Vol. 5 – Dynamics and Control

Volume 5 of the *Encyclopaedia of Aerospace Engineering* covers dynamics and control but its contents are much wider than the traditional topics. The first half covers in considerable detail the dynamics and control of all types of (conventional and unconventional) aircraft, helicopters, UAVs and guided weapons. Of the rest about a sixth of the volume is devoted to radar and electro-optics, identification and tracking and a third of the volume is devoted to space dynamics and control including navigation, the grand tour and docking. At first these seem odd bedfellows but this volume is very inclusive and the topics do relate through the control theme.

The volume has contributions from over 70 international experts, yet the style in each chapter is identical and the changes in authorship do not show. Each chapter is comprehensive and provides good referencing for further reading although I am sure there must be some sub-topics that are missing.

Here we come to the first problem – there is no index. The index is in Volume 9. It is at this point when I wonder how to treat the volume. It cannot be brought separately to the rest of the series and the price of about £2,000 for the set is a lot to pay when you need just one volume. But it would be a mistake to want to separate the volumes since relevant control material is also in Volume 8, particularly that relating to systems engineering, avionics system integration and safety. Space applications would also need Volume 2 which covers propulsion and power. Conversely Volume 5 should have a wider readership than those involved in flight mechanics since some material is of use to other departments, such as range calculation, take off clearances and flight test techniques. Thus the volumes need to be kept together as there are no neat departmental boundaries between them.

The volume is neither a primer nor high level text book but a very readable and comprehensive reference manual and this reviewer wishes it had been around decades ago as it would have saved him a lot of time. It should be referenced by anyone given an assignment outside their comfort zone as it will save effort and justify the purchase price.

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Introduction to Theoretical Aerodynamics and Hydrodynamics

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This book is aimed at being a textbook for students learning theoretical fluid mechanics for the first time and as such it is concise but contains enough material to fill out an introductory undergraduate course in fluid mechanics. The author is an eminent aerodynamicist and many of the important ideas and concepts throughout the book are very clearly expressed and one can sense the tremendous insight that a leading practitioner in the subject is able to bring out in some of the explanations.

The book focuses on inviscid flow theory for incompressible fluids. There are five chapters with eleven appendices. As the author notes in the preface, none of the material is original and can be found in classic texts such as Lamb's *Hydrodynamics*.

https://doi.org/10.1017/S0001924000006898 Published online by Cambridge University Press