

## Consumption calculation of vehicles using OBD data

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### Abstract

The European type approval procedure, based on a fixed driving cycle for all vehicles, is not representative of their real on-road usage: the driving style and its influence on consumption and emissions cannot be neglected and their real-world environmental impact is not simple to measure.

The objective of this work is to develop a methodology to calculate in real-time the energy and environmental impact of spark ignition and diesel vehicles.

An on-board instrumentation capable to communicate with the electronic system of the vehicle (OBD/CAN) have been developed to collect all the sensor data available (rpm, vehicle speed, engine load, lambda sensor voltage, catalyst temperature, intake airflow, pressure and temperature etc.) and use them as input for power and consumption models.

The models have been applied on several vehicles and validated on a dynamometer chassis running NEDC and ARTEMIS cycles. Consumption has been measured with the CVS and with a portable emission analyzer (HORIBA OBS-1300).

A calibration procedure has been also developed in which 3 tests on a dynamometer chassis are needed: the maximum power curve, the curve at idle and a curve at fixed rpm varying the engine load. For spark ignition engines, an additional test should be needed to calibrate a coefficient that takes into account of the enrichment during accelerator pedal gradients, but this coefficient is not much variable for different vehicles (~10).

All the vehicles show a difference between measurements and models never greater than 4% so this can be an accurate methodology to calculate the power and consumption of vehicles during their real use.

**Keywords:** Instantaneous Vehicle Consumption, Engine Power, OBD, On-Board Data Collection.

# Consumption Calculation Of Vehicles Using Obd Data

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## **Consumption Calculation Of Vehicles Using Obd Data:**

*Data Acquisition from Light-Duty Vehicles Using OBD and CAN* Eric Walter, Richard Walter, 2018-11-15 Modern vehicles have multiple electronic control units ECU to control various subsystems such as the engine brakes steering air conditioning and infotainment These ECUs are networked together to share information directly with each other This in vehicle network provides a data opportunity for improved maintenance fleet management warranty and legal issues reliability and accident reconstruction Data Acquisition from LD Vehicles Using OBD and CAN is a guide for the reader on how to acquire and correctly interpret data from the in vehicle network of light duty LD vehicles The reader will learn how to determine what data is available on the vehicle s network acquire messages and convert them to scaled engineering parameters apply more than 25 applicable standards and understand 15 important test modes Topics featured in this book include Calculated fuel economy Duty cycle analysis Capturing intermittent faults Written by two specialists in this field Richard P Walter and Eric P Walter of HEM Data the book provides a unique roadmap for the data acquisition user The authors give a clear and concise description of the CAN protocol plus a review of all 19 parts of the SAE International J1939 standard family Data Acquisition from LD Vehicles Using OBD and CAN is a must have reference for product engineers service technicians fleet managers and all interested in acquiring data effectively from the SAE J1939 equipped vehicles *Advances in Information*

*Communication Technology and Computing* Vishal Goar, Manoj Kuri, Rajesh Kumar, Tomonobu Senjyu, 2022-05-09 The book is a collection of best selected research papers presented at the International Conference on Advances in Information Communication Technology and Computing AICTC 2021 held in Government Engineering College Bikaner Bikaner India during 20 21 December 2021 The book covers ICT based approaches in the areas of ICT for energy efficiency life cycle assessment of ICT green IT green information systems environmental informatics energy informatics sustainable HCI or Artificial intelli computational sustainability *Proceedings of the XV Ibero-American Congress of Mechanical Engineering*

Antonio Vizán Idoipe, Juan Carlos García Prada, 2023-08-02 This open access book shows some of the highlights presented at the XV Ibero American Congress of Mechanical Engineering The papers explore the forefront of Mechanical Engineering containing research into fluid mechanics energy systems tribology materials science robotics mechatronics biomechanics instrumentation thermodynamics and mechanical sustainability **Environmental Crisis: Pollution and Governance**

Dongfei Han, Mukesh Khare, Siyue Li, 2025-07-03 This book presents cutting edge research findings on environmental pollution and remediation covering key areas such as pollution analysis and monitoring as well as pollution control and restoration At the 2024 UN Environment Assembly environmental pollution and remediation were once again defined as one of the three major crises facing the planet The global environmental pollution issue remains severe despite the efforts of many countries and regions the situation is still far from optimistic Issues such as heavy metals and radioactive contamination in seawater are gradually becoming significant topics in environmental pollution Accurate composition

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**Vehicle Electronics to Digital Mobility** ,2004 **Evaluation of Portable Emissions Measurement Systems (PEMS) for Inventory Purposes and the Not-to-exceed Heavy-duty Diesel Engine Regulation** J. Wayne Miller,2006

**The Development of an Advanced Telematics Based Automatic Vehicle Monitoring System (AVeMS)** Joseph C. Silva,2010 **BOSCH Automotive Handbook** Robert Bosch GmbH,2004 BOSCH Automotive Handbook Sixth Edition the latest update to the world s definitive automotive technology reference is expanded by twenty five percent and covers the

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**Automotive Diagnostics** ,1990 A collection of papers from an Institute of Mechanical Engineers conference which discuss the latest developments and likely future trends in automotive diagnostics Coverage is given to all types of vehicles and all types of vehicle diagnostic systems whether on or off board Particular emphasis is given to driver information systems on board diagnostics off board diagnostic equipment data collections testing industry standardization training and operator skills and design considerations

**Traffic-related Air Pollution** Health Effects Institute. Panel on the Health Effects of Traffic-Related Air Pollution,2010 [Annual Index/abstracts of SAE](#)

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*History of Automotive Electronics* Ronald K. Jurgen,1998 **Cumulative Index [of The] SAE Papers** Society of Automotive Engineers,1965 *Data Acquisition from Light-duty Vehicles Using OBD and CAN* Eric Walter,Richard Waters,2018 This is a guide for the reader on how to acquire and correctly interpret data from the in vehicle network of light duty LD vehicles The reader will learn how to determine what data is available on the vehicle s network acquire messages and convert them to scaled engineering parameters apply more than 25 applicable standards and understand 15 important test modes

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movie info jerome max minghella a freshman at a prestigious art school dreams of making it big but his arrogance and affectations hamper his chances jealous of a clueless jock he

*art school confidential letterboxd* - Dec 23 2022

art school confidential directed by terry zwigoff who needs to make more movies please is a somewhat surreal look at a student s life in art school and all the pretentiousness assumptions and turbulence that comes with it all oh and there s some serial whack job strangling women on campus yeah it starts out strange and then gets stranger

**art school confidential wikipedia** - Aug 31 2023

art school confidential is a 2006 american comedy drama film directed by terry zwigoff and starring max minghella sophia myles john malkovich jim broadbent matt keeslar ethan suplee joel moore nick swardson adam scott and anjelica houston

**art school confidential 2006 theatrical trailer youtube** - Aug 19 2022

feb 10 2009 146k views 14 years ago art school confidential is a 2006 film directed by terry zwigoff starring max minghella sophia myles john malkovich jim broadbent and nick swardson jerome

[art school confidential official trailer 1 john malkovich movie](#) - Jun 16 2022

oct 5 2012 art school confidential official trailer 1 john malkovich movie 2006 hd rotten tomatoes classic trailers 1 56m subscribers subscribe 806 share save 129k views 10 years ago subscribe to

**art school confidential movie review common sense media** - Apr 14 2022

art school confidential is the beaten down cynical hipster brother of american pie all about how to be popular and how to get laid but with worse language and a far bleaker outlook on life there are lots of memorable turns in this film

**art school confidential 2006 mubi** - Apr 26 2023

art school confidential directed by terry zwigoff united states 2006 comedy 102 synopsis starting from childhood attempts at illustration the protagonist pursues his true obsession to art school but as he learns how the art world really works he finds that he must adapt his vision to the reality that confronts him

*art school confidential 2006 imdb* - Oct 01 2023

may 12 2006 art school confidential directed by terry zwigoff with max minghella sophia myles john malkovich jim broadbent starting from childhood attempts at illustration the protagonist pursues his true obsession to art school but as he learns how the art world really works he finds that he must adapt his vision to the reality that confronts him

**art school confidential 2006 imdb** - Nov 21 2022

fwomp 22 may 2006 yesterday i went to my local art theater to watch an art film about a future artist attending art school whew i m glad i got that out but lets chat about this art film shall we here we go it s got a lot going for it first and foremost is

an impressive script

[art school confidential movie reviews rotten tomatoes](#) - Sep 19 2022

director terry zwigoff presents a scathing satire of art school student existence but derails the movie about a talented young artist well played by max minghella with an artificial sub plot

[art school confidential metacritic](#) - Oct 21 2022

summary art school confidential follows talented young artist jerome platz minghella as he escapes from high school to a tiny east coast art school here the boyish freshman s ambition is to become the world s greatest artist sony pictures classics

**art school confidential movies on google play** - Mar 26 2023

about this movie arrow forward art school confidential follows talented young artist jerome platz max minghella as he escapes from high school to a tiny east coast art school here the boyish freshman s ambition is to become the world s greatest artist like his hero picasso

[art school confidential 2006 filmaffinity](#) - Jan 24 2023

art school confidential year 2006 running time 102 min country united states director terry zwigoff screenwriter daniel clowes comic daniel clowes cast music david kitay cinematography

**art school confidential film 2005 beyazperde com** - Jul 30 2023

Özet jerome genç bir sanatçı adayı gözünü biraz yukarılara dikmiş dünyanın en iyi sanatçısı olmak istiyor eğitimli bir sanatçı olmaya karar veriyor ve alanında son derece önemli bir okula kayıt yaptırıyor fakat zamanla farkediyor ki kendisinde bir tutukluk var ve sanat dünyasında yükselmek o kadar da kolay olmayacak

**art school confidential 2006 plot summary imdb** - May 16 2022

surrounded by a collection of art school clichéd misfits and a cloud of mystery on the campus due to a strangler who has murdered many young female art students jerome plies his considerable talent and is smitten by an older young woman audrey sophia myles

[art school confidential 2006 full cast crew imdb](#) - Jul 18 2022

art school confidential 2006 cast and crew credits including actors actresses directors writers and more

[art school confidential 2006 the movie database tmdb](#) - Feb 22 2023

may 5 2006 overview starting from childhood attempts at illustration the protagonist pursues his true obsession to art school but as he learns how the art world really works he finds that he must adapt his vision to the reality that confronts him

**art school confidential** - Feb 10 2022

art school confidential follows jerome an art student who dreams of becoming the greatest artist in the world arriving as a freshman at a prestigious east coast art school filled with every artsy type there is jerome quickly discovers his affected style

*art school confidential* review movies *the new york times* - Mar 14 2022

may 5 2006 *art school confidential* directed by terry zwigoff comedy drama r 1h 42m by a o scott may 5 2006 we first encounter jerome platz the hapless hero of terry zwigoff s hapless art