

DNX[®]
SCR catalysts
For biomass

Remove NOx more effectively and affordably

An SCR catalyst that's specially designed to meet biomass challenges

Plants that burn biomass probably struggle with premature catalyst deactivation and fouling from alkali metals and phosphorous, along with the need to save energy by reducing operating temperatures. With Umicore's DNX[®] series, these struggles can be overcome.

Combined with the right combustion method and plant layout, this highly poison-resistant SCR catalyst can maintain a level of activity with biomass that is normally only seen at traditional coal-fired plans.

A market leader in biomass applications

With more than 40 references covering a wide range of different biomass and plant types, Umicore is a market leader in SCR catalysts for biomass combustion. Our references operate in both high and low dust conditions and include co-combustion as well as 100% biomass plants.

Lower temperatures, greater benefits

Superior activity enables the DNX[®] catalyst to deliver high NO_x conversion rates at operating temperatures as low as 150°C (300°F). This reduces the rate of surface diffusion of alkali-metals to active vanadium sites in the catalyst, which in turn limits the ability of the alkali metals to poison the catalyst. Low-temperature operation also means that SCR downstream of filters and cyclones can be positioned, which will significantly increase catalyst lifetime without requiring expensive re-heating of flue gas.



Case: Amagerværket Unit 1

This 100% biomass-based combined heat and power plant has a thermal capacity of 350 MJ/s and is burning a combination of wood and straw pellets. The SCR unit is equipped with DNX[®] catalyst, is positioned downstream of an ESP and operates at 288–316°C (550–600°F). The SCR catalyst was replaced with fresh DNX[®] catalyst in 2013, after more than 24,000 hours of efficient operation at base load since installation in 2010. The catalyst has been regenerated several times.

Case: BMC Moerdijk

This 36 MW 100% biomass fired plant burns approximately 2,000 tons of chicken manure per day. The SCR unit is placed downstream an ESP, acid scrubbers and a bag house filter. The SCR catalyst was originally designed to operate at 250-260°C (480-500°F). Umicore catalyst was added to the reactor in 2013 because performance could be guaranteed at 215°C (420°F), thus saving 1.2 million m³ of natural gas annually for flue gas reheating. Later, BMC optimized the operation so SCR inlet temperature is today only 195°C (383°F) while still meeting emission requirements. An activity test of the SCR catalyst after 6,000 hours showed that the activity was still as for the fresh catalyst.