OPERATIONAL TIPS:
THE ROAD FORWARD TO LOWER EMISSIONS AND HIGHER PROFITS

ELECTRIC HEATED TANK FARM LOWERS ENERGY USAGE

The Road Forward
AsphaltPavement.org/Forward

Reaching net zero greenhouse gas (GHG) emissions by 2050 can seem daunting. Luckily, existing technologies and new innovations can be leveraged to assist the industry in exploring ways to answer the call while keeping an eye on the margin. Orlando Paving Company, which is owned by VINCI Construction, is meeting the challenge with the electrification of its Landstreet asphalt plant tank farm, replacing the traditional hot oil system to deliver on both corporate sustainability goals and public commitments to reduce energy consumption.

VINCI calculated that electrifying thermal processes can reduce carbon emissions from natural gas usage of 342 pounds per kWh to 1.6 pounds of carbon per kWh for electric, a reduction of

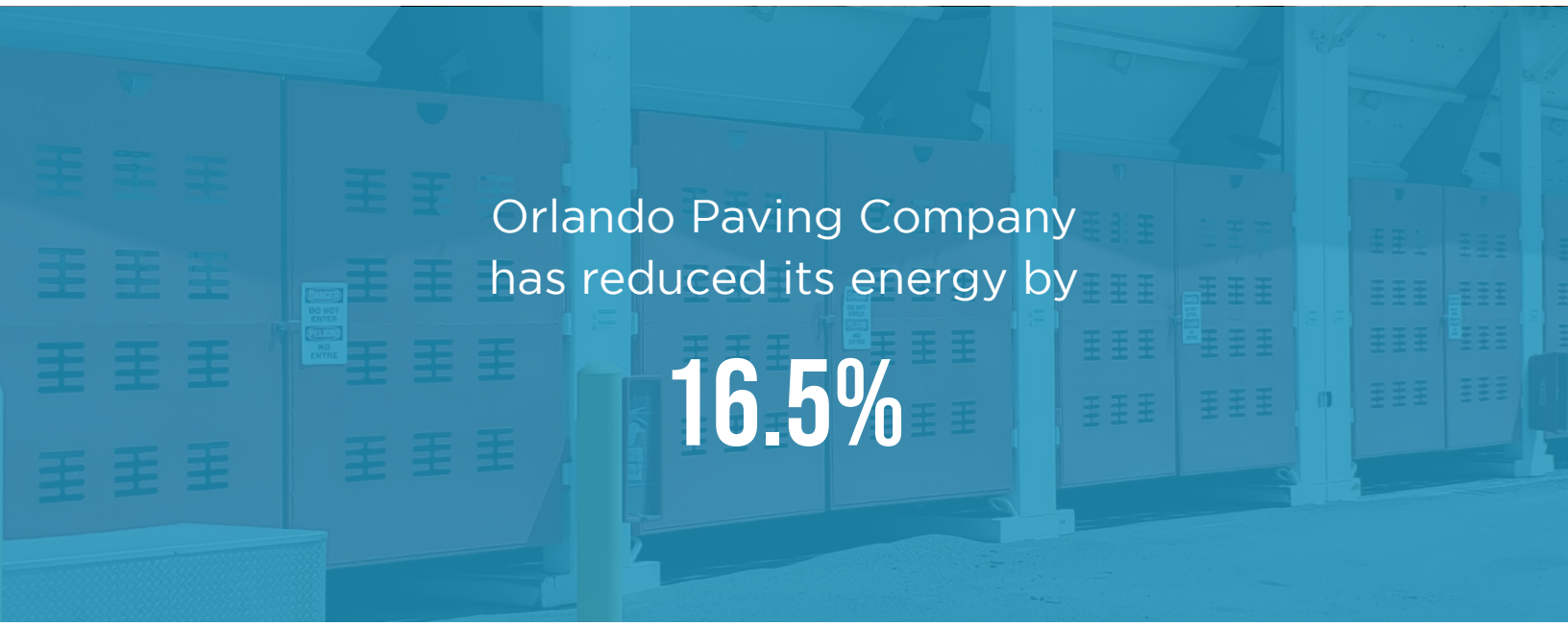
99.5%

Located in Orange County, Orlando Paving Company's operation is surrounded by a vibrant community where tourists from around the world come to see iconic skyscrapers, arenas, theatres, galleries, shopping, and attractions. As a local business, ensuring a positive relationship with neighbors is core to Orlando Paving Company's mission.

The asphalt pavement industry can use two methods to reduce GHG emissions: reducing consumption of raw materials and reducing energy consumption. On average, asphalt facilities use 88 kilowatt hours (kWh) per ton (equivalent to approximately 300,000 Btu/ton). Orlando Paving Company set a goal to reduce energy consumption by 20% to 70 kWh/ton to reduce its environmental footprint and cut operating costs.

VINCI Construction, Orlando Paving's parent company, completed an extensive analysis of the benefits of using electric at its asphalt facilities. VINCI calculated that electrifying thermal processes can reduce carbon emissions from natural gas usage of 342 pounds per kWh to 1.6 pounds of carbon per kWh for electric, a 99.5% reduction. Practically, not all components can utilize electricity; therefore the burner at Landstreet uses natural gas to dry the aggregate, reducing emissions over alternative fuel sources.

© 2022 National Asphalt Pavement Association
☎ 888-468-6499



Orlando Paving Company has reduced its energy by 16.5%

To begin the electric journey, Orlando Paving Company partnered with Astec Industries, Inc., to use existing technology that reduces energy consumption. Astec supplied an electric heated tank farm equipped with electrical heating elements housed in finned tubes in lieu of a traditional thermal fluid heating system to heat the asphalt binder. The system uses all-electric piping and heating elements. The tank farm is unique because it is fully electrically heated. Additionally, Orlando Paving Company was extremely focused on overall heating efficiency, insulating tanks to 9 inches rather than the standard 6 inches. Ceramic thermal breaks were installed on all steel supports to limit thermal bridging. The electric tank farm is equipped with dished bottom tanks (over the traditional flat-bottom design) to prevent heat loss from contact with the concrete pad. While the dished design costs more upon installation, it reduces temperature loss and removes the need to jacket and insulate pipes. It has the added benefit of bottom suction, allowing Orlando Paving Company to maintain a cleaner tank, especially in polymer/rubber-modified applications, saving money on tank cleaning. Orlando Paving Company also found that electric asphalt binder tanks offer a quality benefit by eliminating exposure to more extreme temperatures seen in legacy technology.

Orlando Paving Company has reduced its energy by 16.5%, comparing the kWh energy reduction of an electric heated tank farm over a conventional farm and the replacement for the hot oil system. To determine the cost savings, meters and submeters monitor all energy usage. Continual annual monitoring will identify other opportunities to reduce costs and emissions, setting Orlando Paving Company on the road toward net zero.

GHG EMISSIONS INVENTORY FOR U.S. ASPHALT PLANTS

ASPHALT TANK INSPECTION STANDARDS

ENERGY CONSERVATION IN HOT-MIX ASPHALT PRODUCTION

EMERALD ECO-LABEL OPTIMIZER

Use this feature to explore how operational adjustments impact your plant's efficiency, emissions, and economic savings.

© 2022 National Asphalt Pavement Association

888-468-6499