

Odour from Animal Feeds Plant

The North British Distillery Company Ltd has manufactured whisky on its site at Wheatfield Road Edinburgh since the company of independent blenders was established in 1885. The main process activity at the site is the manufacture of whisky with water, grain and yeast. These are fermented in vats and the alcohol is removed by distillation for further processing and treatment.

The residues include unfermented sugars, soluble proteins and dead yeast cells in a 95% water solution. This waste material is used to manufacture animal feed pellets by centrifuging and evaporation.

The grain residues are dried pelletised and cooled. SEPA obliged the Distillery to submit an odour assessment as part of their requirements for PPC.

NBDC commissioned a major study of six main emission points from the process. Emission concentrations were measured using dynamic olfactometry, flows in stacks quantified and relative contribution from all sources predicted using a dispersion model.

This found that the main source of odour from the works were the two pellet driers with exhausts located within the recirculating wake of the building.

The pellet coolers were relatively inefficient and were in a poor location for dispersion of exhaust gases.

NBDC install a single new pellet air cooler in a more convenient location to aid the construction of a stack and installation of abatement equipment. This also reduced the air flow from 8m³/s to 5m³/s, providing a steady state flow with fewer fluctuations in the process conditions at inlet and requiring a smaller odour control unit overall.

Three different types of odour abatement systems were considered to treat the odour emissions: a wet scrubber, an Aerox system, and cold plasma. Tests were conducted using trial rigs on site to ensure each method was effective for the application.

Odour samples were taken in triplicate and analysed by a UKAS accredited lab using dynamic olfactometry.

The new pellet cooler has now been installed with cold plasma and is operating above minimum performance requirements (~90% abatement). The residual pollution is now discharged from a single stack with improved dispersion.

This project demonstrates the advantages in appraising both environmental and engineering requirements, rather than bolting on abatement to inefficient kit. This integrated approach has enabled NBDC to improve process efficiency and reduce odour impacts.

