Webster Combustion / Asphalt Plant

New burner at Kentucky asphalt plant brings new life to aggregate dryer

In the summer of 2019, Ernie York, a plant manager for a large asphalt company, started actively looking for a replacement burner for the dryer at his drum mix plant in Hazard KY. The plant was in the process of working with the utility and the city of Hazard to have natural gas brought to the site. The asphalt company is part of the largest asphalt producer and paving contractor in North America.

Webster Combustion delivered a new prototype burner to a Mar-Zane Materials plant in St. Marys WV in 2017. Mar-Zane Materials operates asphalt plants in OH and WV and is a division of Shelly & Sands, based in Zanesville, OH. The prototype worked "right out of the box" and has been operating trouble free ever since. As a result of that success, Ernie approached Webster in the summer of 2019 and discussions of a new burner began with Jeff Ryan, Aggregate Market Manager for Webster.

The old Gencor burner during site evaluations at the Hazard KY Plant, Summer 2019.

The existing Gencor burner was rated at 125 MM BTU and built as an oil-only burner firing on #2 oil and RFO. Now that the plant would have natural gas available, Mountain needed a burner capable of firing on natural gas and oil.

A great deal of planning work was done between the customer and Webster to define the objectives and specifications of the new burner to meet their current and future needs during the summer of 2019. In addition to Ernie, another other key player in the planning and decision-making process was plant controls manager Jeff Conover. Jeff's input was required to ensure trouble-free integration of the new Webster Asphalt Burner Management System (ABMS) with the existing plant controls as well as the new plant controls being planned for 2021.

In November 2019, a purchase order was issued for a new HDRA-RFC-125 burner from Webster rated for 125MM BTU/hr with a nose length of 25 feet. It was delivered in February 2020, and installation began in early March. Commissioning and tuning took place over the next three weeks. Because this was the first long-nose burner supplied by Webster Combustion, dialing everything in took a little longer than usual, but in the end, the burner and its control system performed flawlessly. Throughout the process, Ernie and Jeff Ryan from Webster worked together, with support from Webster's management and engineering team, to evaluate and adjust the burner for optimal performance.

Installation of the Webster long nose burner, March 2020

About the new Webster burner, Ernie comments, "Jeff [Ryan] and I have worked together for many years on plant upgrades and combustion controls so we had a history of trust in each other. However, replacing the entire burner was a big deal for us because it's central to our production operation, and I wanted to make sure we got it right, with very little time to lose. So planning was crucial, but still, this was the first long-nose aggregate burner Webster had ever made and so it was a bit of a calculated risk for us to go with it. We issued the order partly based on the proven performance at the St. Marys plant and partly on the commitment I received from Webster's engineering and support team. We made the right decision, no doubt about it."

Over the first several months of operation, the new 125,000,000 BTU/hour multi-fuel burner has proven to be efficient as it has delivered reduced per ton operating costs. Ernie and upper management remain pleased with the burner and its performance thus far and look forward to a full evaluation as the season plays out.

The new Webster HDRA-RFC long nose multi-fuel burner improves efficiency and reduces costly maintenance on the plant's emission control system

The plant's improved performance can be attributed to some special features of the new burner. The Webster model HDRA-RF is a multi-fuel register-style burner for asphalt rotary dryers and comes equipped with Webster's Dynamic Flame Shaping feature which shapes the flame by automatically controlling the register vanes to optimally fit their dryer and combustion zone. The HDRA-RF is the first burner to introduce the concept of dynamic flame shaping to the aggregate drying industry. A servo-actuated register located at the front of the burner controls the shape of the flame based on the output of the burner. The Webster Combustion HDRA-RF provides the option to control the combustion air with a damper, a VFD, or both.

Combustion control is provided by Webster's ABMS Asphalt Burner Management System

The ABMS provides precise control of combustion air by either inlet air damper, VFD or a combination of both. This feature provides optimum performance and emissions control. The ABMS maintains the negative pressure in the drum by controlling the outlet damper of the exhaust fan or utilizing the fan's VFD. Its HMI displays setup, diagnostic, and troubleshooting tools to allow the operator full control of the burner, with ethernet communications for connection from anywhere. The system has continuous data logging which is stored on a hard drive and can be exported through a USB connection.

For more information on Webster Engineering's products and services, visit our website.

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