saving initiatives

NATURAL GAS SAVINGS

3,797 MMBTU

Savings due to enhanced heat recovery systems

Energy Efficiency Initiatives for 2025 and onwards

- VFD Installation : Our team is planning to install VFDs in more machines.
- Chiller Replacement : We are going to replace the chiller system with cooling tower for energy savings
- Exhaust fan replacement : We are planning to replace the roof exhaust fan with turbine ventilator fans to improve energy efficiency.
- Pneumatic diaphragm pump replacement : Our Team plans to replace the pneumatic diaphragm pump with electric operated pump for energy savings.

WATER SUSTAINABILITY

Achieving water sustainability in our Tableware production has been a journey defined by hard work, dedication, and a commitment to continuous improvement. In 2024, we took significant steps forward, driven by relentless effort to optimize our water usage and reduce our environmental impact.

Through rigorous planning and implementation of innovative strategies, we succeeded in decreasing the water intensity of production by 13.88%. This achievement reflects the tireless efforts of our team to enhance manufacturing processes and find more efficient ways to use water. But the story doesn't stop there—our overall total water consumption was reduced by an impressive 23.47%, thanks in large part to the advancements made in our Effluent Treatment Plant (ETP). The ETP, now capable of recycling 100% of the wastewater generated from our tableware production, became a cornerstone of our water-saving initiatives.

This achievement was the result of countless hours of hard work to upgrade and fine-tune the system, ensuring that we could maximize the use of recycled water and minimize our dependence on freshwater resources.

The use of recycled water played a critical role in minimizing the impact, and we knew that the work we were putting into maximizing the use of reclaimed water was helping to keep our operations more sustainable despite these challenges.

The effort behind these initiatives was not easy, but it paid off in the form of a remarkable saving of 47,753 m^3 of freshwater. This wasn't just an achievement on paper—it was a testament to the determination and dedication of every team member involved. From upgrading the ETP to implementing new processes for wastewater recycling, our success was built on hard work, persistence, and a shared commitment to water sustainability. It's this unwavering effort that drives us forward, constantly pushing us to find better solutions and set new standards for efficiency and environmental responsibility.

The results speak for themselves, but it's the effort behind them that truly defines our journey toward a more sustainable future.

WATER SAVINGS

47,753 m3

savings of freshwater through optimization of wastewater recycling process

WATER SAVINGS

↓ 23.47%

reduction in water consumption due to advancements in ETP Plant

Water Sustainability Initiatives for 2025 and onwards

- Recycled Water: We have planned to save 280 m^3 of fresh water per day by using recycled water

WASTE AND CIRCULARITY

A cornerstone of our sustainability efforts has been the introduction of a new carton packaging made from 80% recycled materials. This packaging not only incorporates a significant amount of recycled content but is also fully recyclable, reinforcing our commitment to minimizing waste and advancing the principles of a circular economy. By designing packaging with recycling in mind, we are helping to reduce the demand for virgin materials and close the loop in our production processes.

Additional achievements from 2023 which carried throughout 2024 include:

100%

Of all rejected pieces are reintroduced in Tableware production, with 20% being forwarded to tiles

7%

Recycled waste in products in 2024

We've introduced new carton packaging made from 80% recycled material and fully recyclable, supporting our commitment to waste reduction. Additionally, 100% of rejected plain and colored pieces are recycled, with 80% being reintroduced into production and 20% redirected to our Tiles division. This synergy between departments ensures that waste from one area is effectively utilized in another, maximizing resource efficiency across the board. These initiatives highlight our dedication to minimizing waste and fostering collaboration to improve sustainability throughout our operations.

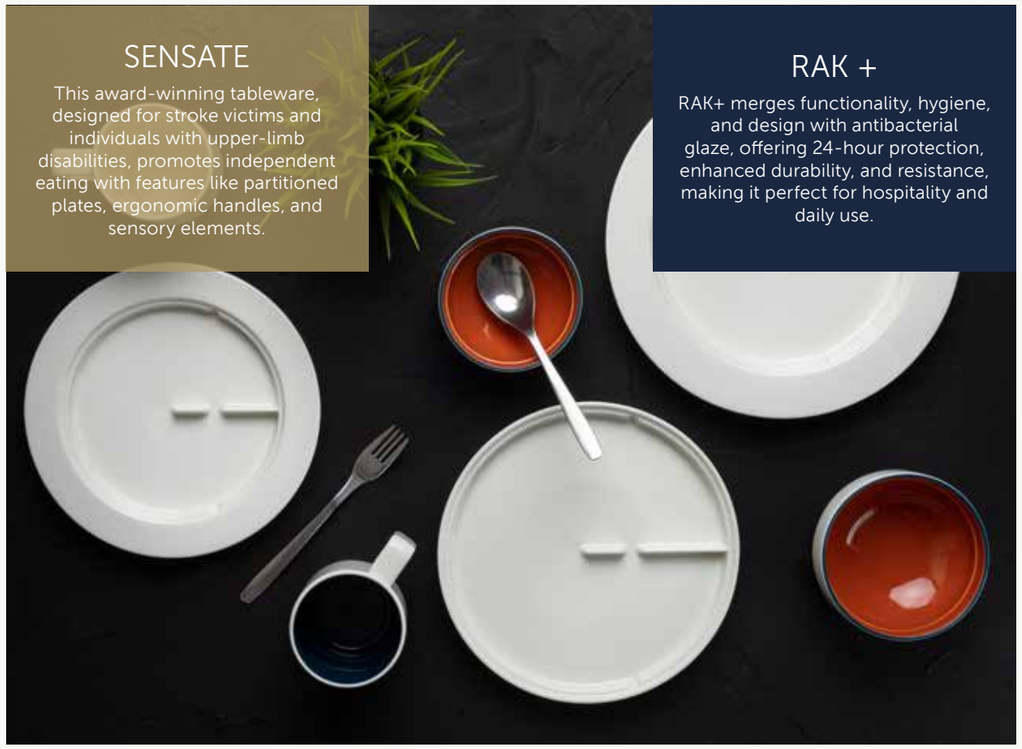
Waste and Circularity Initiatives for 2025 and onwards

- Expanding Product Recycling Program in 2025: Enhance circularity by increasing product recovery and recycling, reducing waste sustainably.

Through these actions, we are taking responsibility for the entire lifecycle of our products and contributing to a future where waste is minimized, and resources are continuously reused.

Tableware (contd.)

TABLEWARE SUSTAINABLE PRODUCTS



Faucets

FAUCETS	
Production Process	Sustainability Initiative
Sand Core	• Re-using the direct scrape sand from the machine by reprocessing and reducing the waste disposal
CNC	• Peeling tools (Bull nose and ball nose) are replaced by insert tools thereby saving the cycle time. This advance process is applied for time-saving.
Grinding	• In the grinding belt consumption of -320 grit, production qty increased by double, therefore the waist belt disposal is reduced.
Electroplating	• All machinery parts are equipped with sensors and control monitors for each level. Rejected parts are used for surface quality analysis. This will reduce the wastage or rework.
Effluent Treatment Plant	• Implemented the water treatment system and reused the treated water.
Assembly	• Lean process applied in our assembly process (01 table for now) for more productivity with timesaving to direct savings in return.
Packing	• Some cartons are re-used for sample packing. • Use only recyclable, compostable, and reusable materials for packaging.
All waste disposals	• All wastes are separated by category and disposing by proper source. (General, Special & hazardous waste)
Electrical Overall	• Almost all the departments are equipped with Variable Frequency Drives installations in all plants across different departments
Assembly – Accessories Packing	• Reduced manpower to 2 persons from 4 person at accessories packing section by introducing automatic packing machine.

Faucets (contd.)

ENERGY EFFICIENCY

In our faucets production division, we continue to make strides toward enhancing energy efficiency, even as we face the challenges of increased production and rising energy demands. In 2024, we experienced a 50% increase in the energy intensity of sales and a 9.52% rise in the energy intensity of production. These increases were primarily driven by a significant boost in chrome production productivity, which, while contributing to higher output, also led to greater energy consumption per unit.

At the same time, we saw impressive growth, with overall production increasing by 21.87% and sales growing by 15.86%. This expansion naturally led to higher energy demands, but we view this not as a setback, but as a natural part of scaling operations to meet growing market demand. While the rise in energy intensity was inevitable due to these factors, it is important to note that it was not solely due to inefficiencies, but also a result of our commitment to meeting the needs of a dynamic market.

Looking ahead, we are focused on continuous improvement and have already put plans in place for 2025 to enhance energy efficiency even further. A key initiative will be the implementation of a solar energy conversion system, which will significantly reduce our reliance on non-renewable energy sources. This initiative aligns with our long-term sustainability goals and will play a critical role in reducing overall energy consumption, improving energy efficiency, and further advancing our environmental responsibility.

Our journey of energy efficiency is one of constant learning and progress, and we are proud of the work we've accomplished so far. As we continue to grow, we are committed to adopting innovative solutions that reduce our environmental footprint while supporting our business objectives. Every step forward represents our ongoing dedication to not just meeting, but exceeding, our sustainability goals.

↑ 21.87%

Overall increase in the production of faucets in 2024

0.15

Energy intensity of faucet sales in 2024 (per GJ/000 AED)

Energy Efficiency Initiatives for 2025 and onwards

- All lights will be converted to LED lights.

WATER SUSTAINABILITY

In 2024, our water sustainability efforts within the faucets production division were met with a series of challenges. The increase in production volumes, coupled with the addition of new machinery, led to a rise in overall water consumption by 27.54%. While this presented an obstacle, we remained determined to find solutions that would allow us to continue advancing our sustainability goals. Despite these challenges, we are proud to report that the water intensity of production remained steady, aligning with 2023 levels, thanks to our ongoing commitment to optimizing water use.

A standout achievement amidst these difficulties was the successful reuse of 406 m^3 of wastewater each month. Through innovative recycling initiatives—repurposing water from washroom flush tanks, as well as from chiller and boiler systems—we were able to significantly reduce our reliance on freshwater, all while maintaining the efficiency and pace of production. This accomplishment highlights our resilience and ability to adapt and innovate even when faced with complex challenges.

Water Sustainability Initiatives for 2025 and onwards

- Water efficiency: Optimize water use, ensuring sustainable growth without increasing consumption.

WATER INTENSITY

↓ 72.52%

Decrease in the water intensity of faucets in sales for 2024

INCREASE IN PRODUCTION

↑ 0.06

Overall increase in the production of faucets in 2024 (m3/piece)

WASTE AND CIRCULARITY

In our faucets production division, we are proud of the significant strides we've made in waste reduction and advancing circularity. We have successfully achieved a 100% reuse rate for all rejected pieces, reintegrating them back into the production process, ensuring that no material goes to waste. This approach reflects our dedication to creating a circular production model where every piece of material is valued and repurposed.

A key milestone in 2024 was our achievement in reducing carton waste by an impressive 20 tons per month. This was driven by the implementation of improved packaging practices and enhanced waste management systems. This accomplishment has had a major positive impact on the environment, supporting our broader sustainability objectives by significantly reducing the waste generated by our production processes.

Furthermore, we took steps to increase the efficiency of our material use by introducing a process to reuse scrap sand. By reprocessing this material, we have been able to achieve approximately 20% savings per month. Not only does this reduce waste, but it also optimizes our resource usage, demonstrating our commitment to the principles of a circular economy.

These achievements showcase the progress we've made and the hard work we continue to put into creating a more sustainable and circular production process. With each step, we are advancing toward a future where waste is minimized, resources are maximized, and our environmental footprint is continually reduced.

20

Tons of carton waste reduced per month

100%

Of all rejected pieces are reused, integrating them back into the production process

Waste and Circularity Initiatives for 2025 and onwards

- Waste Reduction: Aim to boost productivity, reduce grinding belt waste, and cut special waste by 1 ton monthly for sustainability.

Sustainable Logistics

At RAK Ceramics, we're committed to reducing our environmental impact through smarter logistics and procurement. In 2024, we saved around 856,000 kilometers through improved boggy trip performance, which also led to diesel savings of IG 30,000.

By shifting to multimodal transport for raw materials, we have significantly reduced road transport for export containers. Annually, our use of rail freight has cut road distance by 1.2 million kilometers, avoiding 2,328.44 tCO_2e emissions. Additionally, our transition to sea freight has replaced 28,671 nautical miles of road transport, preventing approximately 1.1 million tCO_2e emissions.

In 2024, we further enhanced sustainability by replacing a diesel forklift with a battery-operated model in our carpentry shop, cutting annual diesel consumption by 300 Imperial gallons.

Looking forward, we're exploring carbon capture and biogas generation from solid waste, with plans for implementation in 2025.

⬇ 1.2M km

Reduction in road movement by using rail transport saving

2,328.44 tCO_2e emissions

⬆ 28,671 Nautical Miles

Savings in annual travel of raw material transportation by sea freight compared to road in 2024 saving

1.1 million tCO_2e emissions

⬆ 30,000 IG

Of Diesel Savings in 2024 through improved boggy trip performance

Air Pollution

As part of our ongoing commitment to sustainability, we have made significant strides in reducing our environmental footprint, particularly in the area of air pollution. One of the key pollutants we have focused on reducing is Nitrous Oxides (NOx), which are primarily produced during combustion processes. Over the past year, we are proud to report a notable decrease in NOx emissions, thanks to the implementation of advanced technologies and optimization of our operations. This reduction is a clear reflection of our dedication to minimizing harmful air pollutants and mitigating the impacts of climate change. The decrease in NOx is also significant in reducing the formation of ground-level ozone, a key contributor to smog, as well as improving air quality in surrounding communities.

However, the increase in Sulfur Oxides (SOx), Total Suspended Particles (TSP), and Carbon Monoxide (CO) presents a challenge that we must address moving forward. These increases are primarily due to the rise in production volumes driven by increasing market demand. As production capacity expands, certain emissions have risen as a natural byproduct of this growth. SOx emissions have increased as a result of higher fuel consumption in our manufacturing processes, while TSP and CO levels have been affected by intensified operational activities.

While these increases are a reflection of the growing demand for our products, we are actively working to find solutions to mitigate these emissions. We are exploring the adoption of cleaner technologies and renewable energy sources to power our operations. Additionally, we are reviewing our production processes to identify areas where energy efficiency can be improved and emissions can be reduced.

Pollutants	mg/Nm3 Ave./hr.	
	2023	2024
NOx	2351.03	2,138.15
SOx	346.68	810.22
Total Suspended Particles (TSP)	446.24	738.6
CO	1946.87	2276.76

Emissions

OVERVIEW

Understanding our responsibility in minimizing emissions, we are committed to addressing climate change. Therefore, we focus on enhancing environmental stewardship across our value chain, sourcing raw materials sustainably, and optimizing manufacturing efficiency. Our approach to equipment and production processes prioritizes resource reduction and effective management.

EMISSIONS RESULTS 2023-24

We have been reporting our carbon emissions since 2019. In 2022, we updated our emission calculation methodology to align with the UNFCCC calculator. In 2023 and for 2024, we calculated our emissions as per this methodology as well.

In 2023-24, our total operational emissions decreased by 7.22% and emissions intensity of sales decreased slightly by 0.19%. Key highlights on our emissions from 2023-24 are discussed below:

SCOPE 1 EMISSIONS

Between 2023 and 2024, our Scope 1 emissions saw a decrease of 6.53%, driven by several key initiatives:

- Natural Gas: As the largest contributor to our Scope 1 emissions, natural gas usage decreased by 6.57% (Kt CO2e) compared to 2023. This reduction was achieved through the replacement of heavy fuel oil engines with natural gas engines, along with improvements in Variable Frequency Drives (VFDs) and enhanced heat recovery systems in our kilns. Additionally, our two cogeneration plants, which utilize gas turbines and exhaust air for ceramic spray dryers, have played a significant role in further reducing natural gas consumption.
- Diesel: We reduced diesel usage by enhancing boggy trip performance and transitioning from diesel forklifts to battery-operated models.
- Fuel Oil: Following the conversion of all engines to natural gas in 2023, our fuel oil consumption was reduced to zero.
- Petrol: The most notable reduction came from petrol consumption, which dropped by 68.41% from 2023 to 2024. This was primarily driven by the shift from road to rail for transporting goods.
- Refrigerants: Emissions from refrigerants declined by 2.74% (Kgs), thanks to investments in more efficient and advanced HVAC systems.

Emissions in 2022-24 by Scope (kt CO2e)

Emission Sources	Unit	2022	2023	2024	2023-24 % Change
Natural Gas	kt CO2e	353.20	387.18	361.76	-6.57%
Diesel	kt CO2e	11.70	7.69	7.18	-6.63%
Fuel Oil	kt CO2e	0.76	0		0%
Petrol	kt CO2e	0.03	0.11	0.03	-68.41%
Refrigerants	kt CO2e	5.31	5.11	4.97	-2.74%
Total Scope 1	**kt CO2e**	**371.01**	**400.08**	**373.96**	**-6.53%**
Electricity purchased	kt CO2e	11.92	10.11	6.60	-30.11%
Total Scope 2	**kt CO2e**	**11.92**	**10.11**	**6.60**	**-34.72%**
Total Operational Emissions	**kt CO2e**	**382.93**	**410.19**	**380.56**	**-7.22%**
Total Revenue	Billion AED	3.52	3.45	3.14	-8.99%
Emissions Intensity	**kg CO2e / 000 AED**	**108.79**	**160.65**	**165.59**	**3.08%**

↓ 34.72 %

Decrease in Scope 2 emissions compared to 2023

↓ 7.22 %

Decreasein Total Operational emissions compared to 2023

SCOPE 2 EMISSIONS

Between 2023-24, our Scope 2 emissions decreased by by 34.72%. In our Scope 2, we only calculate electricity purchased, and exclude electricity generated from our power plant, as the natural gas used to fuel the power plant, is included in our Scope 1 emissions.

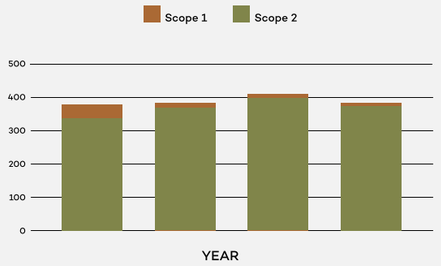
PROGRESS TOWARDS CLIMATE ACTION

We have taken several strides in the last few years to reduce and optimize our energy consumption, which includes, but is not limited to setting up 3 cogeneration plants, undertaking heat recovery, and replacing our chillers with cooling towers. We aim to continue these efforts in the future, with all our divisions exploring and undertaking the latest energy efficiency measures on an annual basis.

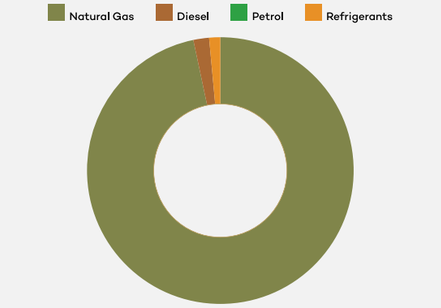
CARBON CAPTURE UTILIZATION AND STORAGE (CCUS)

Furthermore, we are actively developing Carbon Capture, Utilization, and Storage (CCUS) within an industrial symbiosis framework, with the goal of making it operational in the coming years.

TOTAL EMISSIONS FROM 2021-24 (ktCO2e)



SCOPE 1 EMISSION SOURCE BREAKDOWN IN 2024 (ktCO2e)



Initiatives for 2025

- Global and Scope 3 Carbon Calculations: Continue to work towards capturing our global carbon footprint, and Scope 3 emissions.
- Energy Efficiency: Continue our efforts & investments towards energy savings across all our product lines.
- CCUS: Continue to work towards CCUS operationalization.