



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 produces exhaust air with a characteristic odor detectable over a large area in the surrounding vicinity. The customer contacted Heraeus Noblelight 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 m³/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, we installed a test reactor in the main exhaust air flow. Measurements provided the basis for calculating the required dose of UV irradiation. Experiments also revealed that a small amount of condensate inside the reactor was causing corrosion of the housing material during the long-term experiment.

In the worst case scenario, calculations showed a need for high irradiation of the exhaust air. To save space and to provide an easy-to-handle module, the final solution incorporates 400 Watt lamps. The high mounting location and conditions drove the design of the Heraeus UV module 16.500, which uses a highly resistant plastic material to withstand the environment during one and a half years of operation.

Commissioning

Heraeus Noblelight assisted with the on-site start-up and commissioning. Customer maintenance personnel installed the UV module and control cabinet and, in collaboration with Heraeus, successfully operated the system. Measurements taken by Heraeus determined an appropriate radiation source and, after a couple of months in operation, the positive 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 decreases 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 a customized solution 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 material

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