

Universal multi-functional secondary catalyst carriers for purification of gas emission of thermal power equipments

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In the production units of catalytic converters of exhaust gases of thermal power equipments in totally and internal combustion engines in particular are used in various engineering design solutions on registration of structural features of these units, designed to improve the efficiency of gas emissions purification, such as mutual location and geometry of the branch pipes of input-output exhaust gases, presence of additional branch pipes for supplying auxiliary reagents, using of thermal insulation block of catalytic reduction [3] or the system of its heating, using of various classes of inorganic compounds as a catalyst carrier (ceramic and metal carriers) and varying within wide limits geometry and structure of the catalyst.

The infliction of catalyst on a metal or ceramic surface by known means is associated with a variety of disadvantages, in particular for the reason that can only be used a certain combination of catalyst material and carrier material, so that should be satisfactory and stable adhesion of the catalytic material to the carrier surface (metal or ceramic) the operating conditions of the catalyst. It should be observed corresponding to the ratio between the temperature coefficients of linear expansion (TCLE) in the systems of substrate - catalytic layer, since cyclic temperature changes are occurred thermal stress is directly proportional to the difference of thermal expansion values in the system media is the catalyst that leads to the destruction of the coating. The degradation of the catalytic coating can also be caused by mechanical impact, dust, and other factors.

To solve this problem, a method was developed for controlled formation of catalytically active centers of complex micro-relief on surface of heat-resistant alloys and ceramic materials (primary carriers). It is based an idea in fundamentals that is based on the chemical compositions and new technology of special amorphous or glass-ceramic adhesives (secondary carriers) of the primary media formation, which are applied to the surface by layers, thickness less than 1 μm . Glass-containing coverage of primary carrier (metal or ceramic) is intended for fixation on it's at the glassing temperatures of the secondary carrier layer of catalytically active coating to any value of thermal coefficient of linear expansion (TCLE).

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