

Preface

Environmental problems such as air pollution and global warming have started to be one of the main factors in the design and development of new vehicles. Using fossil fuels and inefficient power producing technologies have increased these problems. These fossil fuels will also be depleted in the near future. Therefore, there is a need to develop more efficient, environmentally friendly, and economical alternative technologies to be implemented in vehicles to create a sustainable future and meet the consumer demands for tomorrow. Among the different types of vehicles, aerial vehicles have a significant contribution in today's global problems. Not only aircrafts but also airports have serious effects on the pollution and other environmental impacts in aviation industry. The emissions released to the atmosphere from these vehicles and airports not only cause environmental problems but also threaten the human health as a result of the consequences of these problems. On the other hand, aviation is one of the biggest industries that consume a significant amount of energy. Improving the energy conversion efficiency using alternative technologies and renewable energy resources plays a key role for sustainability. The cost of the materials of the components used in the aerial vehicles and the fuel cost must also be decreased to increase the usage of these vehicles instead of other ways of transportation. Hence, aviation should be handled in detail with respect to new technologies and resources considering energy, environmental, economic, and sustainability effects.

This edited book entitled “Sustainable Aviation – Energy and Environmental Issues” focuses on alternative and sustainable energy solutions, modelling, planning and optimization in aviation, and aerodynamic features. This book contains 31 uniquely selected papers out of the conference papers presented in the International Symposium on Sustainable Aviation (ISSA-2015), which was held in Istanbul, Turkey on 31 May–3 June 2015. ISSA-2015 was an international, multi-disciplinary symposium, aimed to address current issues in the field of aviation such as improving aircraft fuel efficiency, fostering use of biofuels, minimizing environmental impact, mitigating GHG emissions and reducing of engine and airframe noise.

This book provides different engineering solutions and methodologies for sustainable aviation. Policies of the environmental considerations in the aviation industry and ways for the solutions found to decrease environmental impacts are discussed. This book also focuses on modeling applications, biofuels for aerial vehicles, avionics and control systems, eco-design approaches, and several design, management, and planning aspects in the aviation industry. All of them are required tools to provide better energy efficiency and, of course, to decrease the negative impacts of environmental problems. Applications of alternative technologies such as fuel cells and renewable energy resources in aviation industry can also be found in this book.

We hope that this edited book will provide a unique source of sustainable aviation with a prime focus on energy and environmental issues. We sincerely appreciate the contribution of the authors and the assistance provided by the conference organizing committee members in the preparation of this book.

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