NOX ABATEMENT IN DIESEL ENGINES

PATENTED TECHNOLOGY

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ABSTRACT

Nitrogen oxides (NOx) are the most important gaseous pollutants evolved by gasoline and diesel vehicles exhausts. Nowadays, an effective system able to reduce diesel vehicles emissions does not exist.

The Carbon materials and environmental group at the University of Alicante has designed a catalytic system to eliminate NOx from gaseous mixtures which simulate a real diesel exhaust, with a effectiveness near to 100%.

Partners from automotive, naval, power generation, catalysts and engine manufacturers are sought for final development and technical cooperation.

ADVANTAGES AND INNOVATIVE ASPECTS

MAIN ADVANTAGES

• High activities: NOx conversion levels achieved by the novel catalyst surpass 90%, even under adverse reaction conditions and under the presence of inhibitors.

• Low reaction temperatures: the maximum NOx conversions are reached around 200ºC which allows not to have to use external heat sources during real applications.

• High stabilities and durabilities: the novel platinum-based catalyst exhibit a very stable behaviour under time-on-stream experiments, maintaining the NOx conversion levels during hundreds of hours.

• Honeycomb configuration: the anchorage of the catalyst on the cordierite monolith represents one of the main advantages from the point of view of the applicability of the novel system under real diesel exhausts.

INNOVATIVE ASPECTS

• Focused on Diesel engine exhausts.

• The use of a zeolitic material as platinum support has allowed to prepare a novel catalyst with an extraordinary catalytic behaviour toward NOx reduction under real diesel exhaust conditions.

• In contrast with other reaction mixtures alternatives, the use of hydrocarbons as a NOx reduction agent presents the advantage of using reaction mixtures similar to those of real diesel engine exhaust.

MARKET APPLICATIONS

1. As diesel engines are used in many sectors, application areas would be:

    • Automotive sector, naval sector.

    • Energy, electricity and power generation.

- All sectors involved with diesel engines and combustion.

2. Catalyst Manufacturers

COLLABORATION SOUGHT

- Technical Co-operation.
- License agreement.
- Financial resources.

Type of partner sought:
- Companies from automotive.
- Power generation.
- Naval.
- Catalysts sectors.
- Engine manufacturers.

Task to be performed:
The research group aims to finish the development of this catalyst and would like to test and develop it for the actual and commercial diesel systems. Partners could collaborate in providing their technology to be tested, in joint further development and also providing resources.