

ENABLING BETTER USE OF RESOURCES AND SUSTAINABILITY



Eric Dixon (left), manager at ATI's Baker, NC, Operations, and Production Manager Jackie Mullis review the alloy chemistry of titanium ingots produced by the plant's new PAM III melting system. Such reviews are part of a rigorous program essential to assure the highest quality for ATI's growing aerospace applications.

Sustainability begins at the first stage of the specialty metals manufacturing process. Our operations use extensive amounts of recycled raw materials, commonly known as scrap. Purchased scrap along with excess metal generated by our customers and by our own manufacturing facilities, known as revert, are key ingredients for our melting operations, such as our PAM III furnace pictured above.

Because ATI uses a significant level of recycled metallic units in our melting processes, we create a near closed-loop sustainable system.

Thirty years ago, ATI pioneered recycling of tungsten scrap by the vacuum distillation process, which produces essentially no emissions. Today, our APT (ammonium paratungstate) facility in Alabama is unique in its ability to produce high purity APT primarily from tungsten scrap.

The use of recycled raw materials saves energy and reduces CO₂ emissions. According to research from Yale University as presented in *Nickel*, "the energy required to produce nickel-containing austenitic stainless steel from scrap is less than a third of the energy used to produce stainless steel from virgin sources. As an additional environmental bonus, recycling produces just 30% of the CO₂ emissions."

Good environmental practices are socially responsible and cost effective. Another effort is our smart use of water. Our ATI Allvac business unit in North Carolina has been recycling cooling water used in its operations for many years. Cooling water and rain water are captured then treated and recycled back into our plants. Through this effort, more than 4.5 million gallons of water are saved each day. Through rainy seasons and droughts, water recycling protects the environment and saves money.

An innovative project at our ATI Wah Chang facility in Albany, Oregon is planning a 50-acre integrated wetlands system that will be a new community conservation project – for biking, walking, observing nature, and learning. It is the first project in the nation designed to treat a unique combination of municipal and industrial wastewater for temperature reduction and wetlands enhancement. The treatment wetland configuration incorporates historic oxbow lakes along the Willamette River to augment flows, improve overall water quality, and create an environmental amenity.



Left: Residents of our water ponds in NC.

By looking at the interrelated issues in the watershed, Wah Chang and the cities of Albany and Millersburg, Oregon, were able to develop a solution that protects and restores wetlands in a practical, cost effective, and aesthetically pleasing way. The Oregon ethic of environmental protection and sustainability is strong. This project makes sense for everyone.

ATI is a leader in enabling those systems that lead to better energy productivity and improved energy efficiency.

Some examples:

- Our titanium and other specialty metals are used in emerging lightweight commercial and military aircraft and the new fuel efficient jet engines that power them.
- Our grain-oriented electrical steel (GOES) is an essential metal required to improve the efficiency of the electrical energy grid.
- We are one of the few global producers of zirconium and hafnium alloys required for nuclear power plants. We also produce an array of corrosion resistant alloys (CRAs) used in feed water and steam water systems for nuclear power plants.
- We make the nickel-based alloys, titanium products, zirconium alloys, and stainless grades used in nuclear fuel waste storage systems.
- Our nickel-based superalloys, titanium alloys, vacuum-melted specialty alloys, and iron castings are used in energy efficient natural gas turbines for electrical power generation.
- We are a leading manufacturer of large iron castings necessary for wind energy turbines.
- We are one of a few manufacturers who produce the specialty metals used in turbochargers that help improve automotive fuel efficiency.
- Our CRAs are used in the manufacture and storage of biofuels.
- Our products are used in high-efficiency appliances and high-efficiency gas furnaces.
- Our premium alloys are used in desalination plants that convert seawater to clean potable water.
- Our tungsten alloys are used to replace lead in medical shielding applications and in nuclear electrical energy power generation plants.

Right: ATI's reactor-grade zirconium and hafnium products, titanium products, nickel-based alloys and specialty and stainless alloys are used in nuclear power plants for generating electrical energy.



Above: There is no cost-effective substitute for grain oriented electrical steel (GOES), which is used in power generation and distribution transformers. Robust growth for this ATI product is expected to continue. The developing world needs more electrical energy. At the same time, mature electrical grids in the U.S. and Europe are in need of significant upgrades. In 2007, the U.S. Department of Energy (DOE) published rules that establish requirements for more efficient transformers. ATI is a leading producer of the premium grade GOES required to make these highly efficient transformers.

