Environmental, Social, Governance
Report 2023

Table of Contents

Letter from the President and Chief Executive Officer

At MKS, we go where the hardest problems are. Climate change is one of the greatest challenges of our time, and we believe that MKS is uniquely positioned to create solutions that help address this challenge. At the same time, we also recognize we have a responsibility to operate our own business in a responsible manner. We strive to reduce the carbon footprint of our operations and believe we can help our customers do the same. Our vision is to enable technologies that transform our world.

MKS' success has been built upon a foundation of integrity, trust, and collaboration, which we have established through our commitment to developing products that support the success of our customers, the sustainability of our planet, and the safety and productivity of our communities. As more and more of our customers and value chain partners set ambitious decarbonization goals, MKS is committed to supporting their progress in furthering global environmental efforts.

In August 2022, we closed our strategic acquisition of Atotech, a company that has long-considered sustainability a core aspect of its innovation strategy. With our combined leading capabilities in vacuum, photonics, and materials solutions serving the Semiconductor, Electronics and Packaging, and Specialty Industrial markets, along with our expanded portfolio of sustainability-focused solutions, we are well positioned to maintain our leadership as the world evolves. This year's ESG Report provides an update on our progress with respect to environmental, social and governance (ESG) initiatives as we continue to focus on the integration of Atotech into MKS' existing businesses. I am pleased to highlight a few of our recent ESG achievements and commitments:

- **Enhanced ESG oversight and integration in our business strategy.** In December 2022, we hired our first Head of Sustainability to lead our ESG program strategy as we further integrate ESG principles throughout all levels of our organization.

- **External recognition of our sustainability efforts.** Our MSCI ESG rating was updated from "BB" to "A" in March 2023. We also continue to maintain a "Low Risk" ESG risk rating from Sustainalytics.

- **Commitment to setting emission reduction targets in line with the latest climate science.** We recognize we have a responsibility to contribute to global decarbonization efforts, and we support the mission of the Science Based Targets initiative (SBTi) to help companies align with global efforts of halving emissions before 2030 and achieving net-zero emissions before 2050. In September 2023, we submitted a letter stating our commitment to set an emission reduction target aligned with SBTi's criteria.

MKS is a foundational solutions provider to the connected world. We serve more than 85% of the wafer fabrication equipment (WFE) market and enable more than 70% of the process steps in the fabrication of advanced printed circuit boards (PCBs). Our position as a critical technology provider presents a unique opportunity for us as we look to the future. Environmental and social responsibility is not only an important consideration for our operations but also a critical piece of our customer value proposition. We continue to invest research and development (R&D), time, and effort into products that transform our world from both a technological and sustainability standpoint. As the world becomes more digital and connected, switches to electric vehicles, increases renewable energy use, and embraces other sustainable solutions, MKS will be there to support the process.

John T.C. Lee
President and Chief Executive Officer

Business Overview

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About MKS

MKS enables technologies that transform our world. We deliver foundational technology solutions to leading edge semiconductor manufacturing, electronics and packaging, and specialty industrial applications. We apply our broad science and engineering capabilities to create instruments, subsystems, systems, process control solutions, and specialty chemicals that improve process performance, optimize productivity, and enable unique innovations for many of the world's leading technology and industrial companies. Our solutions are critical to addressing the challenges of miniaturization and complexity in advanced device manufacturing by enabling increased power, speed, feature enhancement, and optimized connectivity. Our solutions are also critical to addressing ever-increasing performance requirements across a wide array of specialty industrial applications.

Business Overview

MKS partners with customers to develop ground-breaking solutions for their most advanced technology challenges. Operating at the leading edge of science, engineering, and technology, our vision is to enable technologies that transform our world. Through this work, we enable our customers to be more successful and our societies to be safer and more productive.

In 2022, we further strengthened our position as a foundational technology solutions provider, bringing Atotech's critical process chemistry and equipment solutions into our comprehensive portfolio.

Leading market positions attained through our domain expertise and proprietary technologies

Broad end-market exposure characterized by deep customer relationships

Foundational solutions provider for the connected world

|				
$3.5B 2022 revenue	**$241M** 2022 R&D investment	**~11K** total workforce	**>85%** of wafer fabrication equipment applications served[1]	**A** MSCI ESG rating
33K+ customers	**20+** leading positions in product categories[2]	**4,000+** patents worldwide	**1,500+** R&D employees	**Low** Sustainalytics ESG risk rating

(1) Internal Company Estimate
(2) Product categories where TechInsights and/or MKS estimate MKS is #1 or #2 in segment share

Product Portfolio Overview

MKS delivers foundational technology solutions to leading edge semiconductor manufacturing, electronics and packaging, and specialty industrial applications.

SEMICONDUCTOR

Driving Innovation in Critical Subsystems for Deposition, Etch, Lithography, Inspection / Metrology, Wet Processing
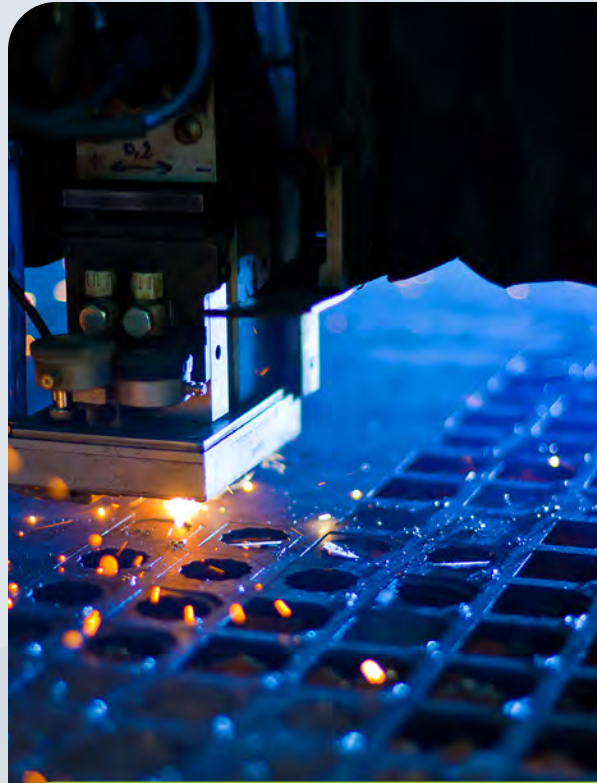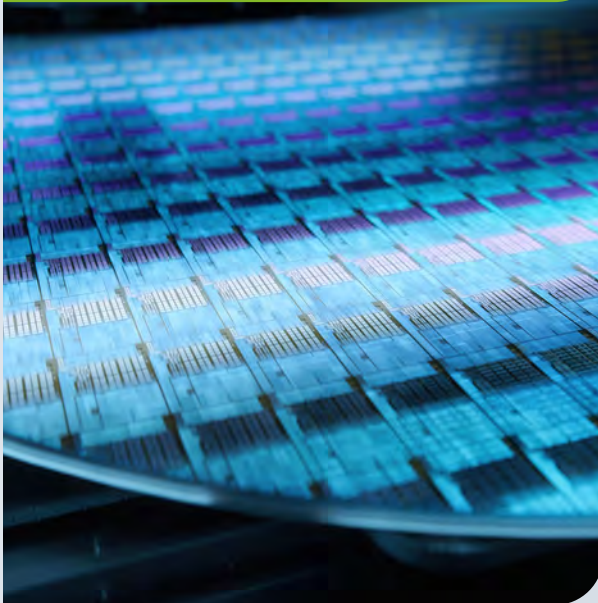
ELECTRONICS & PACKAGING

Enabling Next-Generation Devices for Laser-Based Manufacturing, Next-Gen Interconnect

SPECIALTY INDUSTRIAL

Harnessing Core Expertise Across Markets such as Surface Finishing / Functional Coatings, Solar Manufacturing, Synthetic Diamond Manufacturing, Medical Diagnostics and many more…

Our products are used in a broad range of industries and applications. Our ability to innovate is critical to achieving and sustaining product differentiation as well as establishing and deepening customer relationships. These innovations have accelerated roadmaps for customers in our primary markets and contributed to driving positive environmental impact and progress.

Clean Energy and Renewable Applications

- **Sustainable and highly efficient plating solutions** for c-Si solar cell grid metallization
- Revolutionary processes for **more efficient solar energy production** through electroplating of the contact fingers on solar cells, which increase cell efficiency at a significantly lower material cost.
- Flow, valve, and pressure measurement products that control vacuum pressure and the delivery of gases used in the **fabrication of photovoltaic cells**
- Mass spectrometers, lasers, and photonics components **used by solar panel manufacturers** to optimize their process
- **High corrosion resistant electroless nickel plating solutions** for hydrogen fuel cell-focused applications

Sustainable and Ethical Applications

- A portfolio of **plating equipment solutions designed to save resources** by enabling highly efficient chemical regeneration systems
- Gas analyzers used to detect and speciate emissions from lithium-ion batteries to **ensure quality and make them safer**
- Laser products used for cutting in the life and health science and industrial markets **for more efficient product manufacturing, reducing or eliminating the need for post processing**
- Automation and controls analytics solution used in medical extrusion manufacturing applications to help **reduce energy use by an average of 25-30%**
- Products that provide energy to the chemical vapor deposition (CVD) chamber to **facilitate the growth of responsibly sourced, synthetic diamonds**

Sustainable and Efficient MKS Products

- Auxiliary equipment for plating processes designed to **reduce chemical consumption, extend bath lives, and reduce water consumption and wastewater treatment**
- Ultra-high concentration dissolved ozone systems used in the photoresist strip process **as an environmentally friendly alternative to aggressive acid mixes**
- Pressure, flow, and valve products that **reduce power consumption in the life and health science and industrial markets**
- Mass spectroscopy products used to **monitor coating processes for improved performance and efficiency for applications**, such as battery electrode and fuel cell manufacturing
- High-density interconnect (HDI) drilling solutions, which **provide significant weight and footprint savings** compared to competing solutions **and enable technicians to service them safely and easily**

Environmental Safety and Compliance

- **Environmentally sustainable chemistry alternatives** (chromium(VI)-free, lead-free, nickel-free, cyanide-free) across many essential industrial processes
- Air analyzers that provide ambient air monitoring to **detect pollutants and toxic chemicals near critical public infrastructure and industrial plants**
- Gas analyzers that provide chemical emission stack monitoring of nitrogen oxide, carbon monoxide, sulfur dioxide, ammonia, hydrochloric acid, hydrofluoric acid, and volatile organic compounds from power generation and incineration sources to **ensure regulatory compliance**

Our Sustainability Strategy

MKS plays an integral part in delivering enabling solutions in an increasingly connected world. This position provides us with an opportunity to make an outsized impact in furthering not just our own sustainability goals but also those of our customers. Our commitment to operating our business in an environmentally and socially responsible manner, in tandem with our employees, customers, suppliers, and communities, is unwavering.

At MKS, sustainability informs the way we conduct our business every day:

Driving Sustainable Operations

We seek to reduce the impact our products have on CO2 emissions, water usage, and waste and hazardous chemistry creation.

Innovating for Sustainability

Sustainability is at the core of our innovation strategy. Our customers' sustainability needs help define our next products and solutions.

Strengthening our Brand

As a leader in our industries, we seek to continue to quantify and report on the sustainability benefits of our solutions.

Following the acquisition of Atotech in August 2022, we developed a three-year roadmap designed to help strengthen our sustainability initiatives, enhance how we report on material environmental topics, and continue to maintain compliance with applicable regulations. Recognizing that we can best manage what we can measure, our priorities for 2023 have included consolidating our ESG data across the legacy MKS business and the Atotech business as well as establishing baseline environmental data from which we will be able to set and assess reduction goals going forward.

As described in more detail in this report, we are in the process of setting science-based targets for Scope 1, 2, and 3 emissions. In September 2023, we submitted a letter stating our commitment to set near-term emission reduction targets aligned with SBTi's criteria.

Stakeholder Engagement

Strong relationships are built on a solid foundation of integrity and trust. We strive to create and maintain stakeholder relationships that promote an open dialogue for discussing issues that are important to them and us. We continue to engage with many of our stakeholders on sustainability issues — including through customer sustainability surveys and investor ESG surveys — to understand the ESG matters most important to them. Such conversations have informed the development of our ESG program and have helped ensure that our ESG priorities are aligned and supported across our organization. MKS uses the Sustainability Accounting Standards Board (SASB) Standards and the Task Force on Climate-related Financial Disclosures (TCFD) framework to help guide our reporting efforts and the identification of material topics to our business.
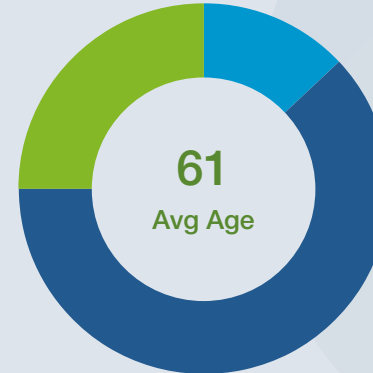
Corporate Governance

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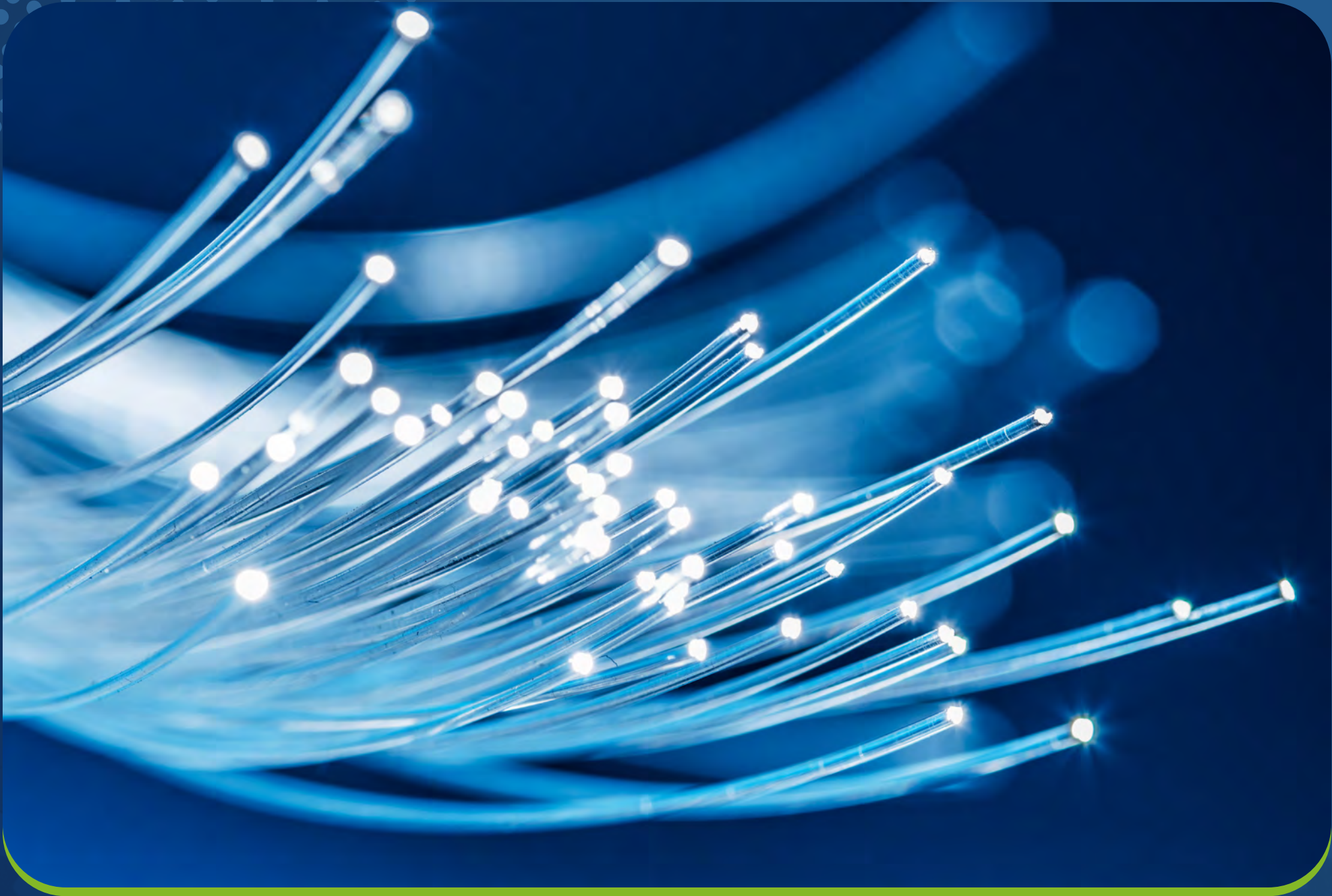
Our Board

At MKS, we believe that representation of a mix of ages, genders, and races brings diversity of thought to the Board of Directors and helps expand the Board of Directors' understanding of the needs and perspectives of all of our stakeholders.

Tenure

6 years
Avg Tenure

0-3 years:	3
4-7 years:	3
8+ years:	2

Age

61
Avg Age

<56 years:	1
56-64 years:	5
65+ years:	2

Gender

38%
Female Members
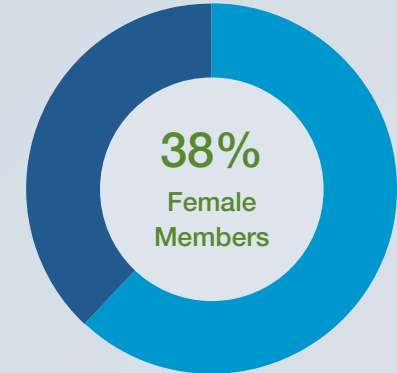
| Male: | 5 |
| Female: | 3 |

Race / Ethnicity

25%
Racially Diverse Members
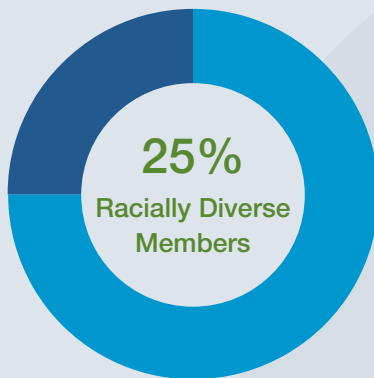
| Caucasian: | 6 |
| People of Color: | 2 |

Other Demographic Diversity

13%
LGBTQI+
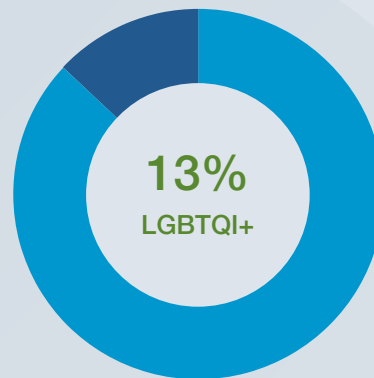
| Non-LGBTQI+: | 7 |
| LGBTQI+: | 1 |

50 WOMEN
50 ON BOARDS

In 2022, MKS was recognized by 50/50 Women on Boards™, the leading global education and advocacy campaign driving gender balance and diversity on corporate boards, for having a significant share of women directors on our board, highlighting our board's gender diversity.

ESG Oversight and Risk Management

ESG is a key priority for MKS and our leaders. As such, our ESG Program is overseen by our Nominating and Corporate Governance Committee of our Board of Directors and our CEO.

At MKS we maintain a robust Enterprise Risk Management (ERM) process to identify, assess, prioritize, and respond to risks, which includes a formal risk assessment approximately every two years. After a formal risk assessment is completed, an action plan is developed for each of our top risks and progress on our response to these risks is shared quarterly with the CEO.

In addition, our Audit Committee oversees cybersecurity risk management and financial risk management.

In partnership with our property insurance provider, FM Global, we have conducted climate-risk assessments on windstorm, flood, wildfire, and earthquake exposure at certain of our major sites and intend to expand the assessments to cover all of our major sites in the future. For more information on how we evaluate climate-related risks and opportunities, please see the Task Force on Climate-Related Financial Disclosures (TCFD) index at the end of this report.

Board of Directors

Nominating and Corporate Governance Committee	Oversees the ESG program strategy, goals, and initiatives.

Executive Sponsors

President and Chief Executive Officer EVP, Chief Financial Officer EVP, Chief Information Officer EVP, General Counsel EVP, Chief Human Resources Officer EVP, Operations and Corporate Marketing Divisional Leadership: EVP & General Manager, PSD, EVP & General Manager, VSD, EVP and COO, MSD Senior Vice President and General Manager, Asia	Champion sustainability as an enabler for growth in the organization. Sign off on all targets and performance disclosures as well as critical investment decisions. Review ESG progress and provide guidance on a quarterly basis.

ESG Steering Committee

Head of Sustainability (Program Leader) VP Investor Relations VP General Counsel of Vacuum Solutions Division VP Assoc. General Counsel Sr. Dir. Marketing Communications VP Research & Development VP Global Workplace Operations Dir. Human Resources VP Operations VP Technology Enablement Group	Guides sustainability strategy development and target setting and secures investments and resources for driving performance. Head of Sustainability reviews performance and progress with the Nominating and Corporate Governance Committee of the Board of Directors on an annual basis.

Working groups

Representatives from across the organization, including R&D, Business Divisions, HR, Legal, Supply Operations, EHS, Finance, Communications and Marketing	Cross-functional teams contributing to different workstreams. Led by members of the Sustainability team.

Cybersecurity and Data Privacy

At MKS, we believe we have a competitive advantage by using technology to enhance operations, increase efficiency, and take advantage of data to improve strategic decision-making. However, we are also aware this makes our company vulnerable to security breaches. In February 2023, MKS was subject to a ransomware incident, temporarily impacting operations in two of our three divisions. We have since fully restored our global operations and recovered substantially all of our delayed revenue caused by this incident.

We recognize that cybersecurity incidents are likely to continue to be a significant risk to corporate organizations. To identify and mitigate cybersecurity risks, including with respect to data within our organization that must be protected, MKS, among other actions, conducts risk assessments. We have personnel devoted to data security and engage external auditors to perform audits based on top information security standards. Additionally, MKS carries cyber insurance as part of our overall insurance program. We also have a Global Data Privacy Policy, which provides rules and principles designed to ensure the safe handling of personal data across our organization. MKS' IT Department and MKS' Business Continuity Plan prepare us for a broad range of potential events and position us to respond to and continue operations during and after a cyberattack. In addition, MKS' Audit Committee oversees cybersecurity risk management.

We ensure everyone at MKS understands and complies with our cybersecurity and data privacy policies. To that end, MKS provides a robust, annual training program for our employees on safe and secure user practices, recognizing security threats and understanding applicable data privacy laws and regulations. Employees are encouraged to report any actual or suspected data security breaches and privacy breaches to the MKS IT Department and the MKS Legal Department. Please see our Data Privacy Notice for further details.

In addition to the cybersecurity protocols described above, following the ransomware incident in February 2023, we have invested and continue to invest significantly in strengthening access requirements and threat detection capabilities. We are also implementing procedures to facilitate a more timely restoration of our operations in the event of future disruptions.

Key Policies and Statements

Our ESG-related policies and statements include:

Code of Business Conduct and Ethics

Our Code of Business Conduct and Ethics links our mission and guiding principles with standards of professional conduct that we expect of our Board, management team and employees across the globe. We also require our sales representatives and distributors to follow appropriate codes of conduct set forth in our agreements with them. These practices reflect our commitment to integrity with respect to our employees, business partners and the communities in which we work.

Anti-Corruption Policy and Procedures

As a global company, we take our obligation to comply with international anti-corruption laws seriously. MKS employees are prohibited from offering, giving, soliciting, or receiving any form of bribe or kickback, directly or indirectly.
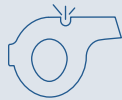
Whistle-Blower Hotline

Our Code of Business Conduct and Ethics outlines our grievance process for anyone who believes an employee has engaged or is engaging in conduct that violates our Code of Conduct. We provide all employees with access to a confidential, anonymous, 24/7 MKS Compliance Hotline, operated by a third party.

Environmental Health and Safety Policy

Environmental health and safety considerations are fundamental to our business practices. We ensure that all employees of MKS understand, promote and assist in the implementation of leading health and safety practices and principles.
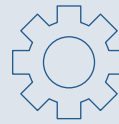
Human Rights and Labor Standards Policy

We are committed to upholding the human rights of workers, and treating employees with dignity and respect as understood by the international community. This applies to all workers, including temporary, migrant, student, contract, and direct employees, and any other type of worker.

Statement on Human Trafficking and Modern Slavery

We are committed to conducting business in an ethical and responsible manner and we have a zero-tolerance policy relating to human trafficking and forced labor. With regard to our operations and supply chain, we are committed to maintaining and improving our systems and processes to ensure we comply with all national and international rules and regulations regarding human trafficking and forced labor.

Political Contributions Policy

MKS funds, assets, and personnel may not be used to make any political contribution or render assistance to any political party or candidate for political office. Examples of prohibited contributions include cash contribution to political candidates or political parties or other political organizations, using or loaning Company personnel or property for political party work or campaign activities, or guaranteeing the debt of a political party.
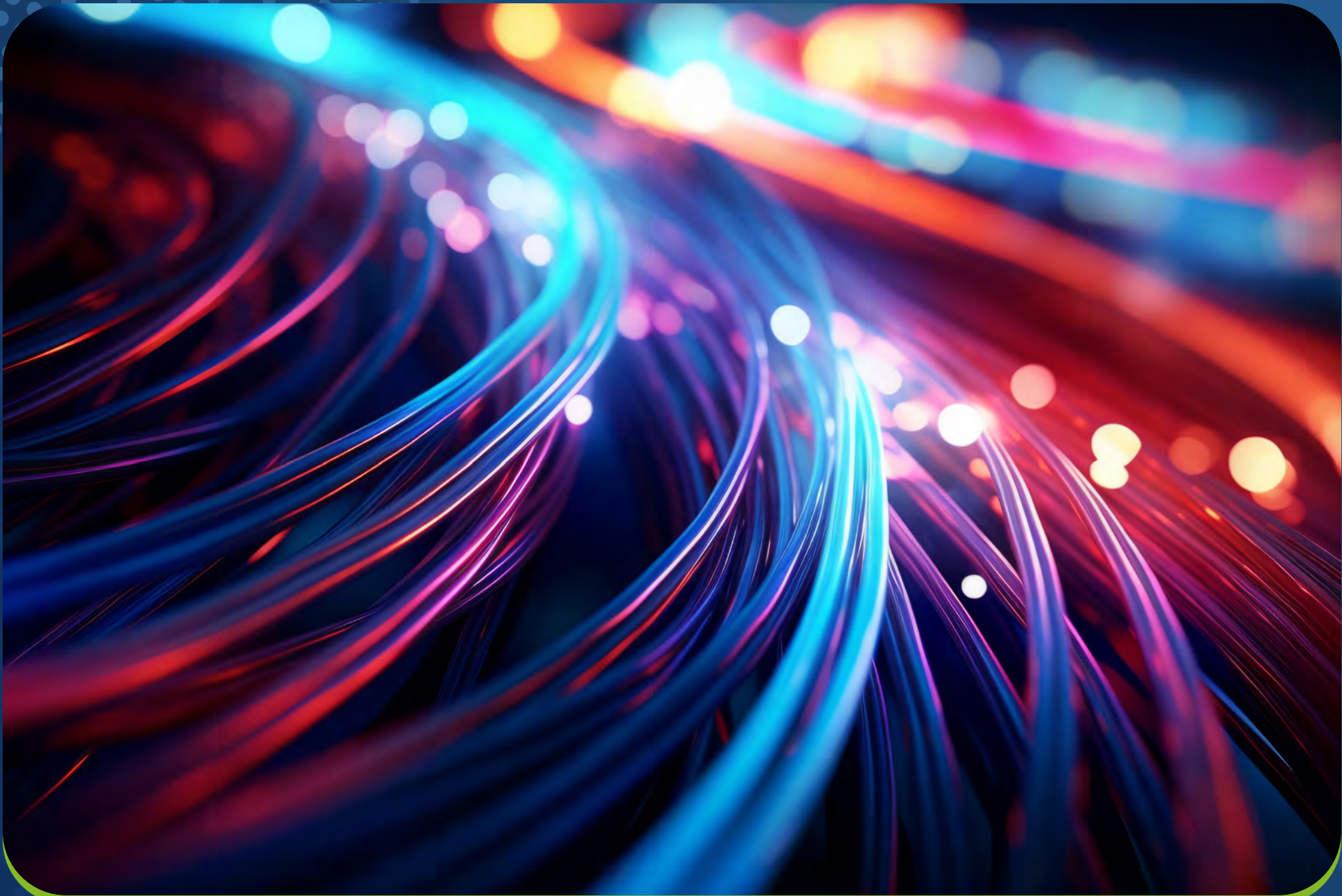
Environment

109 MWh

of renewable energy generated and consumed through the use of solar panels on site at our facility in Manesar, India in 2022

17,360 MWh

of renewable energy procured through utility providers in 2022

Reducing Our Carbon Footprint

We continue to engage with our internal teams to develop a comprehensive plan to reduce our operational emissions across the business. After completing the transformational acquisition of Atotech in August 2022, we developed a combined company baseline for Scope 1 and 2 emissions and have begun the process of evaluating and calculating Scope 3 emissions. Additionally, we are in the process of setting science-based targets for Scope 1, 2, and 3 emissions. In September 2023, we submitted a letter stating our commitment to set near-term emission reduction targets aligned with the SBTi's criteria.

In the meantime, we continue to work closely with our corporate Facilities and Environmental, Health, and Safety teams to evaluate opportunities across our sites where we can:

Implement energy efficiency measures

Explore on-site energy generation projects

Procure renewable energy through utility providers

Purchase renewable energy certificates (RECs) through a Virtual Power Purchase Agreement (VPPA)
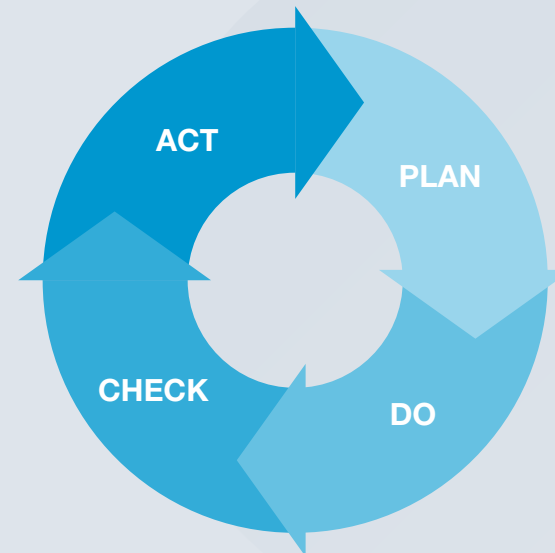
Environmental Management System

Our cross-functional ESG Steering Committee meets throughout the year to review progress on our environmental initiatives and provides updates and recommendations to our executive leadership team and our Nominating and Corporate Governance Committee. MKS management is responsible for and takes a leadership role in providing training, enforcement, and direct support for our internal MKS efforts to ensure that environmental concerns are identified, openly communicated, and addressed in a timely manner as part of our overall business strategy.

Forty-five of our sites[1] have a formalized Environmental Management System (EMS) certified to ISO 14001-2015. ISO 14001 is the internationally recognized gold standard for designing and implementing an environmental management system. It supports organizations in improving their environmental performance, for instance, when it comes to the efficient use of resources and reduction of waste. We continue to evaluate ISO 14001 certifications at additional sites as we continue to enhance our global EMS.

Our EMS uses a set of processes and practices that enable us to reduce our environmental impact and increase our operating efficiency. Our EMS follows the PDCA methodology – Plan-Do-Check-Act – to achieve continual improvement. This includes:

- Reviewing our environmental goals
- Analyzing our environmental impacts and compliance obligations
- Setting environmental objectives and targets to reduce our environmental impact
- Establishing a strategy to meet these objectives and targets
- Monitoring and measuring progress in achieving our objectives
- Ensuring employees' environmental awareness and competence
- Reviewing progress of our EMS

EMS-certified sites

ACT   PLAN   CHECK   DO

(1) 45 out of a total of 150 sites, which include all manufacturing sites, labs, offices, and warehouses.

Product Life Cycle

As decarbonization and net zero become increasingly top of mind for our customers, we have been very focused on understanding the environmental impact our products have in each of their life cycle phases. To this end, we have begun analyzing the carbon footprint for a prioritized portfolio of our products in our Specialty Industrial end-market and sharing this analysis with our customers. We are taking a systematic, structured approach to scale this effort across the remainder of our business. We aim to address the environmental impact of all of our products at each stage of their life cycle, including material sourcing, manufacturing, distribution and transportation, use life, and end of life, by conducting these life cycle assessments in accordance with ISO 14040/44. We believe that a thorough understanding of our products' life cycles will enable us to identify opportunities for improvement, to minimize negative environment impacts, and to make informed decisions about how to enhance our overall sustainability performance.

Below is an analysis of our chemical and equipment product life cycle:

1. Material Sourcing
This stage involves the extraction and procurement of raw materials used in manufacturing our chemical and equipment products. We evaluate the environmental impact of material extraction and sourcing, considering factors such as resource depletion, environmental degradation, and carbon footprint. We work with customers and suppliers in evaluating declarable substances in alignment with the European Chemicals Agency regulations, which aim to improve the protection of human health and the environment through improved identification of properties within chemical substances.

2. Manufacturing
During this stage, we analyze the environmental footprint of our manufacturing processes, which includes an evaluation of our energy consumption, greenhouse gas emissions, water usage, and waste generation. Building on our commitment to set targets, we are in the process of developing water intensity and waste targets for our production processes. We strive to adopt more energy efficient technologies and implement waste reduction strategies to minimize our carbon footprint and decrease the overall environmental impact.

3. Distribution and Transportation
In the distribution phase, our products are transported to customers. We assess the impact of logistics on the environment, including fuel consumption, emissions, and packaging waste. We attempt to make our products as lightweight as possible to reduce associated transportation emissions.

4. Use Life
We evaluate the potential impact on health, safety, and the environment that our products have during their use life. We provide customers with guidelines for responsible product handling and disposal to ensure safe and eco-friendly use of our chemical products.

Our equipment products are designed to withstand typical wear and tear, allowing for extended usable lifespans. We strive to maintain high quality standards, which also allow our products to attain long lifespans. We are dedicated to our customers and provide servicing of our products through the duration of their commercial availability. For some products, even after they are no longer being manufactured, servicing procedures may be extended and the lifetime of the products may be prolonged.

5. End of Life
In this stage, we examine the impact of our products on disposal and recycling. Proper end-of-life management, including recycling and safe disposal practices, is crucial to minimize waste and prevent harmful substances from entering the environment.

If a product becomes obsolete and can no longer be serviced, our refurbishment program will accept returns of older products and replace parts to resell updated products to customers. Trade-in materials are then salvaged and sold on the recycling market when possible. Although the recyclability of our products varies, we very rarely scrap an entire unit. Every product that comes into our service centers has a certain level of scrap that can be salvaged. For example, stainless steel found in vacuum valves is separated out and sent back to our local scrap dealers.

6. Continuous Improvement and Innovation
By conducting thorough product life cycle assessments, we aim to improve the sustainability of our products. We believe our commitment to sustainability will drive us to develop more environmentally friendly alternatives, minimize hazardous substances, and design products with extended lifespans and greater ease of recyclability.

7. Stakeholder Engagement
Throughout the analysis, we engage with our stakeholders, including customers, employees, suppliers, and regulatory bodies. Their input and feedback are invaluable in developing more sustainable practices and aligning our products with their expectations and needs.

The results of our product life cycle assessments will be used to set sustainability goals, measure progress, and communicate transparently with our stakeholders about our efforts and achievements in promoting sustainability in our industry.

Environmental Performance Metrics

In 2022, we were able to significantly increase the data coverage of our collection efforts for our greenhouse gas (GHG) emissions, energy usage, and water usage globally across all our legacy MKS sites.

We continue to strive to collect this data globally across our legacy MKS sites, and in integrating Atotech into our business, we have begun to track and consolidate environmental data from its sites as well. To support our data collection, tracking, and reporting efforts, we have implemented a data management system that consolidates electricity, water, natural gas and fuel usage for 103 of our sites.[1] We plan on onboarding our significant remaining sites onto this platform in order to further streamline our consolidation efforts and provide a holistic view of our environmental performance metrics.

We also recognize the importance of tracking our environmental impact across the value chain. Building on our initial assessment of Scope 3 emissions[2] categories relevant to MKS, we are continuing to evaluate additional categories in light of our acquisition of Atotech and are working toward a consolidated Scope 3 baseline for our entire business.

Our environmental data below reflects our efforts over the past year to more effectively capture the impact of our business on the environment and, with this information, the ability to assess how we can reduce our impact going forward. In 2022, we procured 17,360 MWh of renewable electricity through utility providers, accounting for 10% of our electricity consumption.

METRIC	2022	DATA COVERAGE (BY AREA)[3]
GHG Emissions		
Scope 1 Emissions[4]	8,321 tCO2e	87%
Scope 2 Emissions (Market-Based)	66,207 tCO2e	96%
Scope 2 Emissions (Location-Based)	71,814 tCO2e	96%
Total Scope 1 and Scope 2 (Market-Based) Emissions	74,528 tCO2e	
Energy Management		
Electricity Usage	168,675 MWh	96%
Self-Generated Energy	109 MWh	100%
Fuel Usage (natural gas, LPG, fuel oil, diesel, kerosene and propane)	39,117 MWh	87%
District heating (purchased)	5,901 MWh	100%
Steam (purchased)	4,125 MWh	100%
Energy Usage	217,927 MWh	
Water Management		
Water Usage	687,375 m3	95%
Waste Management		
Waste[5]	5,772 t	83%

(1) 103 out of a total of 150 sites, which include all manufacturing sites, labs, offices, and warehouses.
(2) Scope 3 emissions reflect emissions from sources that are owned or controlled by other organizations but are the consequence of our organization's activities.
(3) Data coverage indicates the percentage of total area covered in square feet. Total area includes all worldwide manufacturing sites, labs, offices, and warehouses of MKS Instruments, Inc. and its subsidiaries, and covers a total of 7,076,262 square feet.
(4) Excludes emissions from refrigerants, company cars, and onsite wastewater treatment.
(5) We are working to improve the quality of our waste data to understand underlying waste streams.

Social

ENVIRONMENTAL, SOCIAL, GOVERNANCE REPORT 2023 ••mks

A Culture of Responsibility

Relationships matter, and we build ours on a solid foundation of integrity and trust. How we run our business, including our social responsibility initiatives, is directly related to our core values and our stakeholder expectations. We ensure these activities are aligned and supported across our organization.

Workforce Metrics *(as of December 31, 2022)*

10,900   **Global Workforce** *(including temporary workers, excluding contract employees)*

39 countries

31%	31%	38%
Asia-Pacific region	Europe, Middle East, India	Americas
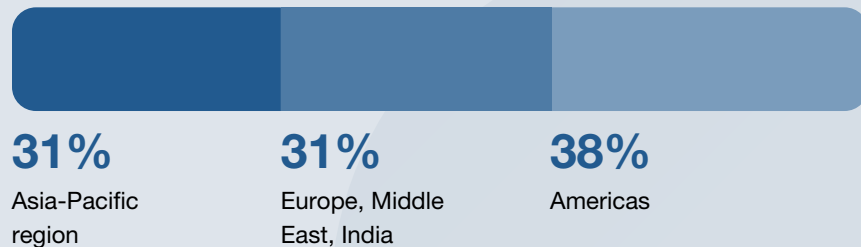
<6%   **Voluntary Turnover During 2022**

>9 years   **Average Employee Tenure**

Human Capital Management

One difference between a good and a great company is the people. We invest in empowering our people to be leaders and thinkers who push the boundaries on new ideas and innovation. We honor mutual respect and constructive candor and are committed to diversity and inclusion. We believe that our dedicated, talented, and creative team differentiates us from competitors and gives us a competitive advantage. In fact, we are proud to be recognized as one of U.S. News and World Report's 2024 Best Companies to Work For in the Industrials and Business Services Industry.

Employee Engagement

We are committed to meaningful engagement with our global workforce. Our CEO holds the organization accountable at the highest level, and we are committed to hosting employee surveys annually in order to understand our employees' thoughts, feelings, and concerns about MKS. We analyze responses in a confidential, aggregated manner, with the goal of making our company a better place to work for all employees.

In 2022, we rolled out our second global employee engagement survey. Due to the timing of the closing of the Atotech acquisition, this survey did not include Atotech employees. We are proud to highlight that our participation rate increased to 84%, a 10% increase from 2021.

In addition, we scored in the top quartile[1] in six different dimensions in 2022, compared to four in 2021. We continue to be in the top quartile in Change Management, Trust, Communication, and Involvement & Belonging, and we scored in the top quartile in two additional dimensions for the first time this year: Management Effectiveness, and Work/Life Balance.

Regular employee feedback is essential to help us continue to drive results while truly understanding the perspectives of our global workforce.

(1) Top quartile is based on third party benchmark data derived from over 1,000 companies across a variety of industries around the world.

Employee Health, Safety, and Well-being

MKS is committed to providing a safe workplace for all employees. We accomplish this through compliance with applicable laws and regulations regarding workplace safety, including recognition and control of workplace hazards, tracking injury and illness rates, and maintaining detailed emergency and business continuity plans.

MKS provides mandatory environmental, health, and safety training to ensure all employees are provided with the knowledge to perform their jobs safely and to protect the environment. We have a global quarterly safety review in place and we expect to standardize safety training across our three divisions in 2024 to facilitate safer work environments and enable us to track safety metrics on a global level.

At MKS, 25 of our sites[1] have a formalized Occupational Health and Safety (OH&S) Management System certified to ISO 45001-2018. ISO 45001 is the internationally recognized gold standard for designing and implementing an OH&S management system. It supports organizations in providing safe and healthy workplaces by preventing work-related injury and illness.

In 2021, MKS developed a formalized Global Management System for Environmental, Health, and Safety (MEHS), designed to protect our employees, other stakeholders, and the environment. Our Environmental Health and Safety team has developed a strong foundation and structure for the MEHS over 2021 and 2022, and we are implementing the system across our organization in a stepwise process that is expected to be completed by 2026. In 2022:

- MEHS was translated into local languages (globally) and self-assessments were performed as pilots in the following regions: Broomfield (US), Shenzhen (China), and Israel (EMEA/Israel).
- We trained Corporate EHS team members in the ISO 19011/14/45K so they could drive audits across countries beginning in 2024.

(1) 25 out of a total of 150 sites, which include all manufacturing sites, labs, offices, and warehouses
(2) TRIR and LTIR reflect data for all full-time employees

The objectives of MEHS are to:

1.
Ensure compliance with MEHS legal requirements and MKS's Global EHS Requirements (referred to as "Process & Compliance").

2.
Ensure that facility EHS processes are managed using the ISO 14001 and ISO 45001 risk-based EHS management approach.

3.
Drive ownership of EHS management through cross-functional leadership and engagement of all employees (referred to as Culture), and improve EHS performance (referred to as Results).

Global Safety Metrics[2]

Total Recordable Incident Rate (TRIR)

Lost Time Incident Rate (LTIR)
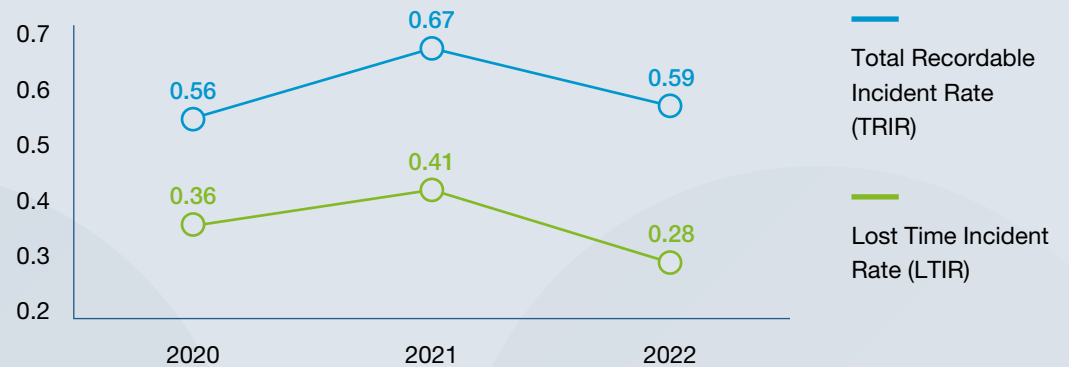
We offer all MKS employees and eligible family members a full range of health and wellness programs which are competitive locally. In addition, we provide all employees globally an Employee Assistance Plan (EAP) program. This program provides employees, and their families support with any work-related or personal issues, including up to six hours of free counseling. We also host quarterly workshops for our employees in partnership with our EAP partner on various mental health and wellbeing topics.

We continue to offer training courses focused on working with and managing remote teams. We also offer employees a global flexible work policy, which is subject to the ability of a job to be done remotely.

Training and Development

MKS is committed to investing in learning and professional development. Our employees have access to a wide range of programs, classes and resources to help them excel in their careers and share what they learn with their colleagues. Our performance management process includes performance feedback and career development discussions that are dynamic and actionable throughout the year. In 2022, we continued to broadly roll out courses to develop our focus on employee engagement, change management and leadership excellence. In addition, we provide financial support for college and graduate education for certain employees and access to online learning for all employees in local languages to help further the careers of our entire workforce.

We also have a training matrix for Environmental, Health, and Safety topics that utilizes third-party courses as well as in-house resources. The courses are distributed by employee job title and based on geographic requirements. Distribution is tracked through our enterprise management system. This training matrix has been implemented in two divisions and we plan to roll it out to our entire workforce in 2024.

In addition, MKS' Management Academy consists of a series of courses designed to strengthen our employees' business skills as they advance in management. We also maintain a Leadership Academy, designed to develop the skills needed for our current and future leaders.

Diversity, Equity, and Inclusion

At MKS, our commitment to fostering a culture that champions diversity, equity, and inclusion (DE&I) extends beyond mere words; it is ingrained in the fabric of our operations and threaded throughout the employee experience. We believe our strength lies in the intentional inclusion of the diversity of our people, their ideas, and their experiences – catalyzing innovation, driving organizational change, and promoting business success. Through our ongoing DE&I efforts, we strive to create a workplace that reflects the diverse communities where we serve, where every individual is empowered to contribute, grow, and thrive.

As part of our approach to ensure a diverse workforce of top talent, we are focused on recruiting across all backgrounds and experiences. We continue to enhance our efforts to provide our hiring managers with diverse candidate slates in our employee recruiting process and resources to establish an equitable interviewing experience for all involved.

We work diligently to foster a workplace culture of inclusion and respect. Most recently, we added "gender expression" to our list of protected categories under our Equal Employment Opportunity and Preventing Harassment/Sexual Harassment and Workplace Violence statements.

Since 2020, over 360 of our leaders around the world have completed a six-week DE&I program hosted by a consulting firm recognized as best-in-class in DE&I capability building. We continue to offer DE&I training for all employees as well as bias awareness and mitigation training for several key functional areas, including our global talent acquisition and management teams.

We also ensure pay equity throughout our organization globally. MKS regularly conducts robust analyses of pay practices across gender globally and other diversity factors in our major operating regions to detect any existing disparities within base and total compensation, taking prompt and effective action to correct any identified disparities.

Our DE&I initiatives extend beyond MKS. We continue to build ongoing relationships and partnerships with other organizations that are aligned with MKS' mission and vision, recognizing that these collaborative efforts are vital in creating lasting and meaningful change.

Our Current DE&I Sponsorships

National Society of Black Engineers

One of the largest student-governed organizations in the world aimed at supporting Black and under-represented communities in STEM education and careers and diversifying the talent pipeline in technology.

Society of Women Engineers

The world's largest advocates and catalyst for change for women in engineering and technology

Human Rights Campaign

Through research, educational efforts, and outreach, the HRC is one of the world's largest LGBTQ+ advocacy organizations

K9s for Warriors

Determined to end veteran suicide, K9s for Warriors provides highly-trained Service Dogs to military veterans suffering from PTSD, traumatic brain injury, and other forms of trauma.

Boston Club Corporate Salute

An organization aimed at advancing women's leadership in the professional workplace through networking, learning initiatives, etc.

Product Stewardship

MKS develops differentiated innovative products, solutions, and services that consistently meet or exceed customer requirements. We are committed to continuous improvement by fostering a world-class quality culture that solves problems with data-driven solutions and inspires accountability and ownership with all employees. We are dedicated to protecting human health, natural resources, and the global environment. Our principles provide guidance to our personnel worldwide in the conduct of our daily business practices.

MKS products are designed, manufactured and tested for safety to conform with essential requirements of relevant directives and standards, customer requirements, product-specific regulations, and/or other applicable safety testing standards, such as:

- Electromagnetic Compatibility Directive (EMCD) – 2014/30/EU
- Low Voltage Directive (LVD) – 2014/35/EU
- European Pressure Equipment Directive (PED) – 2014/68/EU
- Machinery Directive – 2006/42/EC
- UK Conformity Assessed (UKCA) Marking
- Customer requirements and product-specific regulations (NRTL, ETL, UL, CSA, Semi)
- And/or other applicable safety testing standards (OSHA/CDRH)

The MKS Quality Management System is compliant with the ISO 9001-2015 Standard. This certification standard demonstrates our continued commitment to ensuring customer trust and to improving the quality of our products and services. MKS' continuous improvement program aims to help drive quality management system maturity that results in high and consistent levels of business process performance and customer satisfaction. There are 67 MKS sites[1] that are certified to ISO 9001-2015.

In our chemistry business, we classify substances of concern according to a matrix that includes hazardous potential, use case, and global regulatory restrictions, both current and anticipated. We actively seek to eliminate the substances of highest concern, either by developing new products with a lower risk profile or by finding alternative substances. In 2022, we achieved a reduction in the highest risk product class by 44% and a reduction of the overall risk by 19%. Our main focus is related to substances with mutagenic, carcinogenic, toxic to reproduction, persistence and bio accumulative properties.

We are at the leading edge of commercializing processes that remove substances of concern and using less hazardous chemicals whenever possible. Examples of these include TriChrome® and BluCr®, which eliminate both the need for hexavalent chromium and the use of PFAS-containing mist suppressants.

(1) 67 out of a total of 150 sites, which include all manufacturing sites, labs, offices, and warehouses.

Supply Chain

A critical part of our business strategy is cultivating strong relationships with our supply chain. As part of our responsible and sustainable sourcing strategy, we are committed to working in partnership with our suppliers to set clear expectations on how we work together. Our goal is to create partnerships that support responsible and ethical business practices, conduct, and compliance with applicable laws and regulations, resulting in better outcomes for our employees, our businesses, and our environment.

Supplier Code of Conduct

MKS has adopted the industry standard Responsible Business Alliance ("RBA") Code of Conduct as its Supplier Code of Conduct. The Supplier Code of Conduct provides standards and guidelines of conduct for all suppliers doing business with MKS worldwide.

We expect our supply chain partners to conduct themselves with the RBA set of social, environmental, and ethical standards, regardless of local business practices or social customs. We actively evaluate processes to better manage our supply chain and ensure our suppliers are complying with our Supplier Code of Conduct. Please see our Supplier Code of Conduct for further details.

In 2022, we engaged a third party to help us further engage with our supply chain and better understand our suppliers' ESG initiatives and policies. In late 2022, we began reaching out to our top suppliers on several different topics and are using the information gathered through our outreach as a baseline to understand where our suppliers stand today on important ESG matters. We have continued this supplier outreach in 2023.

Conflict Minerals

MKS is committed to identifying any of its suppliers who source "Conflict Minerals" from the Democratic Republic of the Congo (DRC) region from conflict sources. We expect our suppliers to partner with us in this endeavor, regardless of whether they are subject to the Conflict Minerals Rule. Please see our Conflict Minerals Policy for further details. Pursuant to our policy, in 2022, we surveyed our direct supplier base for legacy MKS (i.e., prior to the Atotech acquisition), requesting the smelting source of any gold, tin, tantalum, or tungsten that may be used in the products they supply to MKS. We received responses from 68% of these suppliers, representing 92% of our supplier spend (excluding suppliers to the Atotech business). We report our results to the Securities and Exchange Commission (SEC) annually and to customers on request.

About This Report and Indices

ENVIRONMENTAL, SOCIAL, GOVERNANCE REPORT 2023   ••:mks

About This Report

Disclaimer

This 2023 ESG report is MKS' third report and was prepared in alignment with the Sustainability Accounting Standards Board (SASB) for our industry and incorporates the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) into our ESG reporting strategy and transparency efforts.

See our SASB index for more information.

See our TCFD index for more information.

The quantitative metrics included in this report cover MKS owned and leased facilities using available data for the 2022 calendar year. The metrics include data from Atotech, which MKS acquired in August 2022. Please refer to the Environmental Metrics page of this report for specific data coverage information. MKS engaged HXE Partners to support with content development, review of quantitative data, and report design. Our ESG data and information included in this report is unaudited, and may be subject to revision.

About This Report

This report contains forward-looking statements regarding MKS, including statements about our strategy, our goals, and our commitments. These statements are subject to a number of risks and uncertainties and are not guarantees of future performance. Actual events or results may differ materially from those in these forward-looking statements. Factors that could cause actual events to differ materially from those in these forward-looking statements are described in MKS' Annual Report on Form 10-K for the fiscal year ended December 31, 2022 filed with the SEC on March 14, 2023, and any subsequent quarterly reports on Form 10-Q. All forward-looking statements are based on MKS' current estimates, projections, and assumptions, and we assume no obligation to update them.

Sustainability Accounting Standards Board (SASB) Framework

The Sustainability Accounting Standards Board (SASB) is an independent, private sector organization with a mission to develop and disseminate sustainability accounting standards that help public corporations disclose material, decision-useful information to investors. For additional information on the SASB Standards, please visit sasb.org.

To support investors and stakeholders, MKS has provided the following disclosures based on the SASB Standards for the Electrical & Electronic Equipment, Semiconductors, and Chemicals industries.

Primary Industry Standard: Electrical & Electronic Equipment
Activity Metrics (as of 12/31/2022)

METRIC	CODE	2022 RESPONSE
Number of units produced by product category	RT-EE-000.A	Proprietary, confidential information.
Number of employees	RT-EE-000.B	See Section Human Capital Management – Workforce Metrics

Accounting Metrics (as of 12/31/2022)

METRIC	CODE	2022 RESPONSE
Energy Management		
(1) Total energy consumed, (2) percentage grid electricity, (3) percentage renewable	RT-EE-130a.1	(1) Total energy consumed: 217,927 MWh (2) Percentage grid electricity: 77% (3) Percentage renewable: 8%
Hazardous Waste Management		
Amount of hazardous waste generated, percentage recycled	RT-EE-150a.1	Amount of hazardous waste generated: 3,360 t Percentage recycled: Not disclosed
Number and aggregate quantity of reportable spills, quantity recovered	RT-EE-150a.2	We do not currently track the number of reportable spills on a consolidated basis.
Product Safety		
Number of recalls issued, total units recalled	RT-EE-250a.1	In 2022, we had 5 recalls for a total of approximately 1,340 units. No safety-related issues were reported that corresponded to the recalls. This data includes recalls from the PSD and VSD divisions. Recalls from MSD are not included because MSD divisional level information is not yet available.

METRIC	CODE	2022 RESPONSE
Total amount of monetary losses as a result of legal proceedings associated with product safety	RT-EE-250a.2	0$ monetary losses as a result of legal proceedings associated with product safety.
Product Lifecycle Management		
Percentage of products by revenue that contain IEC 62474 declarable substances	RT-EE-410a.1	We do not track products that contain IEC 62474 declarable substances.
Percentage of eligible products, by revenue, that meet ENERGY STAR® criteria	RT-EE-410a.2	We do not manufacture products that are eligible for ENERGY STAR.
Revenue from renewable energy-related and energy efficiency-related products	RT-EE-410a.3	See our Product Portfolio Overview for information on our renewable energy-related and energy efficiency-related products. We do not publicly disclose revenue generated from renewable energy-related and energy efficiency-related products.
Materials Sourcing		
Description of the management of risks associated with the use of critical materials	RT-EE-440a.1	To support supply chain continuity we diversify, when possible, to avoid single source suppliers, particularly for our critical materials. We have a process to identify if any of our suppliers are on watch lists or have been debarred to ensure that we are doing business with permitted and reputable suppliers, and we require our suppliers to do the same. We continue to review supply chain continuity risks for products containing critical materials and will apply risk mitigation steps where needed.
Business Ethics		
Description of policies and practices for prevention of: (1) corruption and bribery and (2) anti-competitive behavior	RT-EE-510a.1	See Section Key Policies and Statements
Total amount of monetary losses as a result of legal proceedings associated with bribery or corruption	RT-EE-510a.2	0$ monetary losses as a result of legal proceedings associated with bribery or corruption.
Total amount of monetary losses as a result of legal proceedings associated with anticompetitive behavior regulations	RT-EE-510a.3	0$ monetary losses as a result of legal proceedings associated with anti-competitive behavior regulations.

Task Force on Climate-related Financial Disclosures

TCFD | TASK FORCE ON CLIMATE–RELATED FINANCIAL DISCLOSURES

The Financial Stability Board's Task Force on Climate-related Financial Disclosure (TCFD) has developed a voluntary, consistent climate-related financial risk disclosure for use by companies in providing information to investors, lenders, insurers, and other stakeholders. For additional information on TCFD, please visit fsb-tcfd.org.

MKS' TCFD report is organized around the framework's four main tenets, which are governance, strategy, risk management, and metrics and targets.

TOPIC	RESPONSE
GOVERNANCE	
Describe the board's oversight of climate-related risks and opportunities	Our Nominating and Corporate Governance Committee of our Board of Directors oversees the ESG program strategy, goals, and initiatives. Our Board of Directors is informed of our key enterprise risks, which include climate-related risks and opportunities, and the actions we are taking with respect to our ESG program.
Describe the management's role in assessing and managing climate-related risks and opportunities	The ESG Steering Committee meets monthly and consists of key members of the senior leadership team, spanning Operations, Legal, Human Resources, Marketing, and Finance. The ESG Steering Committee guides the process and subsequent management of climate-related risks and opportunities for our business. The ESG Steering Committee reports to the Executive Leadership team, and the ESG Steering Committee Program Leader presents ESG-related performance and progress to our Nominating and Corporate Governance Committee and our Board of Directors on an annual basis.
STRATEGY	
Climate-related risks and opportunities identified over the short, medium, and long term	We recognize climate-related risks and opportunities are likely to impact our business in the future. We regularly conduct risk assessments for physical climate-related risks related to our direct operations in partnership with our property insurer, and plan to include climate-related risks more explicitly into our Enterprise Risk Management (ERM) process in our next ERM cycle. Our technology suite and product portfolio positions us to capture climate-related opportunities that can expand our business and add diversity to our service offerings. For example, renewable energy, particularly solar, is an application that presents opportunities for us. We also see an opportunity in some of our traditional businesses (e.g., automotive) in advancing decarbonization efforts, as our customers are driving demand for products that can be manufactured using more efficient production processes. We are ensuring that this demand influences our innovation priorities. We continue to invest R&D, time, and effort into products that transform our world from both a technological and sustainability standpoint, and as more and more of our customers and value chain partners set ambitious decarbonization goals, MKS is committed to supporting their progress in furthering global environmental efforts.

TOPIC	RESPONSE
Impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning	At MKS, sustainability informs the way we conduct our business every day. We seek to reduce the impact our products have on CO_2 emissions, water usage, and waste and hazardous chemistry creation. Further, sustainability is at the core of our innovation strategy. Our customers' sustainability needs help define our next products and solutions. As a leader in our industries, we seek to continue to quantify and report on the sustainability benefits of our solutions. We recognize that decarbonization is high on the agenda for our customers and investors, and these stakeholders increasingly expect us to decarbonize our own operations. We are currently working on a corporate-level roadmap to formalize our efforts, which will include an assessment of the financial impact of implementing such initiatives. We will also work to determine key market and business segments where sustainability, and especially reducing emissions, is an integral value proposition, and redefine go-to-market strategies with targeted value propositions for these segments.
Resilience of strategy using a 2°C or lower scenario	We have not conducted a scenario analysis at this time.
RISK MANAGEMENT	
Processes for identifying and assessing climate-related risks	Although we recognize that climate-related risks are relevant to our organization, climate-related risks are not currently separated out in our overall risk management practices. We plan to include climate-related risks more explicitly into our Enterprise Risk Management (ERM) process in our next ERM cycle. Climate-related physical risks are assessed by us in partnership with FM Global, our property insurance provider for our major sites. We have conducted preliminary, climate-risk assessments on windstorm, flood, wildfire, and earthquake exposure topics for some of our major sites, including our sites in Irvine, CA, Wilmington, MA, and Loiret, France. Following these risk assessments, we worked with our property insurer to develop response and mitigation plans. Furthermore, we will also be conducting a global analysis of our exposure to water stress resulting from climate change. We will use WRI's Aqueduct Water Risk Atlas to determine our most "at-risk" sites and develop mitigation and adaptation plans as needed.
Processes for managing climate-related risks	Our ERM process consists of a top-down ranking of corporate risks – with those that are flagged frequently weighted more significantly. A top five emerging risks list and a top five current risks list are developed, and an action plan is prescribed and reviewed by executive leadership. Please see the "Integration of risk processes into overall risk management" section of this framework for further details on our ERM process. However, our climate-related risks, including those identified in FM Global's assessments and through our ERM process, will be discussed and reviewed by the ESG Steering Committee. The Sustainability team and relevant working groups will implement any necessary actions to mitigate the risks.
Integration of risk processes into overall risk management	MKS maintains a robust, ongoing ERM process to identify, assess, prioritize, and respond to risks, which includes a formal risk assessment. After a formal risk assessment is completed, an action plan is developed for each top risk, and progress on the risk response is shared quarterly with our CEO. As previously stated, climate-related risks are not currently separated out in our overall risk management practices, but we plan to include climate-related risks more explicitly in our future ERM processes.

TOPIC	RESPONSE
METRICS AND TARGETS	
Metrics used to assess climate-related risks and opportunities	We currently track environmental metrics for our global operations, including our Scope 1 and 2 GHG emissions, energy usage, water usage, and waste data. We are working on establishing our complete Scope 3 baseline and setting targets and internal KPIs to drive improvements in these areas.
Scope 1 and 2 GHG emissions (for calendar year 2022)	Scope 1 Emissions: 8,321 tCO2e Scope 2 Emissions (Market-Based): 66,207 tCO2e Scope 3 Emissions: Full baseline estimation in progress. Note: these Scope 1 and 2 emissions represent emissions only from the data we have available. Please see the Environmental Metrics section of this report for more information on our data coverage.
Targets used to manage climate-related risks and opportunities and performance against targets	In September 2023, we submitted a letter stating our commitment to set near-term emission reduction targets aligned with the Science Based Targets initiative's (SBTi's) criteria.