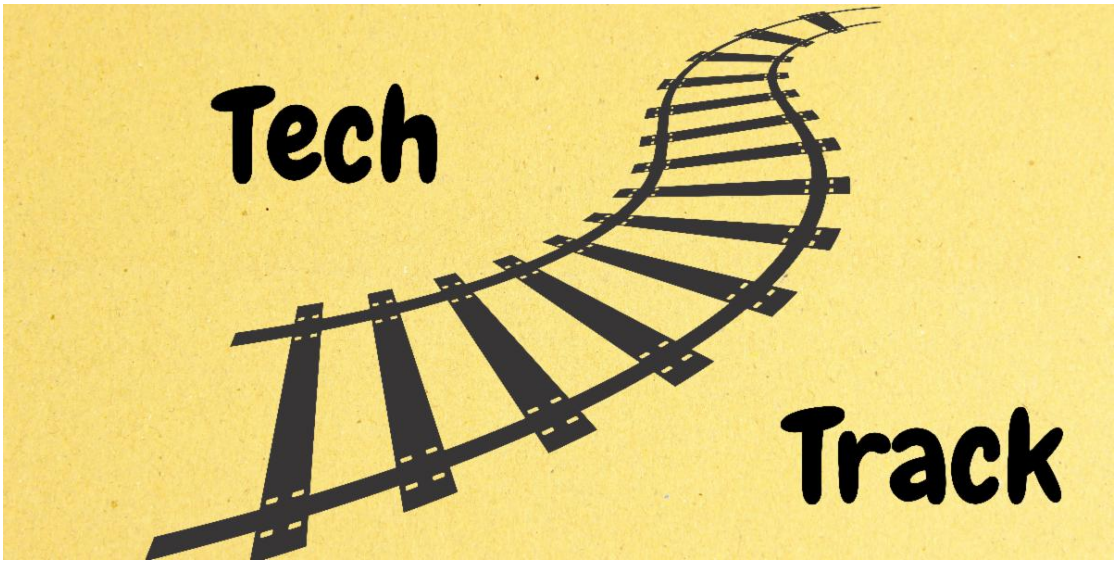
In this edition:



Tips for Energy Efficiency in Boiler & Steam Systems

By: West Virginia University's Pollution Prevention Program

Optimize Air-Fuel Ratios:

When the air-fuel ratio of a boiler is optimized, it can run much more efficiently and last longer. When the air-fuel ratio is too lean – a condition where there is an excess of oxygen - the boiler cannot extract the heat from the burning fuel as efficiently. When the air-fuel ratio is too rich, the fuel is not completely burnt. This will result in reduced efficiency, increased soot build-up, and increased emissions. Either way, it's more costly than a well-tuned boiler. Facilities should consider training existing maintenance personnel to check and optimize the air-fuel ratio of the boilers or hire a professional to check

and adjust air-fuel ratio once or twice a year.

Preheat Boiler Feed Water Using Stack Gases:

Even when a boiler is properly maintained and running efficiently, the exhaust gases still contain a significant amount of heat. By installing heat exchangers, the waste heat from the exhaust stack can be captured and used to pre-heat the feed water going into the boiler. By pre-heating the water, less heat is required to maintain the temperature of the water in the boiler at the proper temperature, saving fuel and improving efficiency.

Insulate Hot Surfaces on Boiler Pipes:

Hot surfaces mean that heat is being lost into the environment instead of reaching its intended destination, decreasing the efficiency of the system. Insulating hot surfaces with fiberglass, mineral wool, or calcium silicate insulation can reduce heat loss, making the system more efficient and reducing fuel costs. With the relatively low cost of insulation and a significant reduction of heat loss, insulating steam and boiler system components resulting in a short payback period, savings can be realized quickly.

Inspect, Repair, and Maintain Steam Traps:

Maintaining steam traps is crucial for ensuring efficiency and minimizing costs. When steam traps function correctly, they effectively remove condensate and non-condensable gases from the steam system, which prevents waste of steam and maintains optimal steam quality. This translates to reduced energy consumption since the system doesn't have to work harder to compensate for steam loss. Regular maintenance prevents the buildup of condensate, which can cause corrosion and damage to the system, leading to costly repairs or replacements. By keeping steam traps in good working order, companies can improve the reliability and longevity of their equipment, lower operational costs, and achieve significant savings on energy and maintenance expenses.

Repair Steam Leaks:

Steam leaks can result in steam waste at significant cost. A single steam leak can cost $10,000+ in lost steam per year. Steam leaks can also pose a safety risk to workers in the facility. While it may require an interruption in production to repair, the relatively low material and labor costs in combination with the drastic savings make these repairs an easy decision.

Replace Old Burners with Efficient Models:

Burner technology has improved over time. Older boilers with original burners can be improved by replacing the burners with modern, high-efficiency burners. These burners offer several economic and

environmental benefits, including reduced fuel consumption, greenhouse gasses and improved control and reliability.

Pollution Prevention
Webinar Recordings

Tennessee Sustainable Spirits hosted a webinar focused on industrial energy conservation for wineries, breweries, and distilleries offering expert insights on reducing energy costs, improving efficiency, and minimizing energy waste.

As part of the Tennessee Pollution Prevention Program, TNSS is designed to help small and medium-sized producers identify savings and opportunities, enhance productivity, and access potential rebates and incentives. These strategies can contribute to both environmental sustainability and long-term financial success.

The recent webinar, featuring Dr. Ethan Languri of TN Tech University, can be viewed on our YouTube channel:

Industrial Energy Conservation for Breweries, Wineries and Distilleries

On the same channel, please take a look at our recent overview of upcoming regulatory deadlines so you can stay up to date and in compliance:

TDEC 2025 Environmental Regulatory Deadlines

In the short four years, the Green Interchange's Plant a Tree for TN Campaign has helped almost **4,000 Tennesseans plant 40,000 trees** across Tennessee and Georgia in their yards and communities.

In **April 2025, Green Interchange will be offering**[bare-root seedlings](#) with a small per/tree donation. Participants will pick up their trees from one of more than **10 pickup sites**, each run by a team of volunteers who committed their time, talent, and passion to help reforest TN.

If you want to give trees away to your employees, or find out more about this opportunity, please contact John McFadden at (615) 330-5364 or at john@greeninterchange.org.

Upcoming April 14, 2025 @1:00 P.M. CST

TDEC's Office of Sustainable Practices continues to host open discussions throughout the year. 19 Tennessee industries participated on our most recent call, with discussion ranging from difficult to manage materials and waste to potential solutions to problems at facilities. Members were able to share successes and vendor information to aid other members.

During this open discussion, participants have the opportunity to talk

to other industry members about pollution prevention strategies, recycling, resource reuse, vendors, and other items relating to facility environment, health, sustainability, or operations. Participants will receive a recurring quarterly calendar appointment.

If you are a Tennessee industry and are interested, please contact Vaughn Cassidy, with TDEC's Office of Sustainable Practices, to be included in the upcoming calendar appointment or the appointment series. Vaughn.Cassidy@tn.gov or give him a call: 731-431-7856.

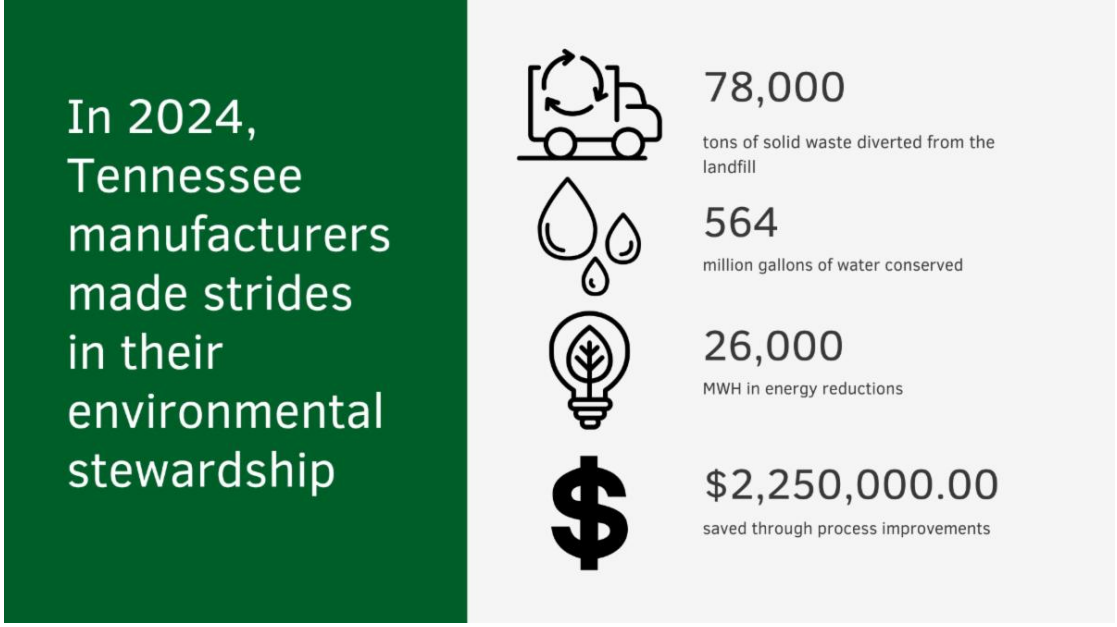
Join us if you can and meet other sustainable industries. You never know if a solution to an issue you are having is discussed.

Updated Deadline: GESA

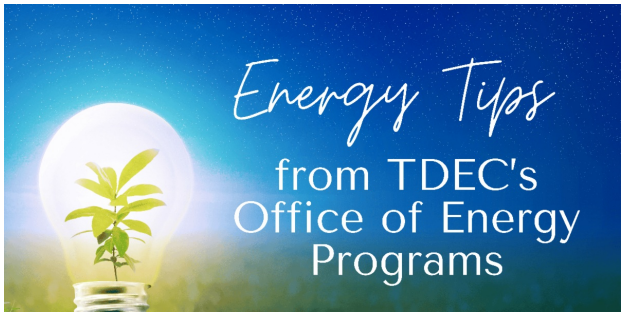
The awards application deadline has been extended to **March 31st**.

If you have any questions please check out this video for a helpful overview of the application process.

IMPORTANT PARTNER REDUCTIONS FOR 2024



The Tennessee Green Star Partnership celebrates another exceptional industry partner that has recently joined. Enjoy our feature highlight article for [Magotteaux in Pulaski, TN.]



Onsite Renewable Energy FACT SHEET

WHAT: Following installation of an onsite renewable energy system, a standardized operations and maintenance (O&M) approach is key to long-term success. An O&M approach provides organizations with information on improving system performance, tracking energy consumption costs and savings, and extending system functions.

WHY: A standardized O&M approach can decrease organizational costs, create a predictable understanding of those costs over time, and increase system performance.

HOW: The excellent fact sheet linked here provides guidance for an effective O&M program, outlining strategies for implementing O&M practices throughout design, construction, and operations to improve organizational energy production.

MATERIALS REUSE

Clayton Homes has been a pivotal TN Green Star Partner for several years. The Clayton Giles facility began a pilot/trial run in March 2024 to repurpose drywall material. TDEC Office of Sustainable Practices facilitated their partnership with Arrowhead Ag, a new company specializing in material wastes to agricultural applications.

Clayton's drywall is essentially gypsum, which is a great soil amendment. Loading and transporting the drywall from the production floor was a challenge. In order to maximize the load, Clayton fabricated jigs to make the waste cuts easy to stack and palletize. The average shipment to Arrowhead Ag is around **20 tons**. So far, **500 tons** has been repurposed and will be applied to corn crops in the Claiborne County area this spring.

"It was definitely trial and error and some training for our team," said Lisa Lujan, EHS Manager for the Giles facility, "but it seems pretty easy now."

Do you need help finding economically viable end uses for your facility's waste material? If so, contact Vaughn.Cassidy@tn.gov or call 731-431-7856.

Tennessee Department of Environment and Conservation
Office of Sustainable Practices
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Connect with us