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A New Cold Starting System for Diesel Engines Feb 14 2023
Cold Starting an Alcohol Fueled Engine with Ultrasonic Fuel Atomization Nov 25 2023 Cold Starting an Alcohol Fueled Engine With Ultrasonic Fuel Atomization
Engineer to Win Feb 02 2022 "Is titanium for you? Can better brakes reduce lap times significantly? How do you choose the rights nuts and bolts? Which is more important, cornering or straight-line speed? Why did it break again? Engineer to Win not only answers these and many other questions, it gives you the reasons why."--Back cover
The Role of the Engine Oil in Cold Weather Starting Feb 22 2021
Cold Starting of a Diesel Engine Using a Timed Spark Ignition Mar 18 2023
Federal Specification Apr 26 2021
The Effect on Cold Starting Performance of an Exhaust Gas to Engine Coolant Heat Exchanger in an Automobile May 27 2021
Exhaust Emissions and Cold Starting of a Four-cylinder Engine Using Methanol as Fuel Oct 01 2021
Improving Engine Cold Start Performance Through Optimal Control Strategies Oct 13 2022
Automotive and Construction Equipment for Arctic Use Mar 25 2021
Fuel Property Effects on the Unaided Cold Starting of a Two-Cycle Diesel Engine Jul 10 2022 In this program, a Detroit Diesel 4-53T was heavily insulated and cooled using a chilled coolant circulation system and cooled combustion air was provided. An external cranking motor was used to turn the engine at a constant rpm. Twenty-one test fuels were blended, and a minimum unaided starting temperature was obtained for each fuel. Multiple linear regression analysis was then performed in order to relate fuel properties to minimum starting temperature. Fuel properties examined were: viscosity; ASTM D 86 and D 2887 boiling point temperatures, cetane number, autoignition temperature, and flash point. Cetane number, viscosity, 50% boiling

temperature, and autoignition temperature had statistically significant impact on minimum starting temperature. Keywords: Cetane; Diesel engine; Cold starting; Fuel properties; ASTM D 2887; Viscosity; Flash point; Diesel fuel; ASTM D 86.

How to Start Marine Engines in a Cold Ship Jan 16 2023

Novel Diesel Engine Cold Start Aid System Using Exhaust Waste Heat Aug 30 2021

Experimental Investigation on Combustion and Ionization During Cold Starting and Idling of a Diesel Engine Mar 30 2024 Diesel engine performance during cold starting is very crucial for smooth engine start at undesirable emission level. The development of cold start strategies that improve combustion stability relies mainly on the understanding of the combustion process during the cold starting. Even for modern diesel engines, the conditions during the cold start is far from normal operation characterized by large amount of unburned hydrocarbon emissions and long start to idling time. Thus, the use of an in-cylinder combustion sensor to measure the combustion quality during engine starting can significantly improve engine cold start control strategies. The ion current sensor has the potential to be used as onboard sensor to measure the combustion process during engine operation and can be used as feedback to the engine control unit. The aim of this research is to study and determine the combustion instability and its impact on various combustion and ionization characteristics by performing cycle analysis for a comparison between engine performance using ultra low sulfur diesel (ULSD) and aviation jet propulsion (JP8) fuels during cold start at 25 degrees Celsius. It also shows a comparison between two ion current sensors during low load idling using the same fuels. For this purpose, the glow plug and fuel injector of VW 2.0L turbocharged diesel engine were modified and electrically insulated to be used as ion current sensors. The experimental test was conducted to study the combustion process and emission product produced during low load idling.

Determination of Engine Cold Start Fuel Requirements Using a Programmable Electronic Choke Nov 13 2022

FINAL REPORT ON COLD STARTING OF RECIPROCATING AIRCRAFT ENGINES Sep 11 2022 INTRODUCT IONConventional internal conbustion a i r c r a f t engines require the samebasic conditions for starting in cold weather as they do in warnweather. These are:(1) The engine must be cranked a t a reasonable speed.(2) A combustible mixture must be delivered t o thecylinders.(3) An ignition spark must be supplied which is capable ofigniting t'ne charge a t the proper t i m e .(4) The fits and olearanoes of mating parts in the enginem u s t be such that normal Sunctions occur a t a l ltemperatures.(5) The engine must receive a usable lubricant.(6) The engine must develop s u f f i c i e n t power t o overcomeits own f r i c t i o n and accelerate itself t o the desiredoperating speed.

Investigation and Demonstration of a Rich Combustor Cold-start Device for Alcohol-fueled Engines Nov 01 2021 The authors have completed a study in which they investigated the use of a rich combustor to aid in cold starting spark-ignition engines fueled with either neat ethanol or neat methanol. The rich combustor burns the alcohol fuel outside the engine under fuel-rich conditions to produce a combustible product stream that is fed to the engine for cold starting. The rich combustor approach significantly extends the cold starting capability of alcohol-fueled engines. A design tool was developed that simulates the operation of the combustor and couples it to an engine/vehicle model. This tool allows the user to determine the fuel requirements of the rich combustor as the vehicle executes a given driving mission. The design tool was used to design and fabricate a rich combustor for use on a 2.8 L automotive engine. The system was tested using a unique cold room that allows the engine to be coupled to an electric dynamometer. The engine was fitted with an aftermarket engine control system that permitted the fuel flow to the rich combustor to be programmed as a function of engine speed and intake manifold pressure. Testing indicated that reliable cold starts were achieved on both neat methanol and neat ethanol at temperatures as low as -20 C. Although starts were experienced at temperatures as low as -30 C, these were erratic. They believe that an important factor at the very low temperatures is the balance between the high mechanical friction of the engine and the low energy density of the combustible mixture fed to the engine from the rich combustor.

The Cold Start Problem Jan 28 2024 A startup executive and investor draws on expertise developed at the premier venture capital firm Andreessen Horowitz and as an executive at Uber to address how tech’s most successful products have solved the dreaded "cold start problem"—by leveraging network effects to launch and scale toward billions of users. Although software has become easier to build, launching and scaling new products and services remains difficult. Startups face daunting challenges entering the technology ecosystem, including stiff competition, copycats, and ineffective marketing channels. Teams launching new products must consider the advantages of "the network effect," where a product or service's value increases as more users engage with it. Apple, Google, Microsoft, and other tech giants utilize network effects, and most tech products incorporate them, whether they're messaging apps, workplace collaboration tools, or marketplaces. Network effects provide a path for fledgling products to break through, attracting new users through viral growth and word of mouth. Yet most entrepreneurs lack the vocabulary and context to describe them—much less understand the fundamental principles that drive the effect. What exactly are network effects? How do teams create and build them into their products? How do products compete in a market where every player has them? Andrew Chen draws on his experience and on interviews with the CEOs and founding teams of LinkedIn, Twitch, Zoom, Dropbox, Tinder, Uber, Airbnb, and Pinterest to offer unique insights in answering these questions. Chen also provides practical frameworks and principles that can be applied across products and industries. The Cold Start Problem reveals what makes winning networks thrive, why some startups fail to successfully scale, and, most crucially, why products that create and compete using the network effect are vitally important today.

Diesel Engine Cold Start Improvement Using THermal Management Techniques Apr 30 2024 The objective of the research program was to investigate, develop, and demonstrate thermal energy storage systems for the improvement of the starting characteristics of Army Diesel engines exposed to cold temperatures overnight. Because of the effect of the oil temperatures on starting work, a passive thermal protection system that used Phase Change Materials (PCM) and insulation was designed for the oil pan and filter. Waste heat was stored in the PCM during engine operation, and was released back into the oil system after engine shutdown. Experimental tests were conducted with the PCM applied to the oil pan and filter of an M925 5-ton truck. After engine shut-off the oil temperature at the bottom of the pan was maintained at +50 deg F during a 12 hr exposure to average air temperature of 13 deg F.

During cold start tests conducted after overnight cold exposure, the engine with the PCM applied to the oil system started faster and required much less cranking energy from the batteries than the baseline engine under similar conditions. A secondary benefit of the warmer oil is the improved engine lubrication at startup, which can reduce engine wear. A passive thermal protection system was also built and tested for the battery box.

Development of a Novel Diesel Engine Cold Start Aid System Using Reversible Chemical Reactions Jun 08 2022

Autoignition and Combustion in Diesel Engines Under Cold Starting Conditions Jun 20 2023 This report includes the results of an investigation on the autoignition and combustion processes in diesel engines at low ambient temperatures. Experiments were conducted on three different single-cylinder direct-injection, four-stroke engines, using fuels of different cetane numbers and physical properties. Tests covered ambient temperatures ranging from 250C to -250C. The engines were soaked at least eight hours before a cold start test. The analysis indicated that the difficulty in starting diesel engines is caused by combustion instability at low temperatures. Combustion instability will cause the engine to misfire once before it fires again. This is referred to as 8-stroke-cycle operation. If it misfires twice, it is referred to as l2-stroke-cycle operation, and so on. This pattern was found to be reproducable. The engine may start on a l2-stroke-cycle operation at low temperatures, shift to an 8-stroke-cycle, and finally shifts to the regular 4-stroke-cycle. This pattern has been found not to be engine or fuel specific. A detailed thermodynamic and combustion analysis of the experimental data indicated that the cause for combustion instability is a combination of dynamic, physical and chemical kinetics factors. Recommendations are made to reduce combustion instability by using the electronic controls already available on engines.

Priming Methods for Cold Starting Diesel Engines Sep 23 2023

Multidimensional Modeling of Fuel Composition Effects on Combustion and Cold-starting in Diesel Engines Jun 28 2021 A computer model developed for describing multicomponent fuel vaporization, and ignition in diesel engines has been applied in this study to understand cold-starting and the parameters that are of significant influence on this phenomena. This research utilizes recent improvements in spray vaporization and combustion models that have been implemented in the

KIVA-II CFD code. Typical engine fuels are blends of various fuels species, i.e., multicomponent. Thus, the original single component fuel vaporization model in KIVA-II was replaced by a multicomponent fuel vaporization model (based on the model suggested by Jin and Borman). The model has been extended to model diesel sprays under typical diesel conditions, including the effect of fuel cetane number variation. Necessary modifications were carried out in the atomization and collision sub-models. The ignition model was also modified to account for fuel composition effects by modifying the Shell ignition model. The improved model was applied to simulate diesel engine cold-starting. The effect of fuel residual from previous cycles was studied and was found to be important. Other injection parameters, such as injection timing and duration were also studied. Another factor that was investigated was engine geometry and how it can be modified to improve on cold-starting in diesel engines. Cold-starting was found to be enhanced by the presence of a small fuel vapor residual and by a shorter injection duration, while engine geometry modifications were found to be helpful in selecting an optimum location on the cylinder head for an ignition aid.

A Computational Study of In-cylinder Cold Starting Processes in a Diesel Engine Apr 18 2023

Cold Start Performance of an Automotive Engine Using Prevaporized Gasoline Dec 03 2021

Automotive Cold-start Carbon Monoxide Emissions and Preheater Evaluation Aug 11 2022 Fairbanks and Anchorage, Alaska, experience high wintertime ambient levels of carbon monoxide (CO). Emissions from starting automobile engines in cold weather are thought to be a major source of CO. A quantitative procedure for determining startup CO emissions was developed. The startup emissions were measured as a function of soak time at several low ambient temperatures. The performance of engine preheaters in reducing the startup CO at the various soak times and temperatures was estimated. The data scatter was too great to draw any firm conclusions; however, the length of cold-soak time appeared to have a stronger effect on cold-start CO emissions than did soak temperatures (0 to -30 C). Compared to no preheat, continuous preheat during an overnight cold soak can reduce the cold-start CO emissions by 20 to 90%.

Method of A/F Control During Spark Ignition Engine Cold Start Jul 30 2021

Test Operations Procedure (TOP) 2-2-650 Engine Cold-Starting and Warm-Up Tests Dec 15 2022 Describes procedures for evaluating the cold-staring capability of military engines with and without the aid of arctic-kit engine heaters.

Oil System Cold Starting Tests on an Orenda Engine Aug 23 2023

SI and CI Engine Cold Start and Transient Emissions and Control Jan 04 2022

Spark Ignition Engine Cold Starting with Methanol-based Fuel Blends Feb 27 2024

Federal Specification Mar 06 2022

Engine Cold-Starting and Warm-Up Tests Jul 02 2024 This report describes procedures for evaluating the cold-starting capability of military engines with and without the aid of arctic-kit engine heaters.

Investigation of a cold starting system for an indirect injection diesel engine May 20 2023

Vehicular Engine Design Apr 06 2022 The mechanical engineering curriculum in most universities includes at least one elective course on the subject of reciprocating piston engines. The majority of these courses today emphasize the application of thermodynamics to engine ef?ciency, performance, combustion, and emissions. There are several very good textbooks that support education in these aspects of engine development. However, in most companies engaged in engine development there are far more engineers working in the areas of design and mechanical development. University studies should include opportunities that prepare engineers desiring to work in these aspects of engine development as well. My colleagues and I have undertaken the development of a series of graduate courses in engine design and mechanical development. In doing so it becomes quickly apparent that no suitable te- book exists in support of such courses. This book was written in the hopes of beginning to address the need for an engineering-based introductory text in engine design and mechanical development. It is of necessity an overview. Its focus is limited to reciprocating-piston internal-combustion engines – both diesel and spa- ignition engines. Emphasis is speci?cally on automobile engines, although much of the discussion applies to larger and smaller engines as well. A further intent of this book is to provide a concise reference volume on engine design and mechanical development processes for engineers serving the engine industry. It is intended to provide basic information and most of the chapters include recent references to guide more in-depth study.

Cold Starting and Oil Pumpability - an Evaluation of New and Used Oils in Gasoline Engines Jul 22 2023

Diesel Engine Cold Starting: P-C Based Comprehensive Heat Release Model, Part I: Single Cycle Analysis Dec 27 2023

Diesel Engine Cold-Starting Studies: Optically Accessible Engine Experiments and Modeling Jun 01 2024 An experimental and numerical study was carried out to simulate the diesel spray breakup, vaporization, ignition, and combustion during cold starting conditions. This report summarizes the optical diagnostics and multi-dimensional computation results for two single-cylinder optically accessible engines. The results showed that optically accessible engines provide very useful information for studying the diesel cold starting conditions, which also provide a critical test for diesel combustion models. The pre-ignition chemistry showed great sensitivity to the compressed air temperature. KIVA with a modified shell model responds accordingly to the change of inlet air temperatures and fuel injection parameters. However, other submodels do not have enough sensitivity to simulate the starting of diesel engine without careful validation and further improvements. A method to compute the ignition delay in engines from data obtained in constant volume vessels was also developed. The method accounts for the effect of variations in charge pressure and temperature on the formation of the chain carriers from the combustible mixture during the ID period. A comparison is made between the computed ID and data obtained in a LABECO research engine under different ambient temperatures ranging from +200 to - 100 C.

AN INVESTIGATION OF THE EFFECTS OF EXTREME LOW TEMPERATURES UPON COLD STARTING OF SPARK IGNITION ENGINES USING STANDARD GASOLINE. May 08 2022

Ruston-Hornsby Airless Injection Cold Starting Oil Engine Oct 25 2023

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