Pittsburgh manufacturers move toward greater environmental sustainability, set new goals

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"Our journey started by figuring out how to measure everything."

Waste generation. Energy consumption. Water usage. Greenhouse gas emissions. All from a global perspective.

Stephanie Reese, global environmental, health and safety and product stewardship manager at Pittsburgh-based MSA Safety Inc., said for the company to improve its environmental sustainability, it had to collect, analyze and, transparently, report this massive amount of data.

It's a task that local companies have increasingly been diving into. For many manufacturers, 2020 provided an optimal time to address and prioritize environmental, social and corporate governance (ESG) performance.

“The challenges of the last year have really brought to light a lot of these questions about what makes for a strong company over the long haul,” Joylette Portlock, executive director at Sustainable Pittsburgh, said. “As a result, we see more companies examining what it means to be a good employer, a responsible manufacturer or service provider, and a supportive community leader.”

The U.S. Environmental Protection Agency attributes 22% of the nation’s total greenhouse gas emissions to industrial sources, and the Pittsburgh metropolitan area marks manufacturing as its fourth-largest industry, according to the 2018 Catalyst Connection Manufacturing Scorecard.

“Imagine if every single one of these manufacturers was able to reduce the energy used in its processes by just a small percentage,” Portlock said.

To progress those efforts, Sustainable Pittsburgh and CEOs for Sustainability published a Leading Forward Roadmap with resources and best practices for moving toward greater environmental sustainability.

Matthew Mehalik, executive director of environmental group Breathe Project, also noted growing efforts in data collection, specifically citing the Bloomberg Intelligence Terminal, which tracks several hundred different factors related to corporate performance, and the Global Reporting Initiative’s new Sector Standards program. He said it’s also becoming more and more common for companies to publish their own annual environmental sustainability reports.

However, Mehalik said those reports should be reviewed with a critical eye to ensure there are opportunities for clear dialogue, rather than “PR mechanisms” with narrow, short-term interests.

Shaheen Contractor, environmental, social and governance analyst for Bloomberg Intelligence, said she sees a lot of gaps in terms of carbon data for U.S. metal manufacturers as opposed to their peers in Europe.

“They lag on Bloomberg E&S scores for the steel sector, largely because they tend to not report a lot of information,” Contractor said. “The way I think of it is you can’t manage what you don’t measure."

But some local manufacturers like MSA are looking to get ahead of the curve, with a keen understanding that addressing these issues is far more than a PR ploy, but rather something that will help their companies thrive.

Newsweek published its 2021 list of America's Most Responsible Companies, based on a combination of environmental, social and corporate governance scores. The larger local firms who made the list included PPG Industries Inc. (ranked 130th), Koppers Holdings Inc. (178), Howmet Aerospace Inc. (185), Alcoa Corp. (255) and Allegheny Technologies Inc. (295).

“It’s good for the bottom line to put (environmental sustainability) practices in place,” Christopher Perrella, an analyst at Bloomberg Intelligence, said. “At some point, the cost of greenhouse gas emissions and waste is going to go up, whether it is through government action or cost of goods. It is important for companies … to get out ahead of that and do the best they can do to run operations more efficiently.”

The following profiles spotlight what a few ahead-of-the-curve Pittsburgh manufacturers have accomplished thus far in terms of environmental sustainability and the goals they are setting forth.


Fasteners made by Howmet Aerospace Inc. for wind and solar operations.

Howmet Aerospace Inc.

Pittsburgh-based Howmet Aerospace Inc. became an independent company in April 2020 after Arconic Inc. split into Howmet and Arconic Corp. Just a few years earlier, in 2016, Arconic Inc. had split off from Alcoa Corp.

Marcel van der Velden, director of environment, health and safety and sustainability for Howmet, said those splits provided the company an opportunity to set new environmental sustainability goals. “That tremendously changed our process, our footprint and our risk profile,” Velden said.

Velden said when the companies were all still one, they produced 30 million tons of greenhouse gas emissions annually. After the first split, Arconic only brought three million metric tons with it, and after the second split, Howmet was left with less than 1 million metric tons of greenhouse gas emissions.

Howmet, which makes components for transportation industries, saw a 5.8% decrease in greenhouse gas emissions from 2018 to 2019, with both direct and indirect emissions equaling 980,000 metric tons. Of that 5.8%, 2.7% was attributed to reduced natural gas consumption across its sites.

Referencing adjusted data from before the split, Velden said during the time it saw improvements in emissions, it also saw growth in volume of production, with year-over-year increases of 3.6% from 2017 to 2018 and another 5% from 2018 to 2019 in terms of energy used per billions of revenue.

But when Covid-19 hit and the aviation industry collapsed, Howmet found itself struggling to make sense of the numbers. When the company's 2020 ESG report comes out, its numbers will reflect a "significant reduction" in greenhouse gas emissions, Velden said. Yet, at this point, some of that reduction comes simply from the economic downturn related to the pandemic and not the company's own green efforts.

"We are in this phase now where we are trying to understand where the market is going and what that means for our production and what goals we can externally share with investors and stakeholders around greenhouse gas emissions," Velden said.

MSA Safety employees at the company's Queretaro, Mexico facility.

MSA Safety Inc.

In 2018, MSA Safety Inc. started the effort to track its waste. A year later, the company, which does light manufacturing of safety products, reported 1,155 metric tons of materials recycled throughout its global facilities and a total waste generation of 2,382 metric tons.

It learned that 48% of its waste was recycled, said Stephanie Reese, global environmental, health and safety and product stewardship manager at Pittsburgh-based MSA. That became a benchmark, and the company started tracking more environmental data. It also joined the Carbon Disclosure Project, an international nonprofit organization to help companies publicly disclose emission data and other environmental impacts.

The company in 2019 reported total global carbon dioxide equivalent emissions, both direct and indirect, of 21,123 metric tons. Direct and indirect emissions include both those that the company gives off from its own operations and those that it is associated with, such as through the purchase of electricity.

“Our goal was to reduce our (scope two) gas emissions by 1% from 2019 to 2020, and we did accomplish that,” Reese said.

Scope two, or indirect, greenhouse gas emissions for MSA come in large part from the purchase of utilities and energy from outside sources to keep its operations running. For example, Reese said MSA focused on reducing electricity at its Queretaro, Mexico, facility.

Reese said the company did so through a combination of simple actions, like changing all lights to LED bulbs and turning off lights during off shifts, and more complex ones, like changing equipment and redesigning processes for more efficient ones.

After seeing that success, MSA Safety committed to reducing its emissions by 1% each year from 2021 to 2024 and to reduce the amount of waste it sends to the landfill by 3% each year during that timeframe.

Those are short-term, but Reese said the company also has its long-term goals set on carbon neutrality; however she did not provide an exact year. She said MSA Safety is in the middle of a climate risk assessment at each of its locations, which will contribute to the development of a long-term climate risk management plan. MSA expects the assessments completed by the end of the first quarter of 2021 and the full plan completed by the third quarter.

“Our sleeves are rolled up completely,” Reese said. “We are taking a good look at our operations and how we manage and understand what we can do to change that carbon footprint and just really digging into some of the options and ideas of where we could progress.”

Covestro's cardyon material made, in part, from waste CO2.

Covestro

Germany-based Covestro AG, which operates its North American headquarters in Pittsburgh as Covestro LLC, acknowledges some of its own products impact the environment, and it says its efforts toward a circular economy are the answer.

Covestro operates three business segments — polyurethanes, polycarbonates, and coatings, adhesives and specialties — that manufacture a variety of materials, including plastics. But when it comes to caring for the environment, companies around the globe are working to disassociate themselves with the well-known images of masses of plastics floating in the ocean.

"I think the world has come to a point that they realize that plastics in the environment can be a problem, that climate change is an issue," Richard Skorpenske, who leads advocacy and sustainability efforts for Covestro LLC's polyurethane segment, said. "We feel we can be a part of the solution offered for that."

Circular economy describes a model of bringing products at the end of their usable life back into the product stream for the company to reuse in another capacity. Skorpenske said to achieve this type of business model, Covestro currently has efforts in the works on advancing its recycling technologies, choosing alternative raw materials and shifting toward renewable energy sources.

For example, Covestro developed a raw material called cardyon, which is created in part with waste CO2 created during Covestro's manufacturing process. The product is still in a pilot stage, but Skorpenske said if it moves forward, the cardyon would use carbon captured by Covestro rather than release it into the atmosphere.

The company is also making other efforts to reduce its environmental footprint.

In 2005, which serves as a benchmark year, Covestro set forth a set of sustainability targets with a completion goal of 2025. The company set a goal to reduce specific greenhouse gas emissions by 50% in that time frame at its manufacturing and research and development facilities, and by 2019 it reduced its emissions by 46.1% from the benchmark year. In 2019, Covestro's both direct and indirect greenhouse gas emissions totaled 5.91 million metric tons.

Skorpenske said Covestro achieved that reduction by optimizing its energy usage, including its consumption of electricity. For example, Covestro cut its steam usage by about 15,000 megawatt-hours at its polycarbonate plant in Map Ta Phut, Thailand, and lowered its electricity requirements by about 20,000 megawatt-hours at its chlorine plant in Baytown, Texas.

"We are striving to have demonstrable and transparent progress toward these targets," Skorpenske said. "This is a journey. If you look at the Paris Agreement, the target is climate neutrality by 2050. This is going to be multiple iterations and steps, but we want to show our customers and the parts of society that we interact with that we are making meaningful progress."

A PPG worker at an industrial coatings plant in Tianjin, China.

PPG Industries Inc.

PPG Industries Inc. created a list of sustainability goals in 2017 with target completion for 2025. However, the Pittsburgh-based company has nearly accomplished the entirety of the list, and Mark Cancilla, vice president of environment, health and safety at PPG, said it is working on setting new, more aggressive goals currently.

As one target goal, PPG aimed to reduce its total waste disposal intensity by 25%, which it hit in 2019. That year it totaled 98,400 metric tons of waste. PPG aimed to have 35% of its manufacturing and research and development sites achieve zero waste going to landfills, and it had achieved 33% by the end of 2019.

The manufacturer reported that the faster-than-expected acceleration of its waste reduction efforts stemmed primarily from the governmental reclassification of a silica byproduct from waste to non-waste. PPG said the material was reclassified because the company found a “beneficial use” for the material.

Cancilla said the Louisiana Department of Environmental Quality approved PPG’s request that silica filter cake material from its Lake Charles, Louisiana, facility be qualified as non-waste when used as a landfill daily cover. A daily cover is a layer of material placed on top of a landfill’s daily deposit, which helps to reduce odor and create a firm base for vehicles to operate.

Because of this, PPG diverted 32,000 metric tons of silica from its waste in 2019. To keep that momentum, in 2019 PPG named regional waste coordinators to develop specific plans for each of its top waste-producing sites.

Another example, Cancilla said, comes from PPG’s San Juan del Rio, Mexico, facility, where the manufacturer now uses 100% clean energy supplied via a photovoltaic park.

“The park’s solar panels capture sunlight and transform it into thousands of watts of electricity per second without producing harmful emissions,” Cancilla said. “This project has resulted in a 30% energy savings, 100% reduction in carbon dioxide emissions and a clean-energy certificate from the Mexican government as part of an effort to help the country meet its decarbonization objectives.”

PPG has also worked to reduce its water consumption. As one example, an industrial coatings plant in Tianjin, China, now uses recycled water to clean equipment. As a result of this change, PPG reduced its water consumption at the facility by 349,658 gallons and wastewater by 227,293 gallons per year.

Koppers employees plant a floating wetland, which captures solid contaminants that get into soil and then tributaries from outdoor manufacturing processes.

Koppers Holdings Inc.

Koppers Holdings Inc. joined the Carbon Disclosure Project in 2013 and started to make its data more accessible.

“First and foremost, it’s just getting more information out there and creating more transparency and disclosure around the stuff that we do and have done,” Leroy Ball, president and CEO of Koppers, said. “Getting companies to publish their information on some of these important topics, I think that was a big step forward for us.”

Koppers reported a goal to become net-zero on greenhouse gas emissions by 2050. From 2007 to 2019, the manufacturer saw its greenhouse gas emissions drop 40%, with its 2019 emissions totaling 523,518 metric tons. That number was actually higher than the few prior years, which in 2017 actually dipped to 406,701. Koppers attributed the recent spike to acquisitions it made in 2018.

The company said its emissions decreased through network optimization and energy efficiency improvements related to its combustion and processes, but it declined to offer more details on what changes it specifically made.

“We are getting better and better at controlling risks at our facilities,” Leslie Hyde, senior vice president and chief sustainability officer for Koppers, said. “One thing we’re looking at is the cradle-to-cradle process around our procedures.”

Koppers produces railroad ties that typically stay in service for 25 to 30 years, and Hyde said the company is looking for more ways to bring those ties back into Koppers facilities for recycling. In 2019,

the company collected about 3.5 million railroad ties, converted them to biomass and sold them as fuel to offset the need for fossil fuels.

Another risk mitigation effort the company put into place is the use of floating wetlands. Hyde and Ball reported that large outdoor manufacturing processes typically deposit contaminates or other materials into the soil, which then wash into tributaries. To address this problem, Koppers uses floating wetlands, or foam pads that hold plants. The roots grow down into the water, slowing the flow and collecting some of the solid contaminants.