

Scrubber Removes Grease and Particulates from Air Exhaust

Operating Problem

A leader in the Food Industry has several Pork Sausage Cookers at their manufacturing site in Alabama. Each cooker exhausts over 4,000 ACFM. The streams are saturated with moisture and the pollutant load is pork grease. Electrostatic Precipitators (ESP's) have been installed to treat the exhaust. However, the ESP's were not working well and have high maintenance and operating costs. Additionally, the units were getting older and required significant capital investment to repair and ultimately replace. The use of air filters were attempted but resulted in an extremely messy situation with low removal efficiencies. A major obstacle to overcome was the sub-micron particle size distributions of the grease. Any solution implemented would require adequate particulate removal to meet their current permit regulations.

Project Solution

After carefully reviewing the process application, Pollution Systems recommended the installation of our VS-3 Venturi Scrubber System. Effectiveness of our Venturi Scrubber System has been demonstrated in similar applications for successfully reducing particulate matter emissions, such as waste gas streams from meat smokers.



Air pollution control using a venturi scrubber offers lower initial capital cost and operating costs than other technologies. Smoke and grease laden air from the continuous sausage cooker exhaust is drawn through the VS-3 by the system fan. As the air passes through the venturi section, water from the integral recirculation tank is introduced into the air stream and fine water droplets are formed. Smoke and grease particulate, even less than 1 micron in size, are collected on the water droplets and carried with the air stream to the lower portion of the scrubber where the air velocity is reduced. The lower velocities cause the particulate laden droplets to fall out into the recirculation liquid. The air then passes through the mist eliminator, where remaining water droplets are removed. Finally, the cleansed

air exhausts through the fan, out a stack and into the atmosphere. A “blow down” of the scrubbing liquid along with fresh water make-up ensures smooth operations without plugging or severe buildup. A series of internal nozzles, complete with piping, valving and chemical injection ports, provide a Clean-In-Place (CIP) manifold system for periodic preventative maintenance and internal cleanings.

Implementation

Pollution Systems verified process conditions and provided drawings and specifications to the customer shortly after their decision to purchase our system. A stainless steel skid-mounted system was manufactured and shipped to the customer for installation. After installation, Pollution Systems’ experienced field technical professionals inspected the installation, commissioned the unit, and provided appropriate training.



Results

The project was completed within the expected time frame and budget. Subsequent emissions testing and operational experience have proven the unit to be effective and low maintenance, outperforming the ESPs. With the successful implementation of the scrubber system on the first sausage cooker line, the company has purchased additional units for the other production lines.

Pollution Systems is an experienced leader in the design and fabrication of industrial air pollution equipment. Contact us for any of your industrial air correction needs.