THROUGH A NEW WORKSHOP, THE ENERGY & UTILITIES TECHNOLOGY COMMITTEE IS ENCOURAGING STEELMAKERS TO RECONSIDER HOW THEY THINK ABOUT ENERGY CONSUMPTION. HERE’S A RECAP OF THEIR INAUGURAL EFFORT.

It goes without saying, but it takes a lot to make great steel — experienced, knowledgeable operators; quality raw materials; well-maintained equipment; and metallurgical know-how.

And, of course, it takes energy. Lots and lots of energy. Gas to burn in the furnaces; electricity to power any number of drives, pumps, compressor and cranes; and water to cool. It’s the reason why the steel industry is one of the most energy-intensive industries.

Given the energy consumption of a typical mill, one might assume that reducing those costs in every way imaginable would be the top priority for steelmakers. And to an extent they are. But some believe the mills could be doing much better.

“(The mills) treat it as a fixed cost rather than a variable cost,” said Rishabh Bahel, utilities and energy conservation manager at ArcelorMittal Cleveland.

“The thinking is that if you turn on the switch, the electricity will be there. If you turn on the taps, the water will come out. And if something breaks, just call the suppliers — they’ll come and fix it,” he said.

“This is the mindset we are trying to change,” he added.

To that end, he and other members of the Energy & Utilities Technology Committee (EUTC) organized the inaugural Energy and Utilities — Industry Insights and Fundamentals Workshop.

Held 7–10 October 2019 in Oak Ridge, Tenn., USA, the workshop drew a mix of steel engineers and supervisors responsible for plant utilities. Bahel said the idea behind the workshop was to explain core concepts and introduce ideas that attendees might not have considered before.

“We’re trying to show how energy touches every part of the process and how you can make that part of the process energy efficient,” he said. The workshop grew out of the committee’s desire to encourage more in the industry to consider energy issues and to drum up interest in the
EUTC. Thinking about these issues, and exploring them within the committee is really a win-win, he explained.

“Energy is the one thing that always has a payback,” he said. “You reduce the pressure in a compressor, and you’ll see the bills go down.”

The committee partnered with the Department of Energy’s Better Plants program, housed primarily at the Oak Ridge National Laboratory (ORNL), and the Environmental Protection Agency’s (EPA’s) Energy Star program.

The Energy Star program is probably best known for the blue Energy Star labels affixed to certain energy-efficient consumer products. But the program also has a component aimed at helping industrial plants improve energy efficiency.

The program has, since 1992, helped U.S. industrial plants save a cumulative US$42 billion in energy costs. And as of 2017, businesses in 31 industrial sectors, including steelmaking, were working with the Energy Star program to strategically manage their energy usage.

As for the Better Plants program, it counts more than 220 partnerships with companies throughout the U.S., representing more than 3,200 facilities across all 50 states. As partners, each of the facilities has adopted ambitious energy, water and waste reduction goals.

According to Better Plants, partner businesses have saved more than US$6 billion dollars and 1.3 quadrillion Btus of energy. More than a quarter of the partner businesses have met their initial energy reduction goals.

Within the U.S. steel industry, ArcelorMittal was one of the first to agree to work with the EPA and the Energy Department programs. Larry Fabina, manager of continuous improvement at ArcelorMittal USA and a presenter at the workshop, told attendees that the partnerships have been fruitful.

“A steel company that wants to work with the EPA — that wasn’t an easy sell,” he said. “But it was the right thing to do for us because they have a very good program and a very good network.”

Betsy Dutrow, the Washington, D.C.-based manager of the EPA’s Energy Star Industrial Partnerships, provided an overview of energy management and why it is effective.

Also during the conference, attendees heard from Sachin Nimbalkar, ORNL’s group leader for energy efficiency research and analysis, who discussed ways steel plant operators can benchmark themselves in terms of energy efficiency, and Thomas Wenning, program manager for industrial energy efficiency at Oak Ridge, who talked about the resources available to plant operators looking to implementing an ISO 50001-compliant energy management system.

Attendees also took a deeper dive into energy considerations within specific systems: industrial process heating, lighting, compressed air, fans motors and drives, and industrial wastewater.

Chenn Zhou, of Purdue University Northwest’s Center for Innovation Through Visualization and Simulation, discussed how advanced simulation and visualization technologies are playing a key role in energy reduction.

Bahel said the EUTC was able to organize the workshop due in large part to the collaboration with both the Better Plants and Energy Star programs. And that, he said, comes as they look to learn more about the steel industry.

“They are always happy to work with us and learn more about the steelmaking process because the industry is one of the most energy-intensive industries.”

Partnering with them, he said, allows them to do better research. And that, in turn, can lead to better energy efficiencies within the industry.

“Energy is the second-biggest cost of making steel, but you have the power to control it,” he said.