

Automobile Emission Control Systems

PLATINUM CATALYSTS FOR EXHAUST PURIFICATION

By G. J. K. Acres and B. J. Cooper

Johnson Matthey & Co Limited

Stringent regulations governing automobile exhaust emissions are due to come into force in the United States. Johnson Matthey have undertaken the development of platinum-based catalytic reactors for control of these exhaust emissions. Two new types of catalyst have demonstrated the feasibility of exhaust control by catalytic means, and have been incorporated on test vehicles to achieve emission levels well below the specified levels for 1975 and 1976 model year cars. Extended road mileage on the former system has shown that good durability can be obtained, with emissions below 1975 limits for 25,000 miles.

The world-wide concern over environmental pollution with respect to the gasoline engine began in the early 1940s when Los Angeles residents became aware of an atmospheric phenomenon known as photochemical smog. Studies (1, 2) showed that the smog formation resulted from reaction between nitrogen oxides and hydrocarbons, producing harmful lachrymatory compounds. These were retained in the Los Angeles basin by a temperature inversion in the upper atmosphere preventing dispersion of the pollutants, causing smog formation. Although Los Angeles represents a specific problem due to climatic conditions peculiar to the area, the smog formation focused attention in the United States on all aspects of atmospheric pollution. A major source of pollution was shown to be the internal combustion engine (3) which produces principally carbon monoxide (CO), hydrocarbons (HC), nitric oxide (NO), with small amounts of sulphur oxides (SO₂), lead (Pb) and particulates. One source of American data (4) quotes the contribution of the automobile to atmospheric pollution as high as: CO 90 per cent, HC 65 per cent and NO_x (nitrogen oxides) 60 per

cent. The figures are of course extremely variable from country to country, the American figure being one of the highest, and virtually depend on the immediate environment of the test. However, the figures reflect the concern over the automobile's contribution to pollution, not only in the Los Angeles area, but also in conurbations where high traffic density occurs.

As a result, increasingly severe legislation has been laid down (initially in California but extending to the rest of the United States) to limit noxious emissions from automobiles. This culminated in the signing of the 1970 Clean Air Amendments Act which calls for 90 per cent reduction of CO and HC emissions from 1970 model year levels by 1975, and 90 per cent reduction of NO_x emissions from 1971 model year levels by 1976.

U.S. Federal Legislation Governing Automobile Emissions

The increasing severity of emission regulations is shown in Table I which gives the permissible levels of exhaust emissions (CO, HC, NO_x) together with evaporative and

Automotive Technician Emission Control Systems

**B. D. Hayes, Marion T. Maness, R. A.
Ragazzi**



Automotive Technician Emission Control Systems:

Automotive Technician's Comprehensive Handbook Pasquale De Marco, 2025-07-23 This comprehensive handbook provides automotive technicians with the most current and thorough information on all aspects of automotive repair and maintenance. It covers everything from basic electrical systems to advanced driver assistance systems with a focus on practical hands-on troubleshooting and repair techniques. With its clear and concise explanations, detailed illustrations, and step-by-step instructions, this book will help you diagnose and repair even the most complex automotive problems. It's the perfect resource for both individual technicians and automotive businesses looking to stay ahead of the curve in the automotive industry. In addition to its comprehensive coverage of automotive repair and maintenance, this book also includes valuable information on safety, environmental regulations, and customer service. This makes it an ideal resource for anyone working in the automotive industry. Written by a team of experienced automotive technicians and instructors, this book is the most comprehensive and up-to-date automotive repair and maintenance handbook on the market. It's the essential resource for anyone looking to succeed in the automotive industry. Whether you're a seasoned technician or just starting out, this book has everything you need to diagnose and repair even the most complex automotive problems. Don't wait, get your copy today. This book is written by a team of experienced automotive technicians and instructors who have pooled their knowledge and expertise to create the most comprehensive and up-to-date automotive repair and maintenance handbook on the market. With its clear and concise explanations, detailed illustrations, and step-by-step instructions, this book will help you diagnose and repair even the most complex automotive problems. If you like this book, write a review.

Emission Control Systems and Automotive Fuel Zedong Huang, 2020-10 The book has been written with great emphasis on the troubleshooting and diagnostic aspects of the Emissions Control Systems as well as Automotive Fuel. The book encapsulates all the factors connected to the field of Emissions Control Systems and Automotive Fuel. The contents in this book have been written with coherence to the latest tasks of the NATEF. The book has also been written with an ample amount of focus upon the educational requirement of the students at universities across the globe for those who are doing a course in Automotive Fuels and Emissions Control Systems. Automotive experts have argued that better standards of training are required for the budding technicians in harnessing their skills as well as in diagnosing the procedures. The book will work towards fulfilling these basic as well as the fundamental needs of the technicians as well.

Vehicle Technology and Automotive Engineering Hasan Koten, Selçuk Sarıkoç, 2025-08-27 Rapid technological advances, environmental urgency, and digital transformations in the automotive and vehicle industry are driving many innovations. This book covers the latest breakthroughs and emerging studies that are shaping the next generation of mobility engineering and vehicle technology. Written for researchers, engineers, and professionals in the automotive vehicle and mechanical engineering fields, this book offers both essential solutions and forward-looking perspectives. For those who want to delve deeper into technical studies and stay up-to-date

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addressing the need for improved training standards Our book aims to equip budding technicians with the necessary skills for effective diagnostics and procedures fulfilling both basic and advanced needs A Technician's Guide to Advanced Automotive Emissions Systems Rick Escalambre,1995 This reference is ideal for anyone from students to professionals to hobbyists interested in the latest government standards and procedures concerning automotive emissions Exploring Tech Careers ,2014-05-14 Offers information on the duties salary ranges educational requirements job availability and advancement opportunities for a variety of technical professions *How To Use Automotive Diagnostic Scanners* Tracy Martin,2015-08-01 From hand held dedicated units to software that turns PCs and Palm Pilots into powerful diagnostic scanners auto enthusiasts today have a variety of methods available to make use of on board diagnostic systems And not only can they be used to diagnose operational faults they can be used as low budget data acquisition systems and dynamometers so you can maximize your vehicle s performance Beginning with why scanners are needed to work effectively on modern cars this book teaches you how to choose the right scanner for your application how to use the tool and what each code means How To Use Automotive Diagnostic Scanners is illustrated with photos and diagrams to help you understand OBD I and OBD II systems including CAN and the scanners that read the information they record Also included is a comprehensive list of codes and what they mean From catalytic converters and O2 sensors to emissions and automotive detective work this is the complete reference for keeping your vehicle EPA compliant and on the road **Automotive Technician Cluster** ,2000

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