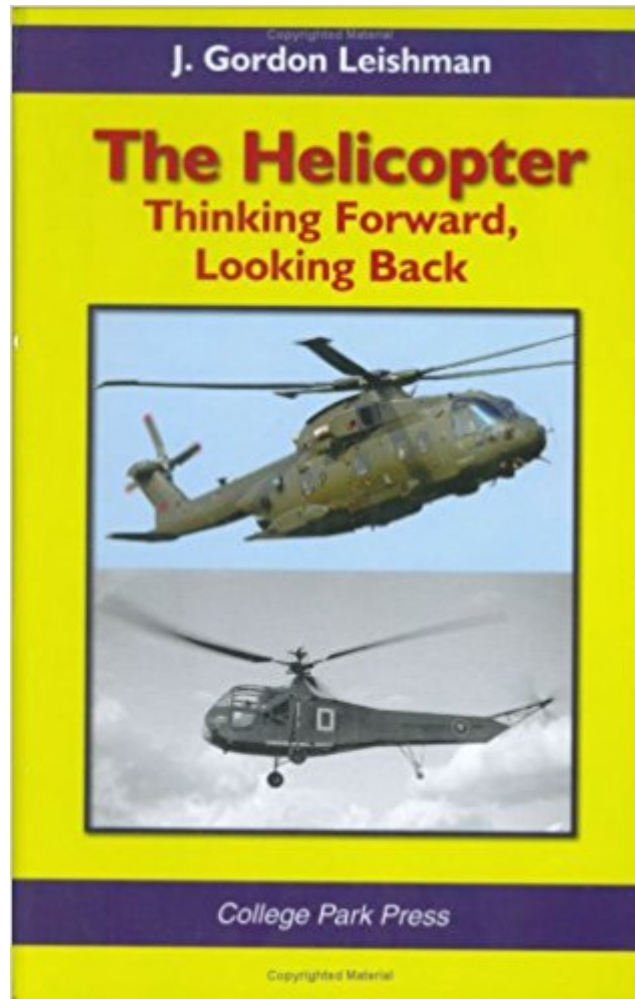


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# The Helicopter: Thinking Forward, Looking Back



## Synopsis

Why, after decades of research, analysis, and experimentation, is helicopter performance still where it is? With this question, Dr. J. Gordon Leishman opens an invigorating discussion of technical problems influencing the performance of the helicopter, and provides a unique perspective into future challenges and new opportunities in realizing its full performance. The problems of the helicopter are assessed in terms of the interdependent aeromechanical factors that affect and limit its flight capabilities. While written primarily for researchers, engineers, managers, and policymakers in the rotorcraft field, the book assumes only a basic background in helicopter engineering and avoids detailed mathematical development, making it suitable for all helicopter enthusiasts.

## Book Information

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## Customer Reviews

This book was a pleasure to read. It presents an overview of recent rotor aerodynamic, acoustic and aeromechanical research and development and its application to the design of the overall vehicle, in simple and graphic terms that can be readily comprehended by people with little detailed knowledge of the helicopter. Accuracy has not suffered from the simplification process - the book's author, Prof Gordon Leishman, is one of the foremost researchers and experts in the rotorcraft field. He has used this expertise to explain the technology so that its logic is readily apparent. He also provides a very useful list of easily obtained references for deeper reading. But the book is much more than a guide to the technicalities of rotorcraft engineering, since it places the engineering and research topics into the context of the overall aircraft design and deals with how they affect the fundamentals

of the vehicle's performance. The book contains a considerable amount of overall generalised performance data that gets to the core of what the helicopter is and what it offers to its customers and perhaps more important, what limits its performance and how its capabilities can be transformed by application of advances in technology. The book does not shirk from looking at the problem of how technology comes into being and is incorporated into the vehicle, either. The author reviews the success of recent trends in applying the technology to improving the vehicle and draws some uncomfortable conclusions. He then proposes strategies for improving results. As an engineer familiar with the field, I found this book very enjoyable and read it in one session. I discovered a few aspects of the subject that were new to me, but most important to me were the thought provoking questions on the development of the vehicle and the industry that the book raised.

This is a good book in learning about the many technical challenges that face the helicopter as an engineering system. A good amount of discussion shows the many tradeoffs and competing requirements which pose significant challenges in revolutionizing the helicopter. Attention is also given to our limited ability to understand the complex aperiodic nature of the flow, along with the complex interaction effects between the main rotor, tail rotor, and fuselage. Next, the book discusses flow control methods along with computational fluid dynamics (CFD) taking on a more active role in helicopter design and analysis. The book ends with the over-arching emphasis of setting realistic government goals that radically shifts the conventional way of thinking on how helicopters are made. If the helicopter is to have drastic performance changes, the government, academia, and industry have to team together for the benefit of all.

This book provides a good overview of the evolution of rotorcraft, including potential developments. Would recommend to buy or read this book.

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