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Patent Search

Invention Title	DUAL-STAGE CATALYTIC CONVERTER FOR REDUCING EMISSIONS IN BI-FUEL INTERNAL COMBUSTION ENGINES
Publication Number	08/2026
Publication Date	20/02/2026
Publication Type	INA
Application Number	202641014840
Application Filing Date	11/02/2026
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	CHEMICAL
Classification (IPC)	F01N 3/28, B01J 35/04, B01D 53/94, F01N 3/20, F01N 3/10

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Abstract:

DUAL-STAGE CATALYTIC CONVERTER FOR REDUCING EMISSIONS IN BI-FUEL INTERNAL COMBUSTION ENGINES ABSTRACT A dual-stage catalytic converter (100) is disc dual-stage catalytic converter (100) comprises a primary catalyst zone (102) arranged inside a canister housing (106). The primary catalyst zone (102) comprises a cer honeycomb substrate (200); and a wash coat (206) deposited on the ceramic honeycomb substrate (200). A secondary catalyst zone (104) positioned downstream of t catalyst zone (102) within the canister housing (106). The secondary catalyst zone (104) comprises a metallic mesh substrate (202) arranged in the secondary catalyst and a coating of titanium dioxide in an anatase phase doped with Ocimum basilicum deposited on the metallic mesh substrate (202). The dual-stage catalytic convert provides superior oxidation and reduction of pollutants compared to conventional single-stage converters. Claims: 10, Figures: 8 Figure 1 is selected.

Complete Specification

Description:BACKGROUND

Field of Invention

[001] Embodiments of the present invention generally relate to a catalytic converter and particularly to a dual-stage catalytic converter for reducing emissions in internal combustion engines.

Description of Related Art

[002] A major environmental challenge arises from harmful emissions released by internal combustion engines, particularly those that operate with both gasolir compressed natural gas in bi-fuel systems. Small off-road vehicles such as all-terrain vehicles often lack effective emission control systems due to limited space and capacity. These vehicles release high levels of carbon monoxide, unburned hydrocarbons, and nitrogen oxides that pose serious threats to human health and contr air pollution. Stricter emission regulations further intensify the demand for effective and compact emission reduction systems.

[003] Conventional solutions rely on catalytic converters such as three-way converters in gasoline vehicles, two-way converters in smaller engines, and customiz catalysts for compressed natural gas vehicles. Diesel-based solutions like oxidation catalysts, particulate filters, and selective reduction systems exist for heavy vehi These solutions use noble metals such as platinum, palladium, and rhodium to facilitate oxidation and reduction reactions that minimize carbon monoxide, hydroc and nitrogen oxides. Commercial practices demonstrate success in passenger vehicles, where sufficient engine management and space allow integration of these converters.

[004] However, these existing technologies reveal several shortcomings when adapted to bi-fuel engines in small or off-road vehicles. Most converters are tuned

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Page last updated on: 26/06/2019