EPS Manufacturers Incorporate Ship & Shore Environmental's Innovative Solutions to Meet Clean Air Regulations

LONG BEACH, CALIFORNIA, USA, April 26, 2022 /EINPresswire.com/ -- Anyone who has encountered foam clamshells for restaurant take-out food, white or green "peanut" packing to cushion shipments, or those thick foam blocks for protecting boxed furniture is familiar with expanded polystyrene (EPS). In use since the 1930s, EPS continues to gain popularity and is used around the world in applications from surfboard cores to roadways to building and construction materials. Mordor Intelligence estimated the 2021 EPS market at 8 million metric tons (impressive for a substance that is over 95% air), with a roughly 5% compounding annual growth rate through at least 2027. EPS production, however, does carry certain environmental concerns.

Ship & Shore Environmental's Steam Generating Thermal Oxidizer (SGTO)

Ship & Shore RTO Installation – Cleaning the Earth One System at a Time

For several decades, Ship & Shore Environmental (S&SE), a multinational environmental pollution abatement and energy solutions firm, has been a major innovator for the EPS industry, empowering the industry to remain in a favorable light in regards to increasing regulations. S&SE executives were some of the first industry experts to engineer abatement solutions for EPS manufacturers. S&SE offers innovative and proprietary designs that

are unmatched in the market because of their efficiency. S&SE systems are all uniquely designed to mitigate pollutants and meet environmental regulations. Steam Generating Thermal Oxidizers (SGTO) and Regenerative Thermal Oxidizers (RTOs) are commonly implemented in the industry and can potentially qualify for “green” manufacturing incentives.

The Complication with Pentane

EPS begins as polystyrene beads, which are permeated with a “blowing agent” that allows the beads to expand (with steam) up to 40x or so of their original size. These expanded foam beads are then pressed and molded into specific shapes or blocks for eventual use. EPS is a lightweight, protective, and cost-effective thermal insulator.

Very often, pentane is used as the blowing agent in EPS. Pentane compounds are frequently used as fuels and solvents. However, improperly managed pentane can contribute to poor air quality and cause effects on human health and the environment. As a result, governments and industry manufacturers alike have embraced EPS treatment regulations. Only with proper handling and processing will EPS remain viable, responsible, profitable, and feasible for use and proper recycling.

EPS fabrication requires highly customized abatement systems that are able to handle high concentrations of volatile organic compounds (VOCs), including pentane. Specific requirements will likely depend on federal and regional environmental regulations of the EPS operation that generates VOCs. Some of the various sources and equipment which generate VOCs include bead storage areas, bead dump to hoppers, pre-expander operations, fluidized bed dryers, block/shape mold releases, vacuum system exhaust, pre-puffed silo storage, and heated aging rooms. Every such pentane/VOC nexus has its own emission characteristics that will shape the requirements of abatement equipment design. One size definitely does not fit all, and performing that customization in a safe, effective manner requires considerable expertise.

S&SE’s Abatement Solutions

For over two decades, S&SE has specialized its full range of capabilities in engineering, fabrication, installation, start-up, and service of high-efficiency abatement systems tailored to a broad range of industries. As mandates and VOC emission regulations expand in tandem, S&SE has emerged as one of the top resources for abatement solutions. The durability, reliability, and capabilities of S&SE’s systems in containing operational costs are unparalleled, which is why approximately 90% of EPS air pollution control systems throughout the U.S. have been engineered, installed, and maintained by S&SE.

Most of the S&SE solutions for EPS pentane emissions have been based on the Regenerative Thermal Oxidizer (RTO) technology, which has proven to be the preferred pentane abatement technology. Most RTO systems combine combustion and heat recovery chambers to achieve a 1500°F operating temperature suitable for destroying 99% of VOCs.

S&SE also provides several other types of innovative pollution abatement systems to ensure the most optimal option is custom designed and engineered for each process. For many EPS processes, S&SE's one-of-a-kind steam-generating thermal oxidizer (SGTO) is the most efficient method of abatement. In essence, an SGTO is a thermal oxidizer built into a steam boiler. The SGTO also sustains at 1500°F for at least 0.5 second to destroy pentane and other VOCs. However, radiated heat transfers via convection to a set of boiler tubes, which then produce steam. Depending on the application and environment, the use of a condensing economizer, which is installed in the exhaust stack, can capture this waste heat and convert it to energy, which can then be used for the SGTO.

"The EPS market is booming again, much like in the '90s," says S&SE CEO Anoosheh Oskouian. "The construction industry is adopting EPS again. We see companies emerging building homes from EPS block molds. We're getting ahead of the curve and driving down client expenses. Boilers use natural gas, but our SGTO design cuts gas consumption to minimize cost and generate energy."

Any industrial plant that uses steam or hot water for process heating while also working with VOC abatement requirements can benefit from S&SE SGTO solutions.

About Ship & Shore Environmental, Inc.

Ship & Shore Environmental, Inc. is a Long Beach, California-based, woman-owned, certified company specializing in air pollution capture and control systems for industrial applications. Ship & Shore helps major manufacturers meet Volatile Organic Compound (VOC) abatement challenges by providing customized, energy efficient air pollution abatement systems for various industries, resulting in improved operational efficiency and tailored "green" solutions. Since 2000, Ship & Shore has been prepared to handle and advise on the full spectrum of environmental needs with its complete array of engineering and manufacturing capabilities and global offices around the U.S., Canada, Europe, Middle East, and China. The Ship & Shore Technical Engineering Team has custom designed tailored solutions for clients throughout the world. For more information, visit www.shipandshore.com.

Beatriz Arana
EnergíaComm, Corp.
beatriz.arana@energiacommunications.com

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