

OUTCOME

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Case study 1

To the rescue

Ensuring the safety of our employees is our top priority. ArcelorMittal Weirton and ArcelorMittal Burns Harbor recently took proactive steps to prepare for hazardous scenarios by participating in emergency drills with local first responders.

Confined space rescue

Working safely in a confined space is a concern in the steel industry. ArcelorMittal Weirton staged a confined space rescue drill with the City of Weirton Fire Department. Employees did not know the drill was taking place, but responded quickly to move equipment as not to delay emergency workers arriving at the scene.

Only 26 minutes elapsed from the time the department was called to the time the “victim” was rescued.

“We kept the drill quiet to see how employees would react in the event of a real emergency,” said Todd Martin, maintenance manager, tin mill. “This was a great training exercise for the Weirton Fire Department and ArcelorMittal. It was a huge success. We look forward to more joint training drills with the City of Weirton.”

Weirton Fire Captain Bob Hinchee was similarly pleased with the drill, explaining, “This gave the Weirton Fire Department rescue team the opportunity to see what kind of conditions they would encounter in an industrial environment inside the mill during this kind of rescue. We got to use rescue equipment we normally don’t use like the 4-1 rigging system for confined space rescues.”

Everyone involved gained valuable knowledge from the exercise that will undoubtedly help them should there ever be a real confined space emergency at Weirton.



Hazmat drill

At Burns Harbor, a hazmat drill brought together first responders from the plant fire department, firefighters from the town of Porter, and hazardous materials teams from both Porter County and LaPorte County. The drill also tested the readiness of the local hospital, when “victims” of the accident reported to the emergency room for treatment.

On the day of the drill, all participants (responders and support personnel), assembled at the Deerfield Woods Training Facility for check-in and a pre-drill briefing and safety meeting.

As the drill began, the plant fire department responded to the scene, initiated incident command, located the victim, searched for additional victims and isolated the scene. During this time, mutual aid units (the hazmat teams and the local outside fire company) responded to the scene. The hazmat teams, dressed in appropriate levels of protective suits, entered the hot zone and performed reconnaissance. They then shut off the leaking valve and returned to the command post. The only task remaining was to arrange for recovery and cleanup of the released material.

OUR 10 OUTCOMES

Outcome 1: Safe, healthy, quality working lives for our people

To the rescue (continued)

At the end of the drill, all participants returned to the Deerfield Woods training center for review. They discussed lessons learned from the event and techniques used.

The event gave responders (both plant and outside responders) a chance to work with each other under controlled conditions, in a situation far less stressful than a real hazmat emergency.

OUTCOME 1

Case study 2

Engineered for safety

When a finished steel coil exits ArcelorMittal Cleveland's hot dip galvanizing line (HDGL), it pauses on a conveyor to receive an identification label before it goes into the shipping warehouse. For years, these labels were applied manually by an employee who would get the tag from the printer, walk up a set of stairs to the elevated coil conveyor, and manually peel and stick the label in the inside diameter of the proper coil.

To improve safety performance, a team at Cleveland engineered an automated coil labeling solution to distance employees from the coil conveyor and eliminate potential safety risks.

"After seeing an accident with a 20-ton coil flipped on its side while someone was near the conveyor platform, I knew we needed to design a better solution to distance employees from the coil conveyor. No one was hurt in that incident, but I could see the risk and I knew we could make it safer," said Alan Poling, systems engineer.

Poling and Shailesh Thakkar, senior maintenance engineer, set out to find a solution.

"When there is an issue on the line, it's our job to figure out how to stop it and keep the line running. This is what we do, we look for problems and design solutions," said Thakkar.

Poling searched for an automatic labeling system to replace the need for an employee to manually place the label. He was surprised to find there was nothing commercially available to meet the HDGL's needs. Hiring a firm custom design and build the system would be far too expensive.



"We changed direction and decided to design our own labeling system in-house," Poling said.

As with any engineering challenge, assembling the right team was imperative. Poling was the lead designer, Thakkar did the programming and automation, and their colleague Rich Moore, MTM, completed the fabrication and installation.

"Any time we do a project like this in-house, using our own talent and expertise, it is preferred," Moore proudly stated. "This system keeps people away from the coils and eliminates the tripping hazards of walking up and down the stairs repeatedly to manually label the coils."

The new system uses state-of-the-art technology, including a single ethernet cable and a touch screen control panel programmed by Thakkar.

Some of the labeling systems they researched worked by moving the entire printer to the product to place the label. This would not work for labeling coils because the label needs to be applied on the inside of the coil, not on its top. Also, moving a

Engineered for safety (continued)

heavy 175-pound printer to and from the coil posed logistical problems.

Their inventive idea positioned the label printer away from the conveyor platform and developed a “pick and place” robotic arm to take the label from the printer to the inside of the coil.

“Another feature we added was a bar code scanner. We have had issues in the past with coil labels getting switched or misplaced, which presents a serious problem for our customers. This system includes a long-range bar code scanner that reads the label on the way out to verify there is a label and the coil number matches the tracking system. A flashing green light notifies the operator the coil is labeled and ready to pick up. A flashing red light indicates there is a problem with the label,” explained Poling.

The labeling system can run for nearly two weeks before needing a label refill. So far, thousands of coils have been safely labeled with the new system.

“Some of what we’ve learned and demonstrated here can be applied elsewhere in the finishing division where coils are labeled, or other manual processes can be automated to make the work safer,” said Poling.

OUTCOME 2

Case study 1

Steel makes a comeback

After experimenting with aluminum in its luxury models, Audi's next A8 will return to steel. Scheduled for release in 2018, the body structure of the new A8 will include more than 40 percent steel, following the trend of automakers using advanced high-strength steels in new vehicles. This represents a marked turnaround from the all-aluminum body-in-white developed for the A8 in 1994.

Since then, steel has evolved dramatically. Steel's strength has multiplied by almost 10 times over the past 20 years, from 270 to 2000MPa tensile strength. More than 80 new steel products are under development at ArcelorMittal, with an automotive steel grade portfolio of almost 200 unique steel grades, half of which were introduced in just the past decade.

Around 17 percent of the new A8 body structure will be comprised of press hardenable steel (PHS). These steels have yield strengths up to 1500 MPa after press hardening. The strength-to-weight ratio of these grades outperforms even the most advanced aluminum grades at lower prices. With new joining technologies, it has never been easier for automakers to incorporate advanced high-strength steels into vehicles. As these technologies mature and are adopted by carmakers, the use of PHS in the multi-material vehicles of the future is set to grow rapidly.

"Usibor® is our key product in hot stamping and has been a major commercial and technical success in the global automotive industry," said Brian Aranha, executive vice president, global automotive, ArcelorMittal. "Looking ahead, the scope of hot stamping products in vehicles will continue to



increase with the release of more advanced products like Usibor® 2000, which offers 10 to 15 percent weight savings when compared to existing hot stamping solutions."

Usibor® is compatible with standard press hardening technologies and processes. Combining Usibor® with Ductibor® into laser welded blanks offers several significant advantages including weight savings, improved crash behavior and cost savings through material and manufacturing optimization.

Dr. Bernd Mlekusch, head of the Audi's Leichtbauzentrum, or Lightweight Construction Center, said: "There will be no cars made of aluminum alone in the future. Press hardened steels (PHS) will play a special role in this development. PHS grades are at the core of a car's occupant cell, which protects the driver and passengers in case of a collision. If you compare the stiffness-weight ratio, PHS is currently ahead of aluminum."

Audi's return to steel is part of a growing trend surpassing the expectations of steelmakers according to data released by the Steel Market Development Institute (SMDI).

Steel makes a comeback (continued)

Between 2006 and 2015, the use of advanced high-strength steels in vehicles grew threefold from an average of 81 pounds per vehicle (36.7 kg) to 275 pounds (124 kg) in 2015. Over the period 2012 to 2015, the use of AHSS increased by around 10 percent each year, well above steel industry forecasts.

Adding to the benefits of lightweighting is a focus on life cycle analysis, or LCA. LCA considers total emissions generated during the three stages of a vehicle's life – production, drive phase and disposal.

"Right now, regulations only consider tailpipe emissions generated during the drive phase," said Brad Davey, chief marketing officer, NAFTA and global automotive for ArcelorMittal. "However, each material used in vehicle production contributes to lightweighting and improves fuel economy, but each does so at a different cost to the manufacturer – and to the environment."

Studies show aluminum produced in North America emits four to five times more GHGs than steel. Additionally, the production of one ton of aluminum requires at least five times the energy required to make one ton of advanced high-strength steel.

"If we want to know how 'green' a vehicle really is, we have to measure emissions over its entire life cycle. Otherwise, choosing an alternative material over advanced steel will result in a huge and irreversible environmental mistake," said Davey.

OUTCOME
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Case study 2

Future mobility trends reinforce the role of steel

Sales of battery electric vehicles (BEV) still lag far behind conventional internal combustion engine (ICE) vehicles, but BEV technology and sales continue to improve at a rapid pace. Globally, BEV sales exceeded one million units in 2017 compared to 773,600 in 2016. Global BEV sales are expected to reach two million units in 2018 and account for 25 percent of all car sales by 2025. While vehicle makeup may look very different in 2025, one constant that will remain is the critical role steel plays in vehicle design.

First, to understand where the future of mobility is heading, it's important to understand what is driving the change. Both North America and the European Union have implemented stringent emissions targets aiming to reduce CO₂ emissions while tightening testing requirements.

Furthermore, local governments around the world are considering implementing vehicle design and driving restrictions to help reduce smog and particulate levels and thereby improve public health. Such factors are quickly moving us toward an electrified world for transportation.

BEVs emit no carbon or nitrogen oxides during the drive phase, and reduce overall fleet emissions significantly. There are also benefits that appeal to consumers:

- BEVs have nearly 90 percent less rotating parts than ICE vehicles, meaning less wear and tear on the car and a lifespan exceeding 600,000 miles.
- Regular maintenance of BEVs is significantly lower as they require no oil changes and other tune-ups more common in ICE vehicles.



- Operating costs per mile are significantly lower in BEVs as compared to ICE vehicles.

While benefits are significant, the financial cost and driving range of BEVs are key in determining how quickly sales will increase. Innovation to improve range, cost and charging time of batteries has accelerated. We've recently seen key announcements from major automakers on their expectation for this field. Volkswagen announced it will spend \$40 billion on electrification over the next five years. Meanwhile, General Motors will launch at least 20 new electric vehicles by 2023 and Ford will invest \$4.5 billion and introduce 13 electrified models in the next five years.

One limitation of BEVs is the weight of the battery and the reinforcement needed to protect the battery during a crash. A BEV requires greater energy absorption to handle the larger kinetic energies of a heavier vehicle and a stronger roof structure to manage greater roof crush loads.

Future mobility trends reinforce the role of steel (continued)

Steel offers the optimal balance of strength, performance and mass reduction with the lowest impact on the environment. ArcelorMittal's advanced steel grades – including our patented press hardenable steel Usibor® 2000, MartINsite® 1700, and MartINsite® 2000 – all offer greater strength per unit density than aluminum. And our Fortiform® cold stamping grades offer greater energy absorption per unit density than aluminum. Steel's unmatched strength enhances intrusion resistance while the thinner gauge steel allows for more space in the battery protection system to accommodate larger batteries, thereby increasing driving range.

Aside from protection and performance, another focus for automakers is controlling vehicle cost. Increasing battery capacity by just one kilowatt per hour typically costs around \$120. Advanced high-strength steels (AHSS) offer the most cost-effective solution to improve battery range without adding in more weight. Steel is the most affordable material over all competing materials.

Automakers recognize the benefits of steel, with major applications of steel seen in today's BEVs. For example, the body-in-white of the Chevrolet Bolt is composed of 86 percent steel, including 44 percent AHSS. Like Chevrolet, OEMs are using the advanced lightweighting potential of steel to achieve their range goals while keeping costs low. Lifecycle analysis provides an additional benefit for BEVs. It is important to consider production phase emissions when evaluating environmental impact of a vehicle, avoiding choosing a lightweighting material that emits more GHGs during production than it saves during the vehicle's drive phase.

OUTCOME
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Case study 1

Providing quality plate for the USS Indiana

ArcelorMittal and the state of Indiana are anxiously awaiting the upcoming commissioning of the USS Indiana (SSN 789), the latest in the Virginia class fast attack submarines. Christened April 29, 2017, the USS Indiana is continuing with sea trials and is expected to be commissioned and handed over to the U.S. Navy in June 2018.

ArcelorMittal USA's Coatesville and Conshohocken plate facilities supply both carbon and navy armor grades of plate to both U.S. companies capable of manufacturing nuclear powered submarines: General Dynamics' Electric Boat Division in Groton, Connecticut, and Huntington Ingalls Industries' Newport News Shipbuilding in Virginia.

"Due to the sophistication associated with these vessels, the government approved the conditions by which these two companies could develop a teaming arrangement to build submarines together, utilizing a modular production process," said Matt Habenicht, plate sales manager, ArcelorMittal USA. "This ensures there are two manufacturers of these highly technical and advanced Navy warfare vessels."

The Virginia-class submarine is a nuclear-powered platform that can carry missiles and torpedoes, gather intelligence and deploy special forces, including Navy SEALs. Each boat costs approximately \$2.68 billion to build, less than the Seawolf-class subs that preceded the Virginia-class, each costing over \$3 billion per unit.

The USS Indiana began construction in 2012, and will be the third U.S. Navy ship to be christened with the name Indiana. The first Indiana (BB-1), the lead ship of her class of battleship, served in the North



Atlantic and later participated in the blockade of Santiago de Cuba during the Spanish-American War. The second Indiana (BB-58) was a South Dakota-class battleship that earned nine battle stars for her service in the Pacific Theater in World War II. BB-58 fought in the Battle of the Philippine Sea and participated in the invasions of Tarawa, Kwajalein and Okinawa, and bombarded Saipan, the Palau Islands, the Philippines and Iwo Jima.

The USS Indiana is 7,800 tons and 377 feet in length, has a beam of 34 feet and operates at more than 25 knots (29 mph) submerged. It's designed with a reactor plant that will not require refueling during the planned life of the ship, reducing lifecycle costs while increasing underway time.

Because the Virginia class fleet provides stealth capabilities and serves as a powerful deterrent to aggressive acts against the U.S. and our allies around the globe, the safety of these vessels is critical to the survival of the dedicated crews who tirelessly protect our freedoms.

Providing quality plate for the USS Indiana (continued)

Ship manufacturers have high expectations related to the quality of materials used to build these complex vessels. Habenicht mentioned a vice president of quality and radiological controls from General Dynamics Electric Boat recently visited the Coatesville facility and expressed the company's critical need for all their suppliers to adhere to their strict quality standards.

"Suppliers need to focus on the specifications, inspections and manufacturing instructions because peoples' lives depend on them. In other words, quality is not an option – it's an imperative," Habenicht added.

Our extensive history and relationship with the armed forces provides us with a challenging yet rewarding position as the premier plate supplier to our nation's Navy. Many of our employees have served in our armed forces or have loved ones who have served, adding to our pride in these partnerships. This critical market remains one area of our nation's manufacturing base which is still made, melted and built in the USA.

OUTCOME
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Case study 2

Steel well-positioned to serve growing line pipe market

ArcelorMittal's raw steel production in the United States, coupled with our R&D expertise, robust product offering and proven experience, positions us well to serve the growing line pipe market in the U.S. We are the domestic leader in producing American Petroleum Institute (API) quality hot-rolled coiled products and cut-to-length plate. Both are key inputs in the production of line pipe, used to gather, transport and distribute oil and natural gas.

There are more than 26,000 miles of pipeline projects planned in the United States according to Simdex Future Pipeline Projects Worldwide Guide, the world's largest database on such projects. Together, these projects represent a potential capital expenditure of \$51 billion. While not all projects will come to fruition, this research indicates significant growth potential over the next several years.

Line pipe steel must be strong enough to handle high internal pressures, especially for gas transmission. For a given pipe diameter, larger volumes of gas can be transported if the pipe can withstand elevated pressures, hence the requirement to use higher strength steel. The steel must also be resistant to fracture, which poses a challenge to steel designers. In conventional steels, as strength increases, fracture resistance decreases. Line pipe steel must be internally clean, with minimal inclusions to avoid rupture initiation and must pass rigorous ultrasonic inspection. Line pipe steel must be tough enough to resist impacts and fracture along the pipeline. In gas lines, fractures can run for miles if the steel is not strong enough.



ArcelorMittal's line pipe portfolio includes all API grades through X-80, including sour service applications. These grades are available in both hot-rolled and plate in a variety of thicknesses and widths. Our line pipe products are produced using American-made steel from one of our five steelmaking facilities in the United States – Riverdale in Illinois, Indiana Harbor and Burns Harbor in Indiana, Cleveland in Ohio, and Coatesville in Pennsylvania.

In the U.S., we have seven facilities capable of finishing our American-made steel for line pipe. At AM/NS Calvert, a finishing facility, we source substrate from our Indiana Harbor plant to produce our strongest, thickest and widest hot-rolled skelp.

Steel well-positioned to serve growing line pipe market (continued)

In the last two years, we have invested more than \$133 million into our key USA operations to ensure our ability to meet customer requirements in this market. These investments include:

- Upgrades to the steel shop and a new caster at Indiana Harbor
- Increased testing capability and handling at AM/NS Calvert to increase hot-rolled product capacity, capability, and quality control
- New equipment at Burns Harbor to develop higher strength and heavier gauge plates, including the highly demanded X-70 plate, as well as ultrasonic testing methods to meet the increasingly stringent industry standards

Our Global R&D Center in East Chicago, Indiana – one of 12 ArcelorMittal research centers around the world – is focused on product and process innovations to meet the rising safety and efficiency requirements in the line pipe market. One significant R&D effort is thermomechanical control processing (TMCP) which allows for low carbon, micro-alloyed steels and enhances both strength and toughness. The low carbon chemistry achieved through TMCP also significantly improves weldability for the pipe maker and field fabricator. These efforts not only reduce the risk of failure in line pipe, but will also mitigate consequences in the event of a failure.

ArcelorMittal is proud to be at the forefront of producing the most advanced steel products and solutions for all major markets – including energy transportation. We will continue to invest in our operations, our research and our products to ensure we deliver the safest and most cost-effective solutions for our customers and consumers.

OUTCOME

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Case study 1

Steel recycling leads to big impact in ArcelorMittal communities

When people consider the role recycling plays in their daily lives, steel companies like ArcelorMittal rarely come to mind. Yet our recycling efforts make a big impact on our community stakeholders, and on our industry, suppliers and customers.

Environmental initiatives at ArcelorMittal are driven by our environmental policy. Embedded in this policy is our commitment to minimizing our environmental impact, which includes using resources efficiently and recycling at high rates. Recycling not only helps us meet our sustainability goals, but also reduces our costs.

Steel is infinitely recyclable and is the most recycled material in the world. According to the American Iron and Steel Institute, there are typically 60 to 80 million tons of steel scrap recycled per year into new steel products in North America. In the United States, 29 percent of every ton of steel ArcelorMittal produces is from recycled scrap steel.

We also recycle many coproducts and byproducts of the steelmaking process. Approximately 85 percent of coproducts and byproducts produced by ArcelorMittal in the U.S. are either internally recycled or externally reused. We actively look for ways to reduce waste in our processes, using less and recycling and reusing more. This recycling mindset is applied to everything from capturing blast furnace gas to generating steam and electricity to power our plants, to using slag to make concrete and cement for our roads.

Cuyahoga County, Ohio is home to our Cleveland facility. There, our recycling program helps local stakeholders accomplish their goals.



Cuyahoga County is required by the Ohio Environmental Protection Agency (EPA) to meet residential and commercial as well as industrial waste recycling goals. Currently the county is responsible for ensuring the district reduces and recycles at least 25 percent of the solid waste generated by the residential/commercial sector and at least 66 percent of the solid waste generated by the industrial sector.

ArcelorMittal USA's regional waste manager, Cary Mathias, supported the industrial sector goal by joining the Cuyahoga County Solid Waste Policy Committee, the advisory group for the Cuyahoga County Solid Waste District. The committee was tasked with preparing and implementing a solid waste management plan. Cuyahoga County

OUR 10 OUTCOMES

Outcome 4: Efficient use of resources and high recycling rates

Steel recycling leads to big impact in ArcelorMittal communities (continued)

successfully adopted the plan and exceeded its industrial solid waste recycling goal. Thanks in large part to our ArcelorMittal Cleveland plant, which is both the largest waste producer and recycler in the county, the County is now recycling 74 percent of waste generated.

We are proud to extend our commitment to environmental excellence beyond our facilities into our communities. This work also supports the goals of our community stakeholders in Ohio and across the country.

OUTCOME

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Case study 2

Recycling coke oven gas contributes to the bottom line

Steel is an infinitely recyclable material with 37% of each ton of steel we produce at ArcelorMittal in the U.S. made from recycled scrap steel. But steel scrap is only the most obvious material we recycle in our processes. We also recycle and reuse many other materials in our efforts to reduce waste and improve the efficiency of our operations.

ArcelorMittal's facility in Warren, Ohio, is a model of resource efficiency. "We view anything wasted as an opportunity. We are always aiming to protect the environment as well as reduce our operating costs," said Joe Magni, operations manager.

The Warren facility's primary business objective is to produce coke for our facility in nearby Cleveland. The coke is used as a fuel in the blast furnaces, and Warren supplies about 40 percent of the coke the Cleveland facility needs to make iron and steel.

But as Magni sees it, ArcelorMittal Warren really has a dual identity. It is part cokemaking facility and part byproduct recycling plant.

Like all manufacturing processes, the work of producing coke naturally creates a number of byproduct materials. While they might be considered wastes from the cokemaking process, many of these byproducts are actually useful to others in the agriculture, chemical, and oil industries.

According to Magni, the Warren facility has worked hard to identify each of its byproducts and find a way to either use it internally or sell it. This not only reduces waste streams being landfilled or flared, but it generates valuable revenue for the facility and supports the operating cost of the plant's primary business of coke production.



Over the past year, ArcelorMittal Warren reached an impressive milestone and has achieved total self-sufficiency for its plant electrical needs. After purchasing a powerhouse from a neighboring facility now out of business, ArcelorMittal Warren has since utilized its coke oven gas (COG) to generate steam and then electricity. Closing the loop, this electricity is then transmitted back to the facility and used to power the cokemaking operation. Previously, excess coke oven gas would have been flared, or burned off before being released to the atmosphere. According to Magni, the facility has now all but eliminated its flare.

"This has been a sustainability game-changer. Not only are we independent in generating the electricity we need to run our operation, but we have excess power that we sell back to the grid on a regular basis. This reduces our energy and carbon footprint *and* generates value for our plant, all by essentially 'recycling' our coke oven gas and making our plant as efficient as it can be," said Magni.

OUTCOME
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Case study 1

A natural solution to water treatment

ArcelorMittal Cleveland is testing a new approach to water treatment and turning to Mother Nature for inspiration. A pilot project launched in spring 2017 is using moss to replace chemicals traditionally used in the hot strip mill water treatment process.

While the idea may be new to ArcelorMittal and the steel industry, it is hardly new to the natural world where moss has been purifying water in lakes, rivers and streams for millions of years.

The Cleveland facility is partnering with Creative Water Solutions for the pilot project, using a special variety of sphagnum moss.

“This sphagnum moss is in the areas of the world known to have the purest water, and it comes from areas, interestingly, that have iron ore,” explained David Knighton, CEO and president of Creative Water Solutions.

Specifically, the sphagnum moss grows naturally in the northern United States where it pulls iron from the water and soil so habitats can survive. According to Knighton, the same job the moss does in nature can be put to good use in an industrial water treatment setting. The moss stabilizes pH, absorbs iron and other metals, purifies water and inhibits corrosion and scaling in the system. All of these contribute to a more efficient water treatment process.

“These are all the things the chemicals have been trying to do [in the traditional water treatment system] but the moss does it naturally.”

The pilot project is showing promising results. In the first month of the trial, the moss was successfully reducing metal content in the water, maintaining the



correct pH and meeting all the same performance requirements of the chemical treatments.

Energy engineer Rishabh Bahel oversees the project. Bahel monitors the facility's overall water usage along with other utilities.

“The main reason we wanted to do this was for water reduction and reducing chemical usage, or even completely eliminating chemicals,” he explained.

The moss packets are replaced every 30 days, after they've absorbed a significant number of impurities.

Overall, using moss is more sustainable and environmentally-friendly, but it is also at least 20 percent more cost-effective than chemicals. Other potential benefits include protecting equipment from damage and corrosion over time.

Bahel admits there have been skeptics, but he is encouraged by the early results of the pilot and the partners' commitment to innovative, sustainable solutions. If the moss continues to perform well in the hot mill furnace cooling tower, then the team may try it in other water treatment systems or power houses onsite.

OUTCOME

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Case study 2

Managing and minimizing our environmental impact

ArcelorMittal Burns Harbor recently participated in an ISO 14001 surveillance audit in which the facility successfully achieved a recommendation of certification to the newest standard of ISO 14001:2015. ISO 14000 is a family of standards related to environmental management that exists to help organizations to minimize how their operations negatively affect the environment and comply with applicable laws, regulations, and other environmentally oriented requirements.

From August 15–18, 2017, ISO 14001ABS QE auditors Tom Dawson and Stacy Foret visited all major Burns Harbor departments.

According to ABS, the updated ISO 14001 revisions focus on:

- **Simplicity** – Less resources spent on implementation, improved engagement, quicker adoption
- **Business Orientation** – Less technical than current standards, optimizing EMS performance and making it more sustainable and aligned with strategic direction of the organization
- **Leadership** – Greater involvement in the management system by the leadership team will ensure the whole organization will be motivated towards the organization's environmental performance
- **Seamless Integration** – Integration within and into different areas of the business, providing transparency and fostering collective responsibility



- **Planning** – Greater level of detail on environmental objectives which now have to reflect changed planning process

Following the extensive three-day surveillance audit, Burns Harbor was recommended for the ISO 14001:2015 standard upgrade with zero non-conformities which, according to the auditors, is rare and commendable.

"I must say, the Burns Harbor environmental management systems are best practice," said ABS Quality Evaluations lead auditor, Stacy Foret, at the audit's closing meeting. "I wish every facility we visit had such a system in place. You make it easy to see what the requirements are and what you are doing to monitor those requirements. Congratulations and kudos to the entire Burns Harbor team."

Upgrades to the new ISO 14001:2015 standard are required for all certified facilities by September 2018 to remain certified to ISO 14001.

Managing and minimizing our environmental impact (continued)

Also during the August audit, four non-conformance corrective action items from 2016 were reviewed, satisfied, and therefore, closed by the auditors.

Rob Maciel, manager, environmental, ArcelorMittal Burns Harbor, said, "The successful transition to the new ISO 14001:2015 standard satisfies a decades old requirement from a variety of domestic and foreign car manufacturers that their upstream steel suppliers have in place and be certified to the most recent ISO 14001 standard to sell steel to those manufacturers. Many thanks to all those involved with these efforts."

OUTCOME
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Case study 1

Achieving reliability and sustainability through power station rehabilitation

ArcelorMittal Burns Harbor is nearing the end of a substantial \$170 million power station rehabilitation project that began in 2016. The power station is the plant's energy management facility, using by-product fuels from coke ovens and blast furnaces as primary fuels for producing steam. The project will enhance the reliability of the operations and provide annual cost savings estimated at \$60 million upon completion.

"Before the investment, the power house was in very rough shape," said Carl Pfeifer, senior division manager, MEU, ArcelorMittal Burns Harbor. "Major pieces of equipment were well beyond their useful and reliable life and all needed to be rehabilitated and/or reconditioned in some fashion."

Once completed, the power station is expected to provide Burns Harbor with 75 percent of the plant's power requirements. The station has only been producing about 35 to 40 percent of the plant's power needs in recent years.

The complex consists of six boilers, each with a rated capacity of 475,000 pounds/hour of steam, three steam turbine blowers, each with a capacity of approximately 225,000 cubic feet/minute to produce blast furnace wind, and three steam turbine generators having a combined capacity of 180 megawatts for Burns Harbor's electric power system.

According to Pfeifer, one of the first projects undertaken was the construction of a modern reverse osmosis facility used to treat water used by the boilers and BOF hoods, replacing outdated feedwater equipment.



"The most important reason for rehabilitating the power station is to bring reliability to the production of steam for the plant," notes Pfeifer. "In turn, that brings reliability of wind for the blast furnaces and other users of steam throughout the plant, including the coke oven exhausters, vacuum degasser, turbine-driven pumps, air compressors and process heating applications. The remaining steam is used to generate electrical power at a significant cost advantage to the plant. This internal generation of power ensures power to our operations if external power delivery from our local electrical utility is interrupted. In case of an external power failure, our critical primary operations are protected through our own internal power generation."

The project also brings environmental benefits.

"Using coke oven gas and blast furnace gas as a significant portion of the fuel required to produce steam, will also have a positive impact on the carbon footprint. These by-product fuels not only won't be flared, but the electrical power generated effectively reduces the generation requirements of the public utilities," adds Pfeifer.

Achieving reliability and sustainability through power station rehabilitation (continued)

One of the biggest challenges of this project is continuing to operate the facility as major pieces of equipment are repaired or replaced. Currently, the reverse osmosis water plant, two boilers and one generator are complete. Work on the remaining boilers, turbo-generators, turbo-blowers and ancillary equipment continues.

The Burns Harbor power station rehabilitation project will be completed by the end of 2020, and will be a major testament to ArcelorMittal's commitment to being a responsible energy user.

OUTCOME
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Case study 2

No energy initiative is too small to help create a lower carbon future

Employees at our facilities in the United States have identified and implemented solutions to increase the sustainability of our operations, reduce greenhouse gas emissions and protect the environment, all while saving costs. From a lighting upgrade project at Riverdale and an office recycling program at R&D, to cutting back on energy usage during peak days in Columbus, no energy initiative is too small.

- **At ArcelorMittal Riverdale, a recent lighting upgrade project not only improved energy efficiency, but it also addressed a safety hazard.**

"The old metal halide lights were not energy efficient and posed a safety risk because they were 125 feet high," said Mukund Ravindran, manager, MEU, Riverdale. "They required a lot of maintenance and the fixture could possibly fall from the ceiling. We upgraded to Phuzion™ LED high bay lights. Each is equipped with safety cables to catch the fixture should it fall."

The plant took advantage of the incentive program offered by their local utility provider. The ComEd Energy Efficiency Program offers cash incentives for energy-efficient lighting, including fixture replacements and retrofits, advanced lighting networked sensors and controls. Riverdale expects to save about \$8,000 per year in energy costs at the caster facility.

"We did the installation while the plant was running and during bi-weekly downturn days. It took coordination between the electrical, mechanical, operations departments and the contractors,"



added Ravindran. "The caster maintenance team led by Taylor Coleman and John Wartak and the caster operations team should be commended for supporting the successful execution of the project."

- **At Global Research and Development in East Chicago, an office recycling program was rolled out, and an energy efficient reflective coating was installed on the windows.**

According to the EPA, one ton of recycled office paper saves 4,100 Kwh of energy, nine barrels of oil, 54 million Btu's of energy, 60 pounds of air pollutants from being released, 7,000 gallons of water, and 3.3 cubic yards of landfill space.

"Diverting paper, plastic and aluminum from our waste stream may seem like a small thing for an office area to do, but you have to look at the big picture," said Robert Joseph, manager, facilities and administration, Global Research and Development, East Chicago. "It all adds up when ArcelorMittal offices across the US are doing this."

No energy initiative is too small to help create a lower carbon future (continued)

- **To use energy more responsibly, ArcelorMittal Columbus started participating in the “Red Day” program with the ArcelorMittal USA procurement team.**

Mary Frankovich, division manager at Columbus, explains, “Based on information from our local utility provider, if we shut down for four hours in the afternoon on peak usage days, it translates to lower energy billing rates in the future.

The shut-down period is from 3 to 7 p.m. on peak energy days. This is when the factories are still running and families are coming home from work in the evening and energy use is high. The objective is to minimize power usage on five peak days of the year.

The procurement team monitors the projected price of energy based on usage. On projected peak usage days, from May thru September, the team notifies Columbus of an opportunity and they can choose to participate on each occasion, based on the needs of the line. During a shutdown, they can schedule other work to use the time wisely.

Columbus has participated in the program for several years, resulting in energy savings of \$100,000 annually.

As these projects illustrate, being a responsible energy user has many benefits beyond creating a lower carbon future. It makes our company more financially sustainable and is an important contribution to society.

OUTCOME
6

Case study 3

Energy Champions gather to share best practices across the Americas

Steelmaking is an energy intensive process. Our goal at ArcelorMittal is to decrease this impact by monitoring and minimizing our annual energy consumption. We continually work to identify and implement ongoing, innovative solutions to increase the sustainability of our operations, reduce greenhouse gas emissions and protect the environment, all while saving costs.

In October 2017, Energy Champions from our facilities in the Americas gathered in Northwest Indiana to share best practices and new ideas.

The Energy Roundtable, which has been held every year for the past decade, attracted employees from 8 facilities. The four-day agenda included internal energy auditor training, updates from the plants on their safety and energy initiatives, tours of Global Research and Development and the Indiana Harbor plant.

This year's meeting kicked off with internal energy auditor training. During the course, provided by NIPSCO and Purdue Manufacturing Extension Partnership, maintenance technicians, engineers and other key ArcelorMittal employees learned how to perform energy audits to identify potential cost saving measures.

The new skills employees learned in this training equipped them to quantify energy consumption and identify projects, both large and small, to reduce energy costs and increase efficiency at their plants.

"The training was pretty insightful in understanding the concept of energy efficiency and various areas in the plant where we have a chance of saving energy including motors, air compressors, boilers,



pumps and lighting," said Nisarg Dave, engineer, utilities, ArcelorMittal Indiana Harbor. "Finding opportunities to reduce energy not only saves us money, but also makes the equipment more reliable and helps reduce the carbon footprint."

One objective of the training was to explain the impact greenhouse gas emissions have on the environment, and how this can be mitigated by energy efficiency improvements.

Additional topics discussed at the summit included:

- **A safety share** – plant representatives discussed an incident associated with safety in the energy area.
- **Project sharing** – attendees shared an energy project or action which represents a best practice at their facility.
- **An update from Global Research and Development** on energy products and processes they are working on.
- **An energy market update** for the Americas.

Energy Champions gather to share best practices across the Americas (continued)

“Over 40 projects were presented, covering several energy-related topics such as safety improvements, lighting, compressed air and variable speed drivers,” said Helder Da Silva, NAFTA, CTO Energy. “It was a very rich exchange between the participants since we could share what we have been doing and learn from other plants. We certainly will be more able and motivated to improve safety and reduce energy costs.”

OUTCOME 7

Case study 1

Investing in the reliability of our internal supply chain

As a vertically integrated business, our customers are dependent on the reliability of our internal supply chain. We actively invest in upgrading our facilities and implementing innovative process improvements.

At ArcelorMittal Indiana Harbor, the 80" hot strip mill is in the final stages of a significant upgrade project which included the rebuild of two of its three walking beam furnaces.

This \$32 million rebuild has significantly improved the reliability of the facility and positioned it to produce up to five million tons a year. The investment comprised a long list of items which required replacement, including all new skid and jack pipes—fixed and movable.

Additional upgrade projects at the hot strip mill included a cooling tower, coil field expansion, motor room upgrades, enhanced quality control measures and other improvements to enhance reliability.

ArcelorMittal Columbus has also recently tackled several impressive improvement projects. For example, a cross-functional team at the facility used sheer ingenuity to reduce roll changes at the temper mill significantly.

Because the facility produces high-value, coated steels for automotive customers, ensuring product quality is paramount. Coils are inspected and re-inspected to ensure customers only receive the top-quality product they ordered.

Inspectors started finding and flagging a recurring defect that initially looked like a "pinhead" defect. The practice to address this type of defect was



to change the work rolls that could be causing the pinheads. When a work roll is changed out, the facility spends money and loses time and productivity.

Steve Fox, process manager, explained, "We ended up forming a team consisting of engineers, quality, operations and process technicians. We discussed these issues and were able to pinpoint where we thought our problem was."

Specifically, the team looked more closely at the defect and discovered it was more likely caused by "pickup." Pickup is when debris gets stuck to the roll and causes a small, dimple-type defect on the steel, according to Fox.

With this finding, the team hypothesized that frequent roll changes they had been doing weren't necessary to solve the problem and instead came up with a simpler, more cost-effective solution.

"What we've done is install new spray headers in the mill itself – restarting the quench tank sprays. We saw a large amount of pickup in the mill, and

Investing in the reliability of our internal supply chain (continued)

we are now trying to remove it upstream at the quench tank by re-firing those sprays,” said Scott Richardson, lead engineer.

The simple solution of spraying water on the steel strip to remove the pickup has addressed the defect without requiring frequent and costly work-roll changes.

Working collaboratively with the quality and engineering departments, temper mill operators have been essential to the team’s success. They are responsible for turning on the sprays, monitoring and controlling how much fluid is in the system.

This has resulted in better product quality, improved productivity, and notable cost-savings.

OUTCOME
7

Case study 2

Improving delivery performance for our customers

In 2017, ArcelorMittal USA embarked on a customer-focused initiative to improve on-time delivery (OTD) performance. We know how important our customers are to our long-term sustainability, and this initiative worked to bring our metrics closer to those our customers need. Several facilities as well as our commercial and corporate planning organizations developed cross-functional teams to support this initiative.

The most important change implemented through this initiative relates to the metrics used to measure OTD. Historically, ArcelorMittal has measured OTD based on the date an order is ready, at our facility, for delivery. Our cross-functional delivery improvement team recognized this metric was not standard across our customer base. Each customer measures delivery differently with metrics ranging order readiness to time of shipment to actual delivery date at a customer's facility.

Our new system allows us to meet each customer's individual needs as it relates to delivery metrics.

ArcelorMittal Burns Harbor took significant steps forward with this initiative in 2017. "Perception is reality and for our performance to be relevant to each customer, our measurement must match their business model," said John Mengel, vice president and general manager, ArcelorMittal Burns Harbor. "Delinquent orders will be tracked, measured, and prioritized to minimize disruptions in delivery."

Delivering a quality product on-time is essential in today's competitive landscape and will help to further secure and grow our business as the market changes. "This new measurement is influenced



beyond the manufacturing plant and will measure the efficiency of both the logistics and outside processing suppliers supporting our customer base," says Chad McKeever, process manager, delivery improvement, ArcelorMittal Burns Harbor. "We now understand what our customers expect, and if we consistently deliver to their expectations, we position ourselves to be their preferred supplier."

At Burns Harbor's plate facility, changes are also underway to improve planning, scheduling, production, met testing, loading and shipping.

"The project that will offer the most significant improvement to Burns Harbor plate is the installation of plate edge marking systems at the 110" and 160" plate mills," says Tony Trial, plate delivery facilitator. "The new systems will provide edge identification on all thicknesses of plate. This is an exciting advancement that offers multiple improvements which will ultimately result in improved timeliness and accuracy of deliveries."

Within Burns Harbor, several teams have been established for the enhancement of OTD

Improving delivery performance for our customers (continued)

performance. Improved results have already been realized in some areas as evidenced by Burns Harbor's record delivery performance in 2017.

Across our U.S. facilities, we're instituting improvement projects like these to provide security and sustain our workforce and communities for years to come. Our customers expect and deserve a quality product delivered on-time, and a best-in-class internal vision is key to ensuring our share of the market.

OUTCOME
8

Case study 1

Showing students a 'fab' time with STEM activities

At ArcelorMittal, we recognize the importance of scientists and engineers to our business, our industry and our communities. As a result, over 40 percent of our annual community investment budget supports STEM (science, technology, engineering and math) education in the United States.

ArcelorMittal recently started a new partnership with the Carnegie Science Center and arranged for the Center's mobile Fab Lab to roll into Monessen, Pennsylvania. The mobile Fab Lab is a digital fabrication laboratory for innovation and invention that provides students a place to play, create, learn, mentor and invent.

"This project is important to us because we need employees in the future who are versed in science, technology, engineering and math," explained Randi Quattro, human resources manager at ArcelorMittal Monessen.

At a local school in Monessen, students designed foamboard airplanes through a specific computer program. Then, they saw those designs come to life on a 3D printer.

Sixth-grader Sydney Brown wants to be an architect when she grows up and was fascinated by the process.

"We used an app on the computer, and we had to create the different shapes – the wings, the body of it, and the back wings," she said. "The laser printer has a flame, and it's very thin, and it just cut right through (the foamboard)."

Hands-on experience is important as a way to engage students in STEM fields.



"These types of activities help them realize this could be a career and they could be successful doing something they love," said Roberta Bergstedt, school director for the Monessen City School District. "Too often they think (science) is overwhelming or confusing. But they're finding out today that science is fun. It's really pretty cool."

"This program gives students a chance to actually start an engineering project from scratch," added Dr. Leanne Spazak, superintendent of the Monessen schools. "It's the new wave of the future."

The Fab Lab event was part of ArcelorMittal's larger partnership with the school, where the company is also supporting the implementation of the Project Lead the Way STEM curriculum. The curriculum is designed to spark the interest of middle school students in science and engineering.

ArcelorMittal continues to invest in programs like this and many others around the country that emphasize STEM education. We hope to develop, over time, a talented pipeline of scientists and engineers who will work in our business and use our products long into the future.

OUTCOME 8

Case study 2

USA employees support hurricane relief through Give Boldly

We encourage our employees to make an impact through volunteerism and our employee matching gifts program, Give Boldly. Amidst the devastation resulting from several hurricanes in 2017, ArcelorMittal lowered the minimum gift eligible for matching through Give Boldly from \$50 to \$25 during the month of September.

Employees responded immediately, and donations from employees with the ArcelorMittal match totaled over \$21,000 designated for the relief effort through the Give Boldly program.

Therese Vande Hey, associate general counsel at ArcelorMittal, participated in the initiative. "I saw the human misery and toll unfolding because of these natural disasters and had to act. I am always reminded of what my family members who work in disaster relief advise – donating money to the experts and teams on the ground is the best way you can help from a distance. And with ArcelorMittal's support, that donation went twice the distance."

ArcelorMittal USA is proud of the spirit of generosity demonstrated by our employees who gave both their time and money to the relief efforts.



OUTCOME
 8

Case study 3

Investing in the resiliency of our nonprofit partners

We are proud to have invested \$60 million over the last 10 years in nonprofits within U.S. communities where we operate. Those funds have produced tremendous results – they have restored thousands of stream miles and acres of land through environmental restoration, introduced thousands of young people to careers in science, technology, engineering and math (STEM), and helped first responders save lives.

We recently had a unique opportunity to examine our last decade of grantmaking. We worked with Steve Rochlin from [iO Sustainability](#) and the [Association of Corporate Contributions Professionals \(ACCP\)](#) by participating in a process called [“The Business of Social Investments.”](#) This process assessed the impact of our community investments. Seven other major corporations also participated. We were humbled to learn that our work met best practice standards in many ways.

One recommendation, however, was to better connect our community investment work with our overarching sustainability goals. Through our 10 sustainable development outcomes, we already emphasize sustainability and resilience in our business, but we could extend that same commitment to our community partners as well.

Recognizing this important opportunity, in October 2017, we launched our pilot community investment initiative, “Building Resilience: Investing in Nonprofit Sustainability.” The program earmarked funding to invest in areas of nonprofit management traditionally underfunded by foundations and corporations. After receiving more than 65 applications with funding requests totaling more



than \$2.5 million, we granted 14 nonprofit partners support totaling \$318,500.

The 14 nonprofit organizations selected to receive ‘Building Resilience’ funds are in the Calumet region (Chicagoland and Northwest Indiana), Ohio and Pennsylvania. The average grant size is \$22,750. The 2017 funding will help to ensure grantees have the necessary resources to complete projects in the following areas:

- Strategic planning
- Program enhancement or expansion
- Professional or leadership development
- Technology implementation and data management
- Fundraising enhancement or expansion

“Every day, we focus on the sustainability and resiliency of our business. We are actively looking for ways to reduce costs, improve safety and efficiency, and enhance our bottom line. Simultaneously, we work to honor the social and environmental obligations we have as a company,” said John Brett,

Investing in the resiliency of our nonprofit partners (continued)

president and CEO, ArcelorMittal USA. “It was time to extend that same focus on sustainability and resiliency to our community partners. These grants will allow our partners to address challenges and think outside the box to prepare for long-term success.”

At the core of this program, and all of our community investment programs, is trust in our community partners. With every relationship, we bring our ideas and expertise to the table. But, we always respect the expertise of our partners. We will continue to trust their skills, expertise and strategy while providing the resources to support their growth, scale and resiliency for years to come.

Engaging our employees and future talent pipeline around STEM

At ArcelorMittal, we look for the best and brightest minds to help us transform the future of steel. One of the ways we achieve this goal is through investing in STEM education to inspire the next generation of talented scientists and engineers. We encourage our employees to volunteer with local nonprofit partners to tap into their talents and share the possibilities of careers in STEM.

In Indiana, our employees engage regularly with Science Olympiad. The company's financial support combined with employee volunteer support aids the nonprofit's mission to improve the quality of STEM education, increase student interest in science and create a technologically literate workforce. Our partnership specifically supports teams near the Indiana Harbor, Burns Harbor, I/N Tek and I/N Kote plants and the Global Research and Development campus.

Teams across the U.S. receive a rules manual at the beginning of the school year which includes events from all science disciplines. Students may be asked to build a structure, design a vehicle, launch a device or even identify a fossil.

In early 2017, nearly 4,000 students STEM, cooperation and leadership skills in multiple Science Olympiad competitions. Valparaiso University hosted its 5th annual Science Olympiad Invitational in January. These events require great coordination, planning and dedicated volunteers to ensure a smooth-running competition day, and several ArcelorMittal employees volunteered to help.

Valparaiso University event coordinator, Bob Clark, Ph.D., assistant professor of chemistry, director of



the mathematics and science education enrollment and development program and Science Olympiad Invitational faculty mentor said, "We had 32 teams competing, so we really appreciate the volunteer support ArcelorMittal employees provided. They were a delight to work with and they all seemed to have a great time."

Our employees got a lot out of the experience as well. "We were all impressed with the amount of work students put into their projects," said Rick Johnson, senior CIP quality engineer operations technology steelmaking, Indiana Harbor. "It was nice to see how much support they received from their teachers, classmates and family members who were at the Valparaiso Invitational."

"I was really impressed at how competitive the students were," said Andrew Smith, associate engineer, Burns Harbor. "To take an interest in science at a young age is both important and awesome. I look forward to volunteering with Science Olympiad again."

OUR 10 OUTCOMES

Outcome 9: Pipeline of talented scientists and engineers for tomorrow

Engaging our employees and future talent pipeline around STEM (continued)

“We’re facing a shortage of skilled workers in manufacturing,” said Gary Norgren, manager of raw materials, ArcelorMittal USA and volunteer coach at St. Thomas More in Munster. “We must educate our young people and encourage careers using STEM skills. The Science Olympiad partnership gives us that opportunity. The excitement exhibited by the students as they apply the concepts they have learned to their various competitions makes all the hard work preparing for the events worthwhile. Watching a newbie 6th grader grow into an experienced 8th grade leader of the team is also very enjoyable to watch.”

OUTCOME

9

Case study 2

Steelworker for the Future® shines on national workforce development stage

Today's economy is changing at a rapid pace, and manufacturers are in danger of falling behind. The skills, training and education necessary to create quality steel products are more advanced and the need for innovation is more critical than ever before. According to Manpower's recruitment difficulty index, two million U.S. manufacturing jobs will go unfilled by 2025. This challenge was the focus of two recent events where ArcelorMittal's Steelworker for the Future® program was featured as a best practice for workforce development.

In November of 2017, William Hill, ArcelorMittal Burns Harbor employee and 2012 graduate of Steelworker for the Future®, served on a panel discussing the current state of manufacturing in the U.S. The panel was hosted by Alliance for American Manufacturing in celebration of its 10-year anniversary. During the discussion, which was moderated by CNN correspondent Dana Bash, Hill shared his interesting path to becoming a maintenance technician electrical at ArcelorMittal.

After 25 years in the military and a stint at Lockheed Martin, Hill took advantage of the G.I. bill and enrolled at Purdue North Central. While earning his engineering degree, he was encouraged by one of his professors to learn more about ArcelorMittal's Steelworker for the Future® program. The rest is history. He received the necessary on-site training at Burns Harbor to supplement his classes at Purdue, and graduated and accepted a position with ArcelorMittal.

Despite more than two decades of advanced electrical training prior to working at Burns Harbor, Hill recognizes how important his hands-on experience at the plant was.



"You can't just walk off the street into any job and expect to do well anymore. You must have the necessary skills, which is why workforce development is so important," Hill said.

Pete Trinidad, President of Local Union 6787, is another champion of the program, explaining, "The Steelworker for the Future® program is a true testament to the partnership between ArcelorMittal, the USW, and local communities. We need educated, talented people to work in this industry, especially as jobs are becoming more advanced. It's our responsibility to make sure our most valued asset, our employees, have the tools they need to be successful."

While in D.C., William Hill and ArcelorMittal's R.D. Parpart met with Indiana Senator Todd Young (pictured right with Hill) and Indiana Senator Joe Donnelly's staff to educate them on workforce issues facing ArcelorMittal, the need for skill labor and what we're doing to address these challenges.

Steelworker for the Future® shines on national workforce development stage (continued)

This same theme continued on two days later at a City Club of Cleveland forum, “Man vs. Machine: The Future of Manufacturing in Ohio.” The forum – which included Alicia Booker, vice president of ArcelorMittal partner school Cuyahoga Community College, and Scott Paul, president of Alliance for American Manufacturing – focused on two key areas: what the workforce of the future will look like and what stakeholders must do to prepare for the shift.

“There is no doubt the future workforce will require more training than ever before. When we entered the 2009 recession, half of manufacturing workers didn’t have anything more than a high school degree. The future of manufacturing will require something more, and it will take an array of policies and programs to accomplish that,” said Scott Paul.

Again, ArcelorMittal’s Steelworker for the Future® was recognized as a successful partnership between a company, union and partner community colleges working together to pave the way.

“The engagement of employers is critical. Companies must invest in their workforce. Look at ArcelorMittal’s Steelworker for the Future® program – this program combines classroom learning with paid on-the-job training that offsets the cost of the two-year program and provides a great job at the end. But that’s not without cost to the company. ArcelorMittal is setting a great example of how to create opportunities today by investing in the workforce of tomorrow,” said Paul.

OUTCOME 10

Case study 1

Celebrating 50 years of innovation at East Chicago R&D

Last year marked the 50th anniversary of East Chicago's research and development center. Over the past 50 years, ArcelorMittal Global R&D in East Chicago has achieved countless commendations and accomplishments to make steel safer, stronger and better for our customers and communities around the world.

The steelmaking process and steel as a product have both evolved tremendously in the last half century. Steel's strength has multiplied by almost 10 times over the last 20 years, from 270 to 2000MPa tensile strength. More than 80 new steel products are under development, with an automotive steel grade portfolio of almost 200 unique steel grades, half of which were introduced in just the past decade.

What's important to recognize is these innovations and transformations don't happen in a silo. Our achievements depend on our willingness to collaborate – among other R&D centers, across all regions and with our customers. At ArcelorMittal Global R&D facilities around the world, scientists and engineers must work together to provide steel product and process solutions to our customers worldwide.

East Chicago R&D not only plays an important role in the initial product research and development of new products, but the center is also heavily involved in the trials and implementation of the product, before it is cascaded to other regions.

Global collaboration occurs in the development of third generation advanced high-strength steels for the automotive industry and fostered by the concept of "co-engineering." Co-engineering,



which was first introduced to the industry by ArcelorMittal, revolutionized the way we work with and develop products for our automotive customers. East Chicago Global R&D plays a major role in the development and promotion of 3rd generation advanced high-strength steels, now a worldwide focus for light-weighting and safety enhancement in the auto industry. When the first commercial launch of these new products takes place in the United States, East Chicago R&D plays a critical role in the testing and trials both in the lab and at our U.S. facilities where they will be produced. Learnings are then shared with Europe and other regions for implementation outside of North America.

Another example is the development of advanced steel grades for the hot-rolled energy market, for which there have been contributions made from our labs all over the globe. However, as the implementation of some of these breakthrough concepts is here in the U.S., the work is now being led by East Chicago.

OUR 10 OUTCOMES

Outcome 10: Our contribution to society measured, shared and valued

Celebrating 50 years of innovation at East Chicago R&D (continued)

We are also investing in equipment at Global R&D East Chicago to improve capabilities to simulate how to produce our advanced high-strength steels; simulate forming processes allowing our customers to better understand how our steels will behave in the final part; and study the complex interaction between structure and properties of our steels.

Over the past 50 years and into the future, the efforts taking place in East Chicago aim to support the global R&D mission, which is to develop new products that create value for our customers, improve ArcelorMittal's competitiveness, contribute to a more sustainable lifestyle, and continuously upgrade our knowledge and attract new talent.

OUTCOME 10

Case study 2

Embodying the spirit of manufacturing

In honor of Manufacturing Day 2017, Stephanie Wells, the vice president of workforce development policy & administration of the Indiana Manufacturers Association, authored a guest blog on our website regarding the important role ArcelorMittal plays within the Northwest Indiana region and the rest of the state of Indiana:

For more than a century, steelmaking has been the primary fabric of Northwest Indiana. ArcelorMittal's origins date back to the Chicago Steel works in the 1890s (and the company has been a member of the Indiana Manufacturing Association since 1915). While the name and technologies have changed over the years, the region has remained the company's home. ArcelorMittal is a vital part of not only the steel industry, but also the Northwest Indiana region and the rest of the state of Indiana, that relies on ArcelorMittal's safe and sustainable steel.

Indiana is the most manufacturing-intensive state in the US, with 30% of our economic output generating from manufacturing. Manufacturing employs 1 out of every 5 workers in the state. However, there is a growing skills gap and perception problem in manufacturing. We know from national surveys that 1/3 of Americans would not encourage their student to enter in to careers in manufacturing. National estimates indicate that due to this perception problem and a growing skills gap, most manufacturers will not be able to fill 60% of open skilled craft positions during the next decade. Creative solutions on how to bridge this gap and fill a talent pipeline for the future is of critical importance.

The forward-thinking leadership of ArcelorMittal in the area of talent development is truly impressive. ArcelorMittal's commitment to funding STEM



initiatives is a powerful statement to the importance of building the next generation workforce today. The significance of STEM education to the steel industry (not to mention the entire 21st century economy) is necessary to develop not only tomorrow's workforce, but for generations to come.

ArcelorMittal's other talent initiatives, such as the highly-lauded Steelworker for the Future program, are models of outside-of-the-box thinking about how to recruit and train highly skilled workers for the future. This program and others like it acknowledge that new hires (in all areas of manufacturing) will need to have state-of-the-art technical capability, knowledge and skills—including the ability to skill up when manufacturing trends and technology change. A bonus of ArcelorMittal's SWFTF program is providing a high-quality degree, a mentorship program to gain real-world experience, and pay while the student is enrolled.

At the same time, ArcelorMittal understands the Steelworker for the Future program is even more valuable in that it is designed to provide all participants with the skills and experience desired by most manufacturers – in other words, even if

Embodying the spirit of manufacturing (continued)

SWFTF graduates do not ultimately take a position with ArcelorMittal, this program is yet another example of the company's commitment and investment to the larger manufacturing community.

The Indiana Manufacturers Association is proud to call ArcelorMittal a member and true partner in advancing the IMA's mission of creating, protecting, and promoting quality manufacturing jobs in Indiana. The IMA was thrilled to be hosted by ArcelorMittal at the Burns Harbor facility in August for a regional manufacturing summit (pictured on page 39), as well as our continued collaboration on workforce development and education issues, which are critical to the continued success of manufacturing in Indiana.

In light of the extraordinary contributions from our friends at ArcelorMittal throughout the years, the IMA was pleased to induct ArcelorMittal into the IMA's first class of Hall of Fame Award Winners – these awards are meant to showcase those outstanding manufacturing companies that have demonstrated a long-term commitment to a strong manufacturing industry through their partnership with the IMA. The IMA continues to be honored to have ArcelorMittal as such a wonderful member and are grateful to their continued commitment to Northwest Indiana and greater manufacturing industry in Indiana.

At the IMA (an official endorser of Manufacturing Day), we like to say that even though Manufacturing Day takes place on October 6th in 2017, every day is a great day to celebrate modern manufacturing and inspire the next generation of manufacturers by raising awareness around the industry.

ArcelorMittal is a great example of a company who truly embodies this principle through its core values of sustainability, quality and leadership and its commitment to helping to build the manufacturing workforce of tomorrow. The company embodies the spirit of Manufacturing Day. Every day.

OUTCOME

10

Case study 3

On Capitol Hill: ArcelorMittal's contribution through government relations

ArcelorMittal's government relations department is critical to our work in outcome 10. This team communicates our societal contributions to many important stakeholder groups, most notably local, state and national government officials. Their work often involves sharing our societal contributions with these stakeholders as they consider policies that may impact our work.

Sustainability is at the core of the government relations department's work. They focus on the sustainability of our company and the sustainability of the steel industry as a whole. Because ArcelorMittal was created through a merger just over 10 years ago and our name is relatively new in the market, we must make an extra effort to communicate our brand, contributions and impact to our government stakeholders. This is both a challenge and an opportunity. Employment statistics are one of the key measurements that the government relations team uses to convey our impact, especially with legislators. This includes our employment data and economic contribution through wages, benefits and taxes.

Who are the stakeholders the government relations department works with most often?

First and foremost, the government relations team works directly with local, state and federal government officials to convey and enhance our company's societal impact. However, we also work closely with employees at ArcelorMittal to help them understand governmental interests and the impact of key legislation or regulations on our business. Our team additionally collaborates with



customers and suppliers on issues that jointly impact our sustainability goals.

How does the government relations team use ArcelorMittal's sustainable development narrative to communicate our impact to our stakeholders?

Our sustainable development narrative and 10 SD outcomes emerged from the work ArcelorMittal has been doing for years. ArcelorMittal is an industry leader in transparency and sustainability efforts. We believe in the circular economy and incorporating life cycle analysis into our work. We are committed to transparency and participate in voluntary programs and reporting initiatives to advance our efforts. We are actively involved in the U.S. Department of Energy's Better Buildings, Better Plants Program and we are a partner of U.S. Environmental Protection Agency's ENERGY STAR® program. In addition, we have a long history of sustainability reporting and transparency both through our internal reporting

On Capitol Hill: ArcelorMittal's contribution through government relations (continued)

mechanism and the Climate Disclosure Project. Our government relations team communicates these actions and initiatives to our governmental stakeholders as appropriate.

Beyond fighting unfairly-traded imports, how does the government relations department work to ensure the sustainability of our business?

One example is we advocate heavily for greater investment in our nation's infrastructure. It's clear that to remain globally competitive, our country needs upgraded highways, byways, railways, bridges and everything in between. ArcelorMittal relies on the safe and efficient transportation of raw materials and finished goods via these systems, and our country must designate revenue sources for such investment.

The latest [Infrastructure Report Card](#) released by the American Society of Civil Engineers gave America's infrastructure a D+ grade, including water-related grades of D for drinking water, D for inland waterways, D for levees, and D+ for wastewater. Beyond pushing for federal investment in surface transportation, we have been heavily advocating for more public funding for our water infrastructure.

In 2016, Congress passed a [Water Resources Development Act \(WRDA\)](#) which authorizes critical water resources projects. These projects focus on environmental, structural, navigational, flood protection and hydrology needs. Some of ArcelorMittal's WRDA priorities include port and river dredging, lock maintenance and a new icebreaker. These projects are critical to navigation routes for water commerce and the movement of goods. Waterborne transportation is safe, efficient and the most environmentally friendly method of transport.

As we meet with legislators in Washington and in the states about these issues, we constantly remind them of the essential economic value infrastructure provides for our business in moving raw materials to our operations, our finished products to customers, and our customers' products to market.

Infrastructure investment has a multiplying effect on manufacturing and jobs, and we will continue to work tirelessly to ensure the sustainability of our business and our country.

**TRANSPARENT
GOOD
GOVERNANCE**

Case study

Corporate compliance is good for business

ArcelorMittal has a robust compliance program with a network of employees, here in the US and around the globe, dedicated to implementing that program. Through this program, we demonstrate our commitment to transparent good governance, which underpins everything we do and guides our company toward success.

What does a “robust” compliance program really mean? Compliance programs cannot simply be a code of conduct and a set of policies that gather dust on an employee’s desk. To truly be an effective compliance program, it must be relevant to the business for which it was developed and dynamic enough to address risk areas as they evolve, communicated clearly and consistently within and outside of the organization, and embedded in the organization’s business processes. Finally, and most importantly, employees at ALL levels of the organization need to be encouraged to ask questions about how to meet their compliance obligations and empowered to report any out-of-the-ordinary activities.

At ArcelorMittal USA, and throughout our company globally, we work hard to ensure compliance training is not just a check-the-box activity. To be clear, we do not expect that employees will become experts, for example, in anti-corruption law or memorize all the rules about handling personally identifiable information (PII), especially if they are not regularly encountering these situations. But we do expect employees to know when these issues might arise and what to do (or who to call!) to comply with the company’s Code of Business Conduct and the laws, rules and regulations that are applicable to the business.



Throughout 2017, ArcelorMittal launched a global communications campaign to further reinforce the principles of our Code of Business Conduct and demonstrate our commitment to transparent good governance. By communicating our expectations through clear and consistent messages, we aim to arm our employees with the tools they need to perform their roles with ethics and integrity.