

# What are Nitrogen Oxides (NOx)?

**Nitrogen Oxides (NOx)** are a group of highly reactive gases composed of nitrogen and oxygen, primarily including nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>). These gases are produced during combustion processes, particularly in vehicles, power plants, and industrial facilities. In the context of UK house building, residential retrofit, and home renovation sectors, NOx emissions are a critical concern due to their impact on indoor and outdoor air quality, human health, and compliance with environmental regulations.

NOx gases are significant pollutants that contribute to the formation of ground-level ozone and particulate matter, both of which are harmful to human health. In residential settings, NOx can originate from gas boilers, cooking appliances, and other combustion sources. Prolonged exposure to NOx can lead to respiratory issues, cardiovascular diseases, and other health problems.

In the UK, the control of NOx emissions is governed by **Building Regulations Part F (Ventilation)** and **Part L (Conservation of Fuel and Power)**, which set standards for ventilation systems and energy efficiency to minimise indoor air pollution. Additionally, the **Clean Air Strategy 2019** outlines measures to reduce NOx emissions across various sectors, including housing.

## **Practical Examples:**

1. **Gas Boilers:** Modern condensing boilers are designed to reduce NOx emissions compared to older models. Retrofitting homes with high-efficiency boilers can significantly lower indoor NOx levels.
2. **Ventilation Systems:** Mechanical Ventilation with Heat Recovery (MVHR) systems can help dilute and remove NOx from indoor air while maintaining energy efficiency.
3. **Building Design:** Incorporating natural ventilation strategies, such as strategically placed windows and vents, can reduce reliance on mechanical systems and improve air quality.

## **Related Terms:**

1. **Particulate Matter (PM2.5/PM10):** Tiny particles in the air that can carry NOx and other pollutants.
2. **Volatile Organic Compounds (VOCs):** Chemicals that can react with NOx to form ground-level ozone.
3. **Air Quality Index (AQI):** A measure used to communicate how polluted the air currently is or how polluted it is forecast to become.
4. **Building Regulations Part F:** UK regulations focusing on ventilation requirements to ensure adequate air quality in buildings.
5. **Clean Air Strategy 2019:** A UK government plan to improve air quality by reducing emissions of pollutants, including NOx.