

The Jet Engine



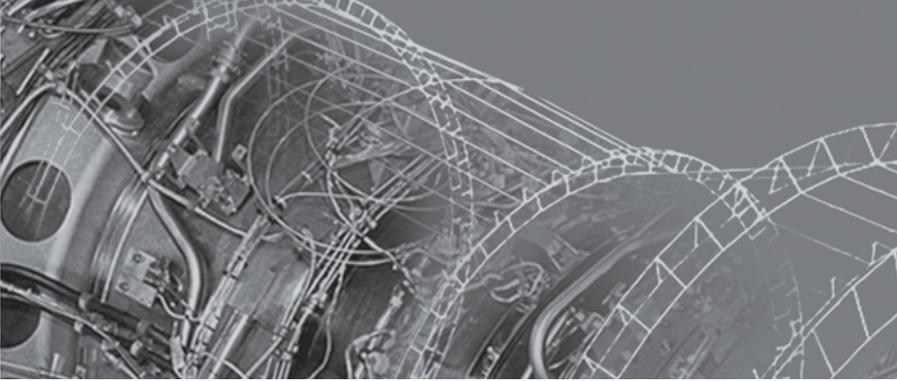
Rolls-Royce had been making piston engines for 40 years before its first jet engine, the Welland, powered Britain's first jet aircraft, the Gloster Meteor, in 1944. In the post-war world, the jet engine was soon embraced as the key to the future for both civil and military aircraft. Meeting the demand for steadily larger and more sophisticated jet engines quickly transformed the business of Rolls-Royce. And half a century later, of course, we can look back on a thousand ways in which jet-engine technology has transformed the world at large.

The evolution of today's hugely powerful engines has been an extraordinary story of continuous incremental improvements, with the occasional leap forward to bigger and better things. So, too, with this book. It first appeared in 1955, and has since then been carefully updated and revised through a further four editions, the last in 1996. This latest edition, though, marks a considerable advance. The layout has been extensively re-designed and the text comprehensively rewritten, to take full account of the enormous progress made on jet engines over the past 20 years.

The result builds on all the strengths that have made *The Jet Engine* a classic of its kind. Remarkable drawings illustrate the complexity of the jet engine in ways that will still appeal to the lay reader. The explanations of the underlying technology have meanwhile lost none of the rigour to be expected from what has been a recommended university text for a whole generation of engineering students. For both audiences, this book remains an inspiring introduction to a challenging subject.

It also takes account of critical trends in engine design over recent years, none more important than those aimed at reducing noise levels and carbon dioxide emissions. Both issues pose problems that will go on demanding innovative engineering solutions for the foreseeable future. This new edition of *The Jet Engine* is a timely reminder of the astonishing skill with which these and so many other problems have already been addressed in the past.

Sir John Rose Chief Executive, Rolls-Royce plc



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section one

design

THIS SECTION ON **ENGINE DESIGN** LOOKS AT HOW THE JET ENGINE CAME TO BE WHAT IT IS TODAY, AND WHY – AND WHAT ENGINEERS NEED TO CONSIDER WHEN TRANSLATING AN IDEA INTO A PROVEN, WORKING ENGINE.

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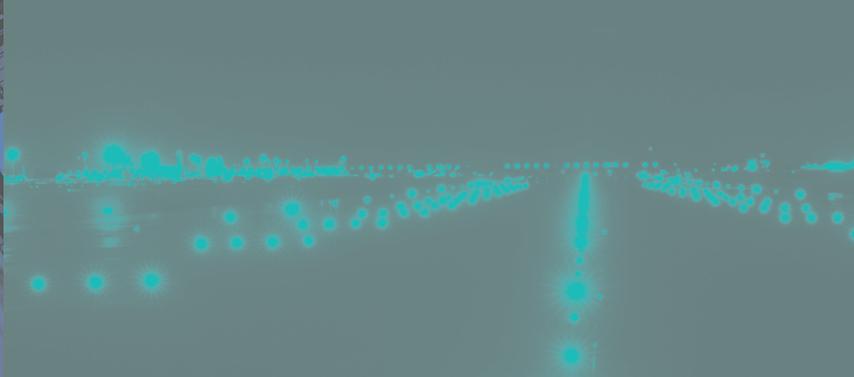
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