Heraeus

Smart UV technology reduces odors from molasses production

Customer case at beet sugar plant.

Sugar plays an integral role in a healthy balanced diet and an active lifestyle. Our customer, a food company that manufactures beet sugar, also produces a number of sugar byproducts. Sugar beets pass through many stages, beginning with sugar syrup which is crystallized to create white sugar. Further processing generates a final product – molasses. This entire process, however, involves an exhaust air with a characteristic odor that can be detected over a large vicinity. Heraeus Noblelight was contacted to reduce this odor.

Situation analysis

Examination of the situation at a local plant revealed that exhaust air from the molasses production unit contained various chemicals.
Troubleshooting began with the knowledge that high-power irradiation has a positive effect on organic components, amines and sulfur compounds. The exact concentration of the 1.100 m^3/h exhaust air stream was unknown and varied, depending on the basic material of the process.

Evaluation and dimensioning of a UV system

To estimate the impact of UV irradiation on the system, a test reactor was installed in the main exhaust air flow. Measurements were taken to calculate the required dose of UV irradiation. Experiments also revealed that a small amount of condensate was created inside the reactor and the housing material corroded during the long-term experiment.

For exhaust air in the worst case scenario, calculations showed a need for high irradiation. High performance amalgam lamps were chosen for the final module to save space and to build an easy-to-handle module. The high mounting spot and mounting conditions determined the design of the Heraeus UV module 16.500, and a highly resistant plastic material was chosen to withstand the corrosion that will take place during one and a half years of operation.

Commissioning

Heraeus Noblelight was on site for start-up and commissioning. Customer maintenance personnel installed the reactor and control cabinet and, in collaboration with Heraeus, the system was put into operation. Measurements taken by Heraeus determined an initial dim level and, after a couple of months in operation, the effect of the UV system to the exhaust air was measured by Heraeus as well as in a customer's lab.

Summary

After half a year of operation, our customer is very pleased with the noticeable improvement – there have been no complaints from the nearby town. The installed system meets government approval, provides a solution for the odor issue, and has decreased some of the regulated exhaust components.

UV lamps from Heraeus Noblelight are an effective and economical solution in comparison to other options for the treatment of exhaust air. Our customer has gained a reliable partner for individualized solutions and long-term support.

Heraeus UV module 16.500

- 16 Lamps
- Outlets to DN 300mm
- High performance amalgam lamps
- Fluid impervious
- Made out of chemically high resistant synthetic

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