



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

# INSULATING TO PREVENT LOSS OF THERMAL ENERGY, REDUCE FUEL USE, AND REDUCE COST

Win-win situations abound on the asphalt pavement industry's road toward reducing carbon emissions. To reach net zero carbon, the industry must understand, identify, and continue to reduce both the carbon intensity of materials used in, and energy consumption associated with, the production of asphalt pavement mixtures. As stewards of finite resources and an industry committed to reaching net zero carbon emissions by 2050, we can take immediate actions to help meet our reduction goals while also increasing a company's profitability and competitiveness.

The Road  
**Forward**  
AsphaltPavement.org/Forward

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One method to reduce carbon emissions is to improve your company's energy efficiency, or the amount of energy consumed per unit of production. For an asphalt plant, energy comes in the form of electricity and fuel consumption, causing either indirect emissions (at the power plant), or direct emissions (stack and tailpipe emissions). These emissions have a direct impact on operations by increasing both your operating cost and your business's environmental impact. One great tip to implement is installing insulation around pipes, storage tanks, and drums to prevent loss of thermal energy and reduce fuel usage. Just as insulation works in homes to reduce heating and cooling costs while improving comfort, insulation of hot oil pipes at asphalt plants can increase safety, lower costs, and conserve energy.

In 2011, Granite Construction Inc. headquartered in Watsonville, Calif. conducted a sustainability audit and calculated that within 1-year the investment in insulation of hot oil pipes at an asphalt plant would result in 100% payback of the initial cost, recovered from the lower energy bills. After the audit, Granite Construction decided to pilot the project at ten of its asphalt plants and insulated all hot oil pipes bigger than 1-inch in diameter. The cost to insulate the hot oil heater pipes was \$15,000 per plant in 2011.

Upon review of the pilot plant's initial cost and energy savings data, which turned out better than originally estimated with a payback period of 180 days, Granite Construction led a companywide initiative and, over the next 24 months, installed insulation at all fifty of the

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company’s asphalt plants throughout Alaska, Arizona, California, Nevada, Oregon, Utah, and Washington to save costs and conserve energy. Granite Construction reports that their uninsulated hot asphalt pipes generally required 1 million Btus per hour to keep the material elastic. By insulating its pipes, Granite Construction reduced the energy intensity for its hot oil systems to an average of 450,000 Btus per hour, reducing energy consumption by 55 percent.

Not only does the practice save energy and reduce carbon emissions, it also enhances worker safety. Protecting workers from bumping into the 300°F line, greatly reducing the risk of burns.

The benefits of insulating hot asphalt tanks and pipes should come as no surprise – it’s discussed in NAPA’s 2007 report Energy Conservation in Hot-Mix Asphalt Production (QIS 126). This practice is often seen as the “low-hanging fruit” for improving an asphalt plant’s energy efficiency and you might be thinking that your plants are already insulated. But the reality is the low-hanging fruit tends to grow back. As pipes and valves get replaced and tanks get repaired, insulation is not always replaced. Regular audits of the insulation at your plants can identify opportunities to reduce wasted heat, energy, and dollars.

Beyond insulation, Brad Estes, Vice President for Construction Materials, recommends all

organizations begin with a sustainability audit, noting “Ninety percent of the time Granite is able to save money and reduce its environmental impact.” Granite conducts sustainability audits annually looking at fuel consumption, electric power, compressed air, and insulation. Estes reiterates, that audits ensure, “everything is up to snuff” and identifies items to fix that improve your energy efficiency, streamline operations, and improve the bottom line.



GHG EMISSIONS INVENTORY



ENERGY CONSERVATION IN HOT-MIX ASPHALT PRODUCTION



EMERALD ECO-LABEL OPTIMIZER

This feature of the Environmental Product Declaration tool allows users to measure CO<sub>2</sub>e reduction and economic savings when aggregate moisture is reduced.