Download Ebook Stirling Engine Drawings Pdf File Free

Design and Development of Stirling Engines for Stationary-power-generation Applications in the 500- to 3000-horsepower Range. Phase I Final Report Stirling Engine Design Manual More Ltd Stirling Engines You Can Build Without a Machine Shop The Regenerator and the Stirling Engine How I Built a 5-Hp Stirling Engine *Three LTD Stirling Engines You Can Build Without a Machine Shop* Eleven Stirling Engine Projects You Can Build **Model Stirling Engines** An Introduction to Low Temperature Differential Stirling Engines *Stirling Engine Projects Steam and Sterling* **Stirling and Hot Air Engines The Stirling Engine Manual Free Piston Stirling Engines Stirling Engine Project** *Ringbom Stirling Engines* **Stirling Cycle Engine Analysis, Robert Stirling's Models of the "air Engine" Free-Piston Stirling Engine Demonstrator Test Plan** *Free-piston Stirling Engine Demonstrator Test Plan* **Assessment of the State of Technology of Automotive Stirling Engines Base Technology Stirling Engine Military Applications Assessment Design and Development of Stirling Engines for Stationary-power-generation Applications in the 500- to 3000-hp Range. Phase I Final Report Stirling Cycle Engines The Philips Stirling Engine The Air Engine** Automotive Stirling Engine Development Project **Liquid Piston Stirling Engines Popular Science The Air Engine** Design and Development of Stirling Engines for Stationary Power Generation Applications in the 500 to 3000 Horsepower Range. Volume 1. Technical Report *Stirling-Steele Engine* **The Star Drive** *United States LPPSD Technical Information Exchange Document* *Understanding Stirling Engines* **Miniature Internal Combustion Engines Stirling Engines** *STIRLING ENGINES ?, ?, ?, Ringbom, MANSON Engine: 18 Engines You Can Build* *Small and Micro Combined Heat and Power (CHP) Systems* **Design and Development of Stirling Engines for Stationary Power Generation Applications in the 500 to 3000 Horsepower Range. First Quarterly Report**

"Everyone needs power. Merrick Lockwood wants to use stirling engines to make that power. This book tells how Mr. Lockwood and his team, spent several years developing a simple, low tech, 5-HP Stirling engine in Dhaka, Bangladesh. It's the story of what worked then and what didn't along with Mr. lockwood's advice on which approaches would work well today. Lockwood's team built a Stirling engine that could burn agricultural garbage (in this case rice husks), however different burners could be designed today to burn previously wasted fuels. Lockwood shows how he used the simple ideas from historic Stirling engines along with his team's innovations to make his engines work. This book is filled with detailed descriptions of Mr. Lookwood's engines along with 34 pages of drawings that have survived. The book includes 184 photographs that show the tools, and methods of fabrication that Lookwood used."--Publisher's description. In May 2018 NASA called a press conference to announce the successful test-run of their tiny nuclear reactor KRUSTY (Kilopower Reactor Using Stirling Technology). This revolutionary technology, which runs on heat alone, may have profound consequences for the future of mankind, enabling us to maintain permanent bases on the Moon, on Mars and other planets, and eventually power a starship. On earth too it could have enormous benefits as a new way to generate power at a time when climate change is threatening our very existence. This book is the amazing story behind this invention, which began with Robert Stirling’s original designs for a heat exchange engine in 1816. An invention truly ahead of its time, the practical application of the Stirling Engine has taxed the minds of scientists and inventors for almost 200 years. Only now is it possible for its full potential to be realised. Phillip Hills weaves science and history together to tell the story of one of the most exciting scientific developments the world has ever seen. Some 200 years after the original invention, internal design of a Stirling engine has come to be considered a specialist task, calling for extensive experience and for access to sophisticated computer modelling. The low parts-count of the type is negated by the complexity of the gas processes by which heat is converted to work. Design is perceived as problematic largely because those interactions are neither intuitively evident, nor capable of being made visible by laboratory experiment. There can be little doubt that the situation stands in the way of wider application of this elegant concept. Stirling Cycle Engines re-visits the design challenge, doing so in three stages. Firstly, unrealistic expectations are dispelled: chasing the Carnot efficiency is a guarantee of disappointment, since the Stirling engine has no such pretentions. Secondly, no matter how complex the gas processes, they embody a degree of intrinsic similarity from engine to engine. Suitably exploited, this means that a single computation serves for an infinite number of design conditions. Thirdly, guidelines resulting from the new approach are condensed to high-resolution design charts – nomograms. Appropriately designed, the Stirling engine promises high thermal efficiency, quiet operation and the ability to operate from a wide range of heat sources. Stirling Cycle Engines offers tools for expediting feasibility studies and for easing the task of designing for a novel application. Key features: Expectations are re-set to realistic goals. The formulation throughout highlights what the thermodynamic processes of different engines have in common rather than what distinguishes them. Design by scaling is extended, corroborated, reduced to the use of charts and fully Illustrated. Results of extensive computer modelling are condensed down to high-resolution Nomograms. Worked examples feature throughout. Prime movers (and coolers) operating on the Stirling cycle are of increasing interest to industry, the military (stealth submarines) and space agencies. Stirling Cycle Engines fills a gap in the technical literature and is a comprehensive manual for researchers and practitioners. In particular, it will support effort world-wide to exploit potential for such applications as small-scale CHP (combined heat and power), solar energy conversion and utilization of low-grade heat. This book is about the Stirling engine and its development from the heavy cast-iron machine of the nineteenth century into the efficient high-speed engine of today. It is not a handbook: it does not tell the reader how to build a Stirling engine. It is rather the history of a research effort spanning nearly fifty years, together with an outline of principles, some technical details and descriptions of the more important engines. No one will dispute the position of Philips as the pioneer of the modern Stirling engine. Hence the title of the book, hence also the contents, which are confined largely to the Philips work on the subject. Valuable work has been done elsewhere but this is discussed only marginally in order to keep the book within a reasonable size. The book is addressed to a wide audience on an academic level. The first two chapters can be read by the technically interested layman but after that some engineering background and elementary mathematics are generally necessary.Heat engines are traditionally the engineer's route to thermodynamics: in this context, the Stirling engine, which is the simplest of all heat engines, is more suited as a practical example than either the steam engine or the internal-combustion engine. The book is also addressed to historians of technology, from the viewpoint of the twentieth century revival of the Stirling engine as well as its nineteenth century origins. The objectives of the Automotive Stifling Engine (ASE) Development project were to transfer European Stirling engine technology to the United States and develop an ASE that would demonstrate a 30% improvement in combined metro-highway fuel economy over a comparable spark ignition (SI) engine in the same production vehicle. In addition, the ASE should demonstrate the potential for reduced emissions levels while maintaining the performance characteristics of SI engines. Mechanical Technology Incorporated (MTI) developed the ASE in an evolutionary manner, starting with the test and evaluation of an existing stationary Stirling engine and proceeding through two experimental engine designs: the Mod I and the Mod II. Engine technology development resulted in elimination of strategic materials, increased power density, higher temperature and efficiency operation, reduced system complexity, long-life seals, and low-cost manufacturing designs. Mod Ii engine dynamometer tests demonstrated that the engine system configuration had accomplished its performance goals for power (60 kW) and efficiency (38.5%) to within a few percent. Tests with the Mod II installed in a delivery van demonstrated a combined fuel economy improvement consistent with engine performance goals and the potential for low emissions levels. A modified version of the Mod II was identified as a manufacturable ASE design for commercial production. In conjunction with engine technology development, technology transfer proceeded through two ancillary efforts: the Industry Test and Evaluation Program (ITEP) and the NASA Technology Utilization (TU) project. The ITEP served to introduce Stirling technology to industry, and the TU project provided vehicle field demonstrations for thirdparty evaluation in everyday use and accomplished more than 3100 hr and 8,000 miles of field operation. To extend technology transfer beyond the ASE project, a Space Act Agreement between MTI and NASA-Lewis Research Center allowed utilization of project resources for additional development work and emissions testing as part of an industry-funded Stirling Natural Gas Engine program. The first phase of the design and development of Stirling engines for stationary power generation applications in the 373 kW (500 hp) to 2237 kW (3000 hp) range was completed. The tasks in Phase I include conceptual designs of large Stirling cycle stationary engines and program plan for implementing Phases II through V. Four different heater head designs and five different machine designs were prepared in sufficient detail to select a design recommended for development in the near future. A second order analysis was developed for examining the various loss mechanisms in the Stirling engine and for predicting the thermodynamic performance of these engines. The predicted engine thermal brake efficiency excluding combustion efficiency is approximately 42% which exceeds the design objective of 40%. The combustion system designs were prepared for both a clean fuel combustion system and a two-stage atmospheric fluidized bed combustion system. The calculated combustion efficiency of the former is 90% and of the latter is 80%. Heat transport systems, i.e., a heat exchanger for the clean fuel combustion system and a sodium heat pipe system for coal and other nonclean fuel combustion systems were selected. The cost analysis showed that for clean fuels combustion the proposed 2237 kW (3000 hp) system production cost is $478,242 or $214/kW ($159/hp) which is approximately 1.86 times the cost of a comparable size diesel engine. For solid coal combustion the proposed 2237 kW (3000 hp) system production cost is approximately $2,246,242 which corresponds to a cost to power capacity ratio of $1004/kW ($749/hp). The two-stage atmospheric fluidized bed combustion system represents 81% of the total cost; the engine represents 14% depending on the future price differential between coal and conventional clean fuels, a short payback period of the proposed Stirling cycle engine/FBC system may justify the initial cost. (LCL). My history with stirling engines. -- A brief history of stirling engines. -- The stirling engine explained. -- What makes a good striling engine? -- Working with aluminum. -- Working with acrylic. -- Thermoforming vinyl. -- Tools needed for these projects. -- Engine #1 - the reciprocating stirling engine. -- Engine #2 - horizontal flywheel magnetic drive stirling engine. -- Engine #3 - vertical flywheel magnetic drive stirling engine. -- Appendices. This project is Phase I of a multi-phased program for the design and development of Stirling engines for stationary power generation applications in the 500 to 3000 horsepower range. Phase I comprises the conceptual design and associated cost estimates of a stationary Stirling engine capable of being fueled by a variety of heat sources, with emphasis on coal firing, followed by the preparation of a plan for implementing the design, fabrication and testing of a demonstration engine by 1985. The main effort in Phase I is the generation of state-of-the-art conceptual designs having greatest potential for prototype testing in 1985. The conceptual designs include a heat transport system for integrating the engine heater head with such energy sources as conventional oil/gas combustors, fluidized bed and other coal combustors, and combustors using coal-derived liquid fuels, and low/medium BTU gases. The heat transport systems being investigated include forced convection with gases or liquids, heat pipes, and direct firing. Currently, the leading choice for the solid fuel combustion system is the atmospheric fluidized bed, with low BTU gasification still a viable alternative. Both systems will continue to be evaluated further, but with greater emphasis on FBC. To date, there appears no clear choice among the heat pipe, forced convection gas loop, or direct firing as the prime candidate for the heat transport sub-system. Conceptual design and analysis will continue on all three sub-systems. Scale-up of United Stirling's P-75 engine to serve as the conceptual design of the 500 HP engine module is continuing. (LCL). Popular Science gives our readers the information and tools to improve their technology and their world. The core belief that Popular Science and our readers share: The future is going to be better, and science and technology are the driving forces that will help make it better. The design of an advanced Stirling engine is considered for potential use in Air Force mobile electric power generator sets. The prospects for acceptable reliability appears good due to new approaches to recognized Stirling problem areas; sealing, heater head and control. The present design appears suitable for a 30kW set, but Air Force needs would be best suited by development of a 60kW unit. Standardization would be facilitated by using the 60kW Stirling engine and associated auxiliaries in a 30kW set. Final design drawings have been completed in the 30kW engine but construction and tests are required to establish that both design criteria for the engine and mobile power requirements are met. Originator-supplied keywords include: Heat pipe, and Combustor control. A program plan and schedule for the implementation of the proposed conceptual designs through the remaining four phases of the overall large Stirling engine development program was prepared. The objective of Phase II is to prepare more detailed designs of the conceptual designs prepared in Phase I. At the conclusion of Phase II, a state-of-the-art design will be selected from the candidate designs developed in Phase I for development. The objective of Phase III is to prepare manufacturing drawings of the candidate engine design. Also, detailed manufacturing drawings of both 373 kW (500 hp) and 746 kW (1000 hp) power pack skid systems will be completed. The power pack skid systems will include the generator, supporting skid, controls, and other supporting auxiliary subsystems. The Stirling cycle engine system (combustion system, Stirling engine, and heat transport system) will be mounted in the power pack skid system. The objective of Phase IV is to procure parts for prototype engines and two power pack skid systems and to assemble Engines No. 1 and 2. The objective of Phase V is to perform extensive laboratory and demonstration testing of the Stirling engines and power pack skid systems, to determine the system performance and cost and commercialization strategy. Scheduled over a 6 yr period the cost of phases II through V is estimated at $22,063,000. (LCL). This book provides invaluable and detailed information on building and optimizing Stirling engines. It's clear organization and the clarity of explanations and instructions have made the original

Italian language version of this book a huge success with Stirling Engine enthusiasts. All 260 pages are printed entirely in color and contain a large number of photos and illustrations. 18 of the authors' miniature engines are presented, each with a technical description, geometric characteristics and performance data, photos, and engine technical data sheets. "Excel" files for the necessary calculations can be obtained free of charge by sending an e-mail to the author. These were created by the author for each type of engines, namely Stirling Alpha, Beta, range engines, Ringbom (vertical and horizontal cylinder) and Manson. These make it easy to both design an engine and optimize it; these calculations include all engine volumes, both functional and "dead". The text is organized so it can be understood by readers with varying degrees of knowledge: to facilitate reading, we have grouped the mathematical notes that are not essential for initial understanding at the end of the relevant chapters. The basic thermodynamic concepts are explained in these notes. The text concerns two engines types: the Stirling (including the Ringbom model, which is the best known), and the Manson, sometimes called the Ruppel engine. There are similarities between the two theoretical cycles used in each; in one respect, however, they differ considerably: the cycle used in a Stirling engine produces mechanical energy by utilizing a gas that is hermetically sealed inside; in fact, the seal is not perfect: some inevitable minor losses occur. In contrast, the Manson is not a closed cycle. The engine that uses the Stirling cycle can be made in three configurations, generally called Alfa, Beta, Gamma, in addition to a fourth, the Ringbom type, in which the displacer is "free", i.e. not connected to the crank mechanism. An important consideration for the Beta and Gamma types is the optimization of output power by establishing the correct ratio between the volume of the displacer and the volume of the working cylinder, factoring different temperatures. Efficiency is calculated and examined. The book begins with the Gamma type, which is the easiest to understand, then the remaining Alfa, Beta and Ringbom types, the latter a "free-piston" engine, and concludes with the Manson type. Mechanical Technology Incorporated is developing a 1 KWe Free-Piston Stirling ENgine (FPSE) Power System. The plan for testing the demonstrator power system is presented. The test hardware is a Free-Piston Stirling Engine prime mover driving a linear alternator. The demonstrator system is basically a modular assembly. The modules are the reciprocating alternator section, engine section, heater head insulation package assembly, and the pressure vessel. The test objective is to demonstrate a system with greater than 30% overall efficiency at 1 KW, 45 hz operating conditions, and to identify and isolate engine losses to provide a basis for future engine improvements. Small and micro combined heat and power (CHP) systems are a form of cogeneration technology suitable for domestic and community buildings, commercial establishments and industrial facilities, as well as local heat networks. One of the benefits of using cogeneration plant is a vastly improved energy efficiency: in some cases achieving up to 80–90% systems efficiency, whereas small-scale electricity production is typically at well below 40% efficiency, using the same amount of fuel. This higher efficiency affords users greater energy security and increased long-term sustainability of energy resources, while lower overall emissions levels also contribute to an improved environmental performance. Small and micro combined heat and power (CHP) systems provides a systematic and comprehensive review of the technological and practical developments of small and micro CHP systems. Part one opens with reviews of small and micro CHP systems and their techno-economic and performance assessment, as well as their integration into distributed energy systems and their increasing utilisation of biomass fuels. Part two focuses on the development of different types of CHP technology, including internal combustion and reciprocating engines, gas turbines and microturbines, Stirling engines, organic Rankine cycle process and fuel cell systems. Heat-activated cooling (i.e. trigeneration) technologies and energy storage systems, of importance to the regional/seasonal viability of this technology round out this section. Finally, part three covers the range of applications of small and micro CHP systems, from residential buildings and district heating, to commercial buildings and industrial applications, as well as reviewing the market deployment of this important technology. With its distinguished editor and international team of expert contributors, Small and micro combined heat and power (CHP) systems is an essential reference work for anyone involved or interested in the design, development, installation and optimisation of small and micro CHP systems. Reviews small- and micro-CHP systems and their techno-economic and performance assessment Explores integration into distributed energy systems and their increasing utilisation of biomass fuels Focuses on the development of different types of CHP technology, including internal combustion and reciprocating engines Two centuries after the original invention, the Stirling engine is now a commercial reality as the core component of domestic CHP (combined heat and power)--a technology offering substantial savings in raw energy utilization relative to centralized power generation. Meeting the challenge involves addressing a range of issues: a long-standing mismatch between inherently favourable internal efficiency and wasteful external heating provision; a dearth of heat transfer and flow data appropriate to the task of first-principles design; the limited rpm capability when operating with air (and nitrogen) as working fluid. The account includes previously unpublished insights into the personality and potential of two related regenerative prime movers--the pressure-wave and thermal-lag engines. -- Presents eleven projects demonstrating how to build simple, fun, and educational Stirling engines from available kits. Model engineers have been making models of internal combustion engines since the invention of the real thing, but it has always been surrounded by a mystique, and a perceived difficulty that has put many people off. The Regenerator and the Stirling Engine examines the basic scientific and engineering principles of the Regenerator and the Stirling engine. Drawing upon his own research and collaboration with engine developers, Allan J Organ offers solutions to many of the problems which have prevented these engines operating at the levels of efficiency of which they are theoretically capable.

The Regenerator and the Stirling Engine offers practising engineers and designers specific guidelines for building in optimum thermodynamic performance at the design stage. COMPLETE CONTENTS: Bridging the gap The Stirling cycle Heat transfer – and the price Similarity and scaling; Energetic similarity In support of similarity Hausen revised Connectivity and thermal shorting Real particle trajectories – natural co-ordinates The Stirling regenerator The Ritz rotary regenerator Compressibility effects Regenerator flow impedance Complex admittance – experimental corroboration Steady-flow Cf–Nre correlations inferred from linear-wave analysis Optimization Part I: without the computer Optimization Part II: cyclic steady state Elements of combustion Design study Hobbyhorse Origins Appendices Two centuries after the original invention, the Stirling engine is now a commercial reality as the core component of domestic CHP (combined heat and power) – a technology offering substantial savings in raw energy utilization relative to centralized power generation. The threat of climate change requires a net reduction in hydrocarbon consumption and in emissions of 'greenhouse' gases whilst sustaining economic growth. Development of technologies such as CHP addresses both these needs. Meeting the challenge involves addressing a range of issues: a long-standing mismatch between inherently favourable internal efficiency and wasteful external heating provision; a dearth of heat transfer and flow data appropriate to the task of first-principles design; the limited rpm capability when operating with air (and nitrogen) as working fluid. All of these matters are explored in depth in The air engine: Stirling cycle power for a sustainable future. The account includes previously unpublished insights into the personality and potential of two related regenerative prime movers - the pressure-wave and thermal-lag engines. Contains previously unpublished insights into the pressure-wave and thermal-lag engines Deals with a technology offering scope for saving energy and reducing harmful emissions without compromising economic growth Identifies and discusses issues of design and their implementation For this year's Senior Project Design, we will be inheriting last year's Alpha Stirling Engine with the intention of improving upon the design to have a functional prototype. With that, this will incorporate several design changes and different testing methods. From those changes, this will provide us with a baseline as far as the validity of analysis for this design. With further analysis of last year's engine, we noticed that it was faulty due to wrong assumptions and modelling. Last year's design team modelled the engine as a single piston, single cylinder engine. With the two pre-existing piston cylinders on their past design, we believe it wasn’t appropriate for their design choice. This year we will pursue a different design provided by a text written by James R. Senft. This text will provide us with engineering drawings for a complete assembly on this type of air engine. Our main objective this year is to focus less on the dynamic analysis of Stirling Engines, but more on the potential applications it can be used in. This report will contain our iterative process of our final design and a brief analysis on the importance of scaling these engines in size. Here is everything you need to know to build your own low temperature differential (LTD) Stirling engines without a machine shop. These efficient hot air engines will run while sitting on a cup of hot water, and can be fine-tuned to run from the heat of a warm hand. Four engine projects are included. Each project includes a parts list, detailed drawings, and illustrated step-by-step assembly instructions. The parts and materials needed for these projects are easily obtained from local hardware stores and model shops, or ordered online. Jim Larsen's innovative approach to Stirling engine design helps you achieve success while keeping costs low. All of the engines described in this book are based on a conventional pancake style LTD Stirling engine format. These projects introduce the use of Teflon tubing as an alternative to expensive ball bearings. An entire chapter is devoted to the research and testing of various materials for hand crafted bearings. The plans in this book are detailed and complete. This collection of engine designs is a stand-alone companion to Jim Larsen's first book, "Three LTD Stirling Engines You Can Build Without a Machine Shop." The Ringbom engine, an elegant simplification of the Stirling, is increasingly emerging as a viable, multipurpose engine. Despite its technical elegance, high-speed stable operation capabilities, and potential as an environment-friendly energy source, the advantages manifest in Ringbom design have been slowly realized, due in large to part to its often enigmatic operating regime. This book presents for the first time a clear, tractable mathematical model of the dynamic properties of the Ringbom, resulting in a theorem that offers a complete characterization of the stable operating mode of the engine. The author here details the research leading to the development of the Ringbom and illustrates theoretical results, engine characteristics, and design principles using data from actual Ringbom engines. Throughout the book, the author emphasizes an understanding of Ringbom engine properties through closed form mathematical analysis and lucidly details how his mathematical derivations apply to real engines. Extensive descriptions of the engine hardware are included to aid those interested in their construction. Mechanical, electrical, and chemical engineers concerned with power systems, power generation, energy conservation, solar energy, and low-temperature physics will find this monograph a comprehensive and technically rich introduction to Stirling Ringbom engine technology. Hot air engines, often called Stirling engines, are among the most interesting and intriguing engines ever to be designed. They run on just about any fuel, from salad oil and hydrogen to solar and geothermal energy. They produce a rotary motion that can be used to power anything, from boats and buggies to fridges and fans. This book demonstrates how to design, build, and optimise Stirling engines. A broad selection of Roy’s engines is described, giving a valuable insight into the many different types and a great deal of information relating to the home manufacture of these engines is included in the workshop section. For Stirling engines to enjoy widespread application and acceptance, not only must the fundamental operation of such engines be widely understood, but the requisite analytic tools for the stimulation, design, evaluation and optimization of Stirling engine hardware must be readily available. The purpose of this design manual is to provide an introduction to Stirling cycle heat engines, to organize and identify the available Stirling engine literature, and to identify, organize, evaluate and, in so far as possible, compare non-proprietary Stirling engine design methodologies. This report was originally prepared for the National Aeronautics and Space Administration and the U. S. Department of Energy. DEFINITION AND NOMENCLATURE A Stirling engine is a mechanical device which operates on a closed regenerative thermodynamic cycle with cyclic compression and expansion of the working fluid at different temperature levels. The flow of working fluid is controlled only by the internal volume changes, there are no valves and, overall, there is a net conversion of heat to work or vice-versa. This generalized definition embraces a large family of machines with different functions; characteristics and configurations. It includes both rotary and reciprocating systems utilizing mechanisms of varying complexity. It covers machines capable of operating as a prime mover or power system converting heat supplied at high tempera ture to output work and waste heat at a lower temperature. It also covers work-consuming machines used as refrigerating systems and heat pumps abstracting heat from a low temperature source and delivering this plus the heat equivalent of the work consumed to a higher tem perature. Finally it covers work-consuming devices used as pressure generators compressing a fluid from a low pressure to a higher pres sure. Very similar machines exist which operate on an open regen erative cycle where the flow of working fluid is controlled by valves. For convenience these may be called Ericsson engines but unfortunate ly the distinction is not widely established and regenerative machines of both types are frequently called 'Stirling engines'. This project was Phase I of a multiphased program for the design and development of Stirling engines for stationary power generation applications in the 500 to 3000 horsepower range. Phase I comprised the conceptual design and associated cost estimates of a stationary Stirling engine capable of being fueled by a variety of heat sources, with emphasis on coal firing, followed by the preparation of a plan for implementing the design, fabrication and testing of a demonstration engine by 1985. The development and evaluation of conceptual designs have been separated into two broad categories: the A designs which represent the present state-of-the-art and which are demonstrable by 1985 with minimum technical risk; and the B designs which involve advanced technology and therefore would require significant research and development prior to demonstration and commercialization, but which may ultimately offer advantages in terms of lower cost, better performance, or higher reliability. The majority of the effort in Phase I was devoted to the A designs.

- Three LTD Stirling Engines You Can Build Without A Machine Shop
- Eleven Stirling Engine Projects You Can Build
- Model Stirling Engines
- An Introduction To Low Temperature Differential Stirling Engines
- Stirling Engine Projects
- Steam And Sterling
- Stirling And Hot Air Engines
- The Stirling Engine Manual
- Free Piston Stirling Engines
- Stirling Engine Project
- Ringbom Stirling Engines
- Stirling Cycle Engine Analysis
- Robert Stirlings Models Of The Air Engine
- Free Piston Stirling Engine Demonstrator Test Plan
- Free piston Stirling Engine Demonstrator Test Plan
- Assessment Of The State Of Technology Of Automotive Stirling Engines
- Base Technology Stirling Engine Military Applications Assessment
- Design And Development Of Stirling Engines For Stationary power generation Applications In The 500 To 3000 hp Range Phase I Final Report
- Stirling Cycle Engines
- The Philips Stirling Engine
- The Air Engine
- Automotive Stirling Engine Development Project
- Liquid Piston Stirling Engines
- Popular Science
- The Air Engine
- Design And Development Of Stirling Engines For Stationary Power Generation Applications In The 500 To 3000 Horsepower Range Volume 1 Technical Report
- Stirling Steele Engine
- The Star Drive
- United States LPPSD Technical Information Exchange Document
- Understanding Stirling Engines
- Miniature Internal Combustion Engines
- Stirling Engines
- STIRLING ENGINES Ringbom MANSON Engine 18 Engines You Can Build
- Small And Micro Combined Heat And Power CHP Systems
- Design And Development Of Stirling Engines For Stationary Power Generation Applications In The 500 To 3000 Horsepower Range First Quarterly Report