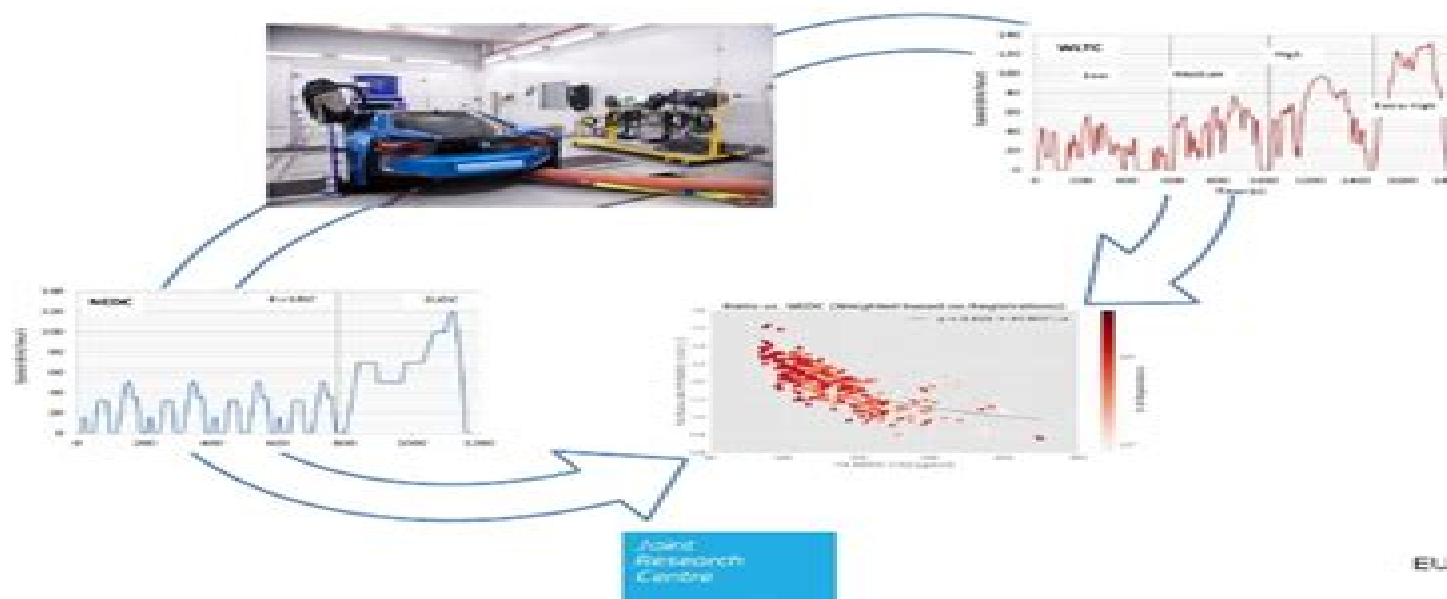


JRC SCIENCE FOR POLICY REPORT

From NEDC to WLTP: effect on the type-approval CO₂ emissions of light-duty vehicles

S. Tsiakmakis, G. Fontaras,
C. Cubito, J. Pavlovic,
K. Anagnostopoulos, B. Ciuffo

2017



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Oliver Diemel



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From NEDC to WLTP ,2017 The present report summarises the work carried out by the European Commission's Joint Research Centre to estimate the impact of the introduction of the new type approval procedure the Worldwide Light duty vehicle Test Procedure WLTP on the European car fleet CO₂ emissions To this aim a new method for the calculation of the European light duty vehicle fleet CO₂ emissions combining simulation at individual vehicle level with fleet composition data is adopted The method builds on the work carried out in the development of CO₂MPAS the tool developed by the Joint Research Centre to allow the implementation of European Regulations 1152 and 1153 2017 which set the conditions to amend the European CO₂ targets for passenger cars and light commercial vehicles due to the introduction of the WLTP in the European vehicle type approval process Results show an average WLTP to NEDC CO₂ emissions ratio in the range 1.1 to 1.4 depending on the powertrain and on the NEDC CO₂ emissions In particular the ratio tends to be higher for vehicles with lower NEDC CO₂ emissions in all powertrains the only exception being with the plug in hybrid electric vehicles PHEVs In this case indeed the WLTP to NEDC CO₂ emissions ratio quickly decreases to values that can be also lower than 1 as the electric range of the vehicle increases

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Vehicle Type-approval and Emission Regulation in the EU:

Environmental Perspective Jiří Vodička, 2024-01-01 st edn m t matem knihy je vztah mezi schvalov n m typu vozidel a ochranou ivotn ho prost ed Autor analyzuje ned vn rozhodnut Evropsk ho soudn ho dvora a aktu ln pravidla v t to oblasti a klade si ot zky z eho pramen hlavn z sady evropsk ch p edpis Ve sv publikaci nab z komplexn a kritickou anal zu r mce EU pro schvalov n motorov ch vozidel se zvl tn m z etelem na na zen 2018 858 a jeho d sledky pokud jde o p edch zen emisn m skand l m jako tzv Dieselgate Autor podrobn rozeb r technick a pr vn nuance testov n emis v etn norem Euro 5 6 a nadch zej c normy Euro 7 jako i zaveden zku ebn ch cykl WLTP a RDE a p edkl d tak ten m ucelen p ehled o v ech aspektech kontroly

emis motorov ch vozidel v EU Kniha neopom j ani na zen 2019 631 o emis ch CO₂ z nov ch vozidel a v nuje se tak kl ov m regula n m v zv m a v klad m Publikace je cenn m zdrojem informac pro v dce pr vn ky i tv rce politik kte se zaj maj o propojen pr va ivotn ho prost ed regulace automobilov ho pr myslu a fungov n EU **Advances in Environmental, Economic and Social Assessment of Energy Systems** Diego Iribarren,2020-12-07 The overall energy sector calls for a transformation from a fossil based system to a low carbon one At a technology level significant efforts have been made to provide energy solutions that contribute to a sustainable energy system However the actual suitability of these solutions is often not checked In this sense the assessment of energy systems from a life cycle perspective is of paramount importance when it comes to effectively planning the energy sector While environmental issues are commonly addressed through the use of the Life Cycle Assessment LCA methodology the comprehensive evaluation of the economic and social aspects of energy systems often remains ignored or underdeveloped This book consists of a set of scientific works addressing the analysis of energy systems from a life cycle technical economic environmental and or social standpoint Case studies at and beyond the technology level are included some of them involving a combination of life cycle and non life cycle approaches for the thorough evaluation of energy systems under the umbrella of sustainability **Absorptionsspektroskopie zur zeitaufgelösten Abgasmessung an Verbrennungsmotoren** Oliver Diemel,2019-02-04 Die vom Gesetzgeber vorgeschriebenen Pr fzyklen zur Bestimmung der Emissionen von Kraftfahrzeugen mit Verbrennungsmotor werden zunehmend dynamischer und ber cksichtigen mittlerweile auch den praktischen Fahrbetrieb Real Driving Emissions Folglich ergeben sich gesteigerte Anforderungen an die entsprechende Abgasmesstechnik In dieser Arbeit wird ein neuartiges in situ Sensorsystem zur Messung gasf rmiger Abgaskomponenten beschrieben basierend auf Absorptionsspektroskopie mittels durchstimmbarer Diodenlaser TDLAS Die Methode ist hoch selektiv und erfasst ausgew hlte Linien im Infrarotspektrum der betrachteten Molek lspezies Das entwickelte Sensorsystem wurde ausgelegt auf die Messung von Wasserdampf H₂O Kohlenstoffdioxid CO₂ Kohlenstoffmonoxid CO Stickstoffmonoxid NO und Stickstoffdioxid NO₂ deren spektrale berg nge bei Wellenl ngen zwischen 1 4 und 5 2 m angeregt werden Zus tzlich zur jeweiligen Konzentration wird ber das H₂O Spektrum auch die Gastemperatur gemessen Das System ist vollst ndig fasergekoppelt und kann ber eine Klemmflanschverbindung im Abgastrakt installiert werden Das in situ Messprinzip kombiniert mit der schnellen Durchstimmbarkeit der Diodenlaser erlaubt die zeitliche Aufl sung einzelner Motorzyklen was anhand von Messungen an einem Einzylinder Forschungsmotor demonstriert werden konnte An einem Mehrzylinder Serienmotor wurde der entwickelte Sensor mit einer konventionellen Abgasmessanlage verglichen wobei unter instation ren Betriebsbedingungen deutliche Abweichungen festgestellt wurden Perspektivisch kann der Sensor demnach sowohl bei dynamischen Emissionsmessungen als auch zur Untersuchung von Zyklus zu Zyklus Schwankungen eingesetzt werden **Zukünftige Kraftstoffe** Wolfgang Maus,2019-04-13 Das Buch ist als Kompendium angelegt und deckt das Wissen von Gesetzes Verbands und Wirtschaftssektoren ab die f r die zuk nftige

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Handbook of Fuels Barbara Elvers, Andrea Schütze, 2021-09-21 A guide to industrially relevant products and processes for transportation fuels The Handbook of Fuels offers a comprehensive review of the wide variety of fuels used to power vehicles aircraft and ships and examines the processes to produce these fuels The updated second edition reflects the growing importance of fuels and fuel additives from renewable sources New chapters include information on current production technology and use of bioethanol biomethanol and biomass to liquid fuels The book also reviews novel additives and performance enhancers for conventional engines and fuels for novel hybrid engines This comprehensive resource contains critical information on the legal safety and environmental issues associated with the production and use of fuels as well as reviewing important secondary aspects of the use and production of fuels This authoritative guide includes contributions from authors who are long standing contributors to the Ullmann's Encyclopedia the world's most trusted reference for industrial chemistry This important guide Contains an updated edition of the authoritative resource to the production and use of fuels used for transportation Includes information that has been selected to reflect only commercially relevant products and processes Presents contributions from a team of noted experts in the field Offers the most recent developments in fuels and additives from renewable sources Written for professionals in the fields of fossil and renewable fuels engine design and transportation Handbook of Fuels is the comprehensive resource that has been revised to reflect the recent developments in fuels used for transportation 14.

Internationales Stuttgarter Symposium Michael Bargende, Hans-Christian Reuss, Jochen Wiedemann, 2014-05-07 Ein stetig steigender Fundus an Informationen ist heute notwendig um die immer komplexer werdende Technik heutiger Kraftfahrzeuge zu verstehen Funktionen Arbeitsweise Komponenten und Systeme entwickeln sich rasant In immer schnelleren Zyklen verbreitet sich aktuelles Wissen gerade aus Konferenzen Tagungen und Symposien in die Fachwelt Den raschen Zugriff auf diese Informationen bietet diese Reihe Proceedings die sich zur Aufgabe gestellt hat das zum Verständnis topaktueller Technik rund um das Automobil erforderliche spezielle Wissen in der Systematik der Konferenzen und Tagungen zusammen zu stellen und als Buch in Springer.com wie auch elektronisch in SpringerLink und Springer für Professionals bereit zu stellen

Data-Driven Traffic Engineering Hubert Rehborn, Micha Koller, Stefan Kaufmann, 2020-10-23 Data Driven Traffic Engineering Understanding of Traffic and Applications Based on Three Phase Traffic Theory shifts the current focus from using modeling and simulation data for traffic measurements to the use of actual data The book uses real world empirically derived data from a large fleet of connected vehicles local observations and aerial observation to shed light on key traffic phenomena Readers will learn how to develop an understanding of the empirical features of vehicular traffic networks and how to consider these features in emerging intelligent transport systems Topics cover congestion patterns fuel

consumption the influence of weather and much more This book offers a unique data driven analysis of vehicular traffic in traffic networks also considering how to apply data driven insights to the intelligent transport systems of the future Provides an empirically driven analysis of traffic measurements congestion based on real world data collected from a global fleet of vehicles Applies Kerner s three phase traffic theory to empirical data Offers a critical scientific understanding of the underlying concerns of traffic control in automated driving and intelligent transport systems

16. Internationales Stuttgarter Symposium Michael Bargende,Hans-Christian Reuss,Jochen Wiedemann,2016-04-27 Die Anforderungen an Forschung und Entwicklung in der Automobilindustrie ndern sich kontinuierlich Hersteller und Zulieferer m ssen einerseits globale L sungen entwickeln andererseits aber Kundenbed rfnisse und legislative Vorgaben einzelner M rkte ber cksichtigen Selbst bei der Emissionsgesetzgebung herrscht alles andere als globale Einigkeit In Europa wird ab September 2017 die Messung der real driving emissions RDE eingef hrt Damit wird die Bewertung der Schadstoffemissionen vom Pr fstand auf die Stra e verlagert mit umfassenden Konsequenzen f r die Antriebsentwicklung Zudem wird in verschiedenen Weltregionen die lokale Einf hrung von Zonen mit schadstoffemissionsfreiem Verkehr gefordert berlagert wird all dies durch die laufende Absenkung der CO2 Grenzwerte f r die Fahrzeugflotten Alle Weltregionen haben hier unterschiedliche Absenkungsschritte definiert Dies alles wird noch getoppt von steigenden Anspr chen an Komfort und Emotionalit t des Automobils Wie reagiertnun die Automobilindustrie im Spannungsfeld zwischen zunehmender Globalisierung und m glichst global zu vermarktender Produkte auf der einen Seite und den neuen von Regionen abh ngigen Anforderungen an das Fahrzeug und der dazugeh rigen Variantenvielfalt auf der anderen Seite Welche technischen Konsequenzen ergeben sich hieraus Dar ber und ber vieles mehr werden Experten aus Industrie und Wissenschaft beim Symposium berichten

Big Data and Electric Mobility Haoran Zhang,Quan Zhou,2025-03-31 This book details how to assess electric mobility characteristics within electric vehicles discussing energy management methods automated systems and the enormous potential of data resources mined from software navigation systems and connectivity Big Data and Electric Mobility presents methods to mine data specifically for electric vehicles to comprehend their performance and to present opportunities to develop data driven technological advancements Including contributions from experts across the world the book will look at topics such as human mobile behavior battery charging and health powertrain simulation energy management and multiphysics constrained optimal charging The book will be key reading for researchers and engineers in the fields of automotive engineering electrical engineering and data mining

Electrifying Mobility Graham Parkhurst,William Clayton,2022-10-17 Electrifying Mobility Realising a Sustainable Future for the Car considers the drivers barriers to adoption and the current lived experience of electric vehicles drawing upon this experience to inform planning for mass adoption and how regulation might change to reflect the specific needs and challenges raised

Mobility in a Globalised World 2017 Eric Sucky,Reinhard Kolke,Niels Biethahn,Jan Werner,2018-06-19 Introduction to Electromobility Martin Doppelbauer,2024-12-30 The book

provides a comprehensive overview of all relevant technical and environmental aspects relating to road vehicles with low emission drive technology. The focus is on electric and hybrid vehicles whose drive technology, energy storage, batteries, hydrogen and charging systems are presented in detail. It also deals with overarching framework conditions such as climate protection, generation and distribution of electrical energy and hydrogen, raw materials, life cycle assessment and costs. The latest technical developments have been taken into account in this updated edition. The facts are made clear in many breakdown graphics. Examples deepen the material or provide a practical reference so that the content is more memorable for students. This book is aimed among others at students from the subjects of automotive technology, energy technology, electrical engineering, energy supply, energy economics, mechanical engineering and industrial engineering.

Powertrain Systems for Net-Zero Transport Institution of Mechanical Engineers (IME), 2021-12-23. The transport sector continues to shift towards alternative powertrains, particularly with the UK Government's announcement to end the sale of petrol and diesel passenger cars by 2030 and increasing support for alternatives. Despite this announcement, the internal combustion continues to play a significant role both in the passenger car market through the use of hybrids and sustainable low carbon fuels as well as a key role in other sectors such as heavy duty vehicles and off-highway applications across the globe. Building on the industry leading IC Engines conference, the 2021 Powertrain Systems for Net Zero Transport conference (7-8 December 2021, London, UK) focussed on the internal combustion engine's role in Net Zero transport as well as covered developments in the wide range of propulsion systems available: electric, fuel cell, sustainable fuels etc. and their associated powertrains. To achieve the net zero transport across the globe, the life cycle analysis of future powertrain and energy was also discussed. Powertrain Systems for Net Zero Transport provided a forum for engine, fuels, e-machine, fuel cell and powertrain experts to look closely at developments in powertrain technology required to meet the demands of the net zero future and global competition in all sectors of the road transportation, off-highway and stationary power industries.

Annual Report JRC European Commission, Joint Research Centre, 2017 *Internal Combustion Engines and Powertrain Systems for Future Transport 2019* 0 IMECHE, 2020-03-09. With the changing landscape of the transport sector, there are also alternative powertrain systems on offer that can run independently of or in conjunction with the internal combustion (IC) engine. This shift has actually helped the industry gain traction, with the IC Engine market projected to grow at 4.67% CAGR during the forecast period 2019-2025. It continues to meet both requirements and challenges through continual technology advancement and innovation from the latest research. With this in mind, the contributions in *Internal Combustion Engines and Powertrain Systems for Future Transport 2019* not only cover the particular issues for the IC engine market but also reflect the impact of alternative powertrains on the propulsion industry. The main topics include Engines for hybrid powertrains and electrification, IC engines, Fuel cells, E-machines, Air path and other technologies achieving performance and fuel economy benefits. Advances and improvements in combustion and ignition systems, Emissions regulation and their control by engine and after treatment.

Developments in real world driving cycles Advanced boosting systems Connected powertrains AI Electrification opportunities Energy conversion and recovery systems Modified or novel engine cycles IC engines for heavy duty and off highway Internal Combustion Engines and Powertrain Systems for Future Transport 2019 provides a forum for IC engine fuels and powertrain experts and looks closely at developments in powertrain technology required to meet the demands of the low carbon economy and global competition in all sectors of the transportation off highway and stationary power industries Research Handbook on EU Environmental Law Marjan Peeters, Mariolina Elia Antonio, 2020-06-26 This comprehensive Research Handbook discusses how the EU has used its regulatory power to steer towards environmentally friendly behaviour delving into the deep concerns related to the compliance with and enforcement of EU environmental law It also highlights the important role of civil society's use of environmental procedural rights and characterizes how the CJEU case law has contributed to the effective implementation of EU environmental legislation The Innovation Odyssey Christophe Midler, Marc Alochet, Christophe De Charentenay, 2023-04-21 Affordable is not typically the first adjective used to describe an electric automobile This book traces the history of an affordable electric car from its genesis to its marketing This history is more than a singular adventure It is the analysis of a project that allows us to understand the key issues of strategy and management of contemporary innovation The book features in lessons in Strategy revealing the complexity of international product development and the conditions for its implementation in today's fragmented world Project management showing what is required to succeed in the a priori impossible challenge of a design within an alliance between five partners from four different countries Innovation demonstrating that the electrification of mobility can be combined with affordable prices Industrial policy using the emblematic domain of electric vehicles to illustrate the major role of public authorities in technology the future direction of this role and the importance in the competition between Western and Chinese industries Intrapreneurship showing that a start up is not the only context in which it is possible to attempt and experience breakthroughs Towards a Climate-Neutral Europe Jos Delbeke, Peter Vis, 2019-10-16 This book explains the EU's climate policies in an accessible way to demonstrate the step by step approach that has been used to develop these policies and the ways in which they have been tested and further improved in the light of experience The latest changes to the legislation are fully explained throughout The chapters throughout this volume show that no single policy instrument can bring down greenhouse gas emissions The challenge facing the EU as for many countries that have made pledges under the Paris Agreement is to put together a toolbox of policy instruments that is coherent delivers emissions reductions and is cost effective The book stands out by the fact it covers the EU's emissions trading system the energy sector and other economic sectors including their development in the context of international climate policy This accessible book will be of great relevance to students scholars and policy makers alike The Open Access version of this book available at <http://www.taylorfrancis.com/books/e/9789276082569> has been made available under a Creative Commons Attribution Non Commercial

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