

GREENHOUSE GAS EMISSIONS

We acknowledge and accept our responsibility to manage our operations to minimize the generation of greenhouse gas (GHG) emissions and the associated impacts on climate change, public health, and the environment. This is evidenced by our being listing as one of America's 2024 Climate Leaders by USA Today based on emissions performance for the 2020-2023 period. Our concerns for these potential impacts will drive our plans and activities to reduce our emissions to sustainable levels. We also consider GHG emission reductions a sign of improved operational efficiency at our manufacturing facilities and a potential business advantage. We diligently monitor our processes in compliance with applicable regulatory requirements and work to minimize our global environmental footprint.

We have established that 85% of our GHG emissions are associated with our energy usage, specifically electricity and natural gas. Accordingly, Materion has embarked on an ambitious energy reduction initiative as described in more detail in the Energy section. Materion estimates that its proactive efforts to reduce energy consumption have resulted in a decrease of approximately 4,000 metric tons (MT) of Carbon Dioxide Equivalents (CO₂e) for 2023. Additionally, in 2023 our Elmhurst and Stuttgart facility utilized 100% renewable electricity and our Lincoln and Leesport facilities switched to 100% renewable electricity mid-2023. Also in 2023, our Jena facility deployed an onsite solar array. Materion is continuing to assess GHG emissions and the results will be used to focus our planning and implementation to those operations and activities that provide the greatest potential for reductions in GHG emissions.

The 2019 - 2023 companywide GHG Emission data is provided in the table below. Approximately 70% of our Scope 1+2 emissions are associated with our Performance Materials business; with Electronics Materials and Precision Optics representing 21% and 9%, respectively. Approximately 91% of our emissions are associated with operations in the United States, 3% in Europe, and 6% in Asia/Pacific locations.

Our 2023 absolute emissions were slightly improved relative to 2022; however, we did experience a slight increase in emissions intensity for both Scopes 1 and 2. Significant equipment and volume-related energy reductions at some of our domestic manufacturing facilities were offset by increased domestic manufacturing process emissions and mining and milling activity at our Delta facility.

Emissions						
GHG Emissions		2019	2020	2021	2022	2023
Absolute (MM MT CO ₂ e)	Scope 1	0.062	0.066	0.071	0.073	0.072
	Scope 2	0.102	0.112	0.118	0.127	0.122
	Scope 1+2	0.165	0.178	0.190	0.200	0.194
Intensity (MT CO ₂ e/\$1000 Net Sales)	Scope 1	0.053	0.056	0.047	0.042	0.043
	Scope 2	0.086	0.096	0.078	0.072	0.073
	Scope 1+2	0.139	0.151	0.126	0.114	0.117

ENERGY

Many of our manufacturing processes are heavily dependent on energy and we understand that improved energy efficiency and reduced usage provides economic as well as environmental benefits including reduced GHG emissions. We are committed to investigating and implementing approaches to reduce our overall energy consumption and usage intensity and increasing our use of renewable energy. Our approach includes enhancing energy usage metrics, identification of usage reduction opportunities, improving process technologies, procuring renewable energy, and other innovative methods to identify and implement efficiency and other energy reduction improvement opportunities across our organization.

In 2023, our company launched a robust, company-wide Energy Metrics program spanning all of our global manufacturing locations. This program focuses on the measurement, aggregation, and reporting of electricity and natural gas usage data, which together constitutes over 96% of our total energy consumption and 85% of our greenhouse gas emissions. Each site now receives monthly energy reports that include detailed trending, analytics, and energy usage and intensity information, offering our teams comprehensive insights of energy consumption patterns across our organization. This data initiative is foundational to our energy program and underscores our commitment to transparency and efficiency, driving continuous improvement in our sustainability efforts.

Also in 2023, our company developed and implemented a comprehensive set of energy reduction best practices, which were deployed across all manufacturing locations. These practices were delivered to our sites and focused on fundamental principles of energy efficiency tailored to our industry. The program highlighted common energy reduction opportunities and stressed practical methods and solutions to enhance efficiency and reduce consumption. The best-practices also provide information to our sites regarding publicly available tools and training resources to improve the energy reduction proficiency of our teams.

Greenhouse Gas Emission and Energy



Examples of energy reduction activities undertaken by our sites in 2023 include the replacement of a boiler at our Delta facility with a more efficient unit, resulting in approximately 7,400 GJ of energy savings. Similarly, a compressor replacement at our Brewster facility saved approximately 320 GJ of electricity. The optimized tuning of fume scrubbers at our Limerick facility led to 380 GJ of electricity savings. Idling of annealers at our Albuquerque facility saved over 7,000 GJ of natural gas. Machine optimization efforts at our Liechtenstein facility yielded over 4,000 GJ of electricity savings. Reductions in heating at our Alzenau facility achieved 9,400 GJ of savings. Additionally, shift optimization and related adjustments at our Brewster, Subic and Singapore facilities enabled over 2,500 GJ of energy savings.

For 2023, Materion has established that over 99% of its electricity originates from local and regional energy grids; the exception being for our Jena facility which began operating a new rooftop solar array in mid-2023. In 2023, Materion procured 100% renewable grid electricity for our Stuttgart facility and expanded 100% renewable grid electricity to our Lincoln and Leesport facilities starting in mid-2023. For 2023, approximately 20% of all electricity used originated from renewable sources, while 80% originated from non-renewable sources.

Absolute total energy use in 2023 versus 2022 remained stable, however our intensity increased during the same period. Since 2019, we have generally experienced a long-term favorable decrease in energy intensity and we expect this trend to continue in the long term as our expanding energy reduction initiatives take root in our operations.

Energy Usage						
Energy Usage		2019	2020	2021	2022	2023
Absolute (MM GJ)	Total	1.47	1.52	1.62	1.75	1.75
	Electricity	0.67	0.73	0.76	0.83	0.82
	Natural Gas	0.80	0.79	0.85	0.88	0.86
	Other	0.003	0.005	0.01	0.04	0.06
Intensity (GJ/\$1000 Net Sales)	Total	1.24	1.29	1.07	0.99	1.05
	Electricity	0.56	0.62	0.50	0.47	0.49
	Natural Gas	0.68	0.67	0.57	0.50	0.52
	Other	0.003	0.004	0.004	0.02	0.04