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Preface

The 10th Asian Battery Conference (10ABC), which was held in Bangkok, Thailand, in September 2003, was attended by over 320 delegates from almost 40 countries. This was despite the tough economic climate in which the industry operates. It is evident that the Asian Battery Conferences remain a valuable forum, where the continued improvements that have and are still being made in lead–acid battery technology can be showcased and shared to the betterment of industry participants. The 10ABC carried on a strong tradition of excellence through the active exchange of scientific, technical and commercial information through a wide range of presentations by industry experts and the technical panel discussion, as well as through informal personal contacts and discussions.

The successful conclusion of the 10ABC provides an opportunity to review briefly developments since the first Asian Battery Conference in Hong Kong in August 1986, and also to look to the future. A view in both directions reflects a product of which we can be justifiably proud, and in whose future we can be confident. The lead–acid battery has been a source of power for starting, lighting and ignition in automobiles for over a century and its basic technology has remained essentially the same.

Most historians date the invention of batteries back to about the year 1800 when experiments by Alessandro Volta resulted in the generation of electrical currents through chemical reactions between dissimilar metals. In 1859, Raymond Gaston Planté invented the lead–acid battery by using two lead plates separated by a rubber sheet and immersed in dilute sulfuric acid. Around 1881, Fauré and others developed batteries using a paste of lead oxides for the positive-plate active materials that, thereby, allowed greater efficiency. The rudiments of flooded lead−acid battery technology date back to those times, but there has been a continuing stream of improvements in the materials used in construction, in the manufacturing and formation processes, and in the more recent valve-regulated technology. Without these continued advances, arguably, the lead−acid battery would have long been consigned to the history books.

Changes in the design of battery grids, materials, and other innovations have improved the weight, size, and efficiency of battery operation, but the lead−acid battery basically remains a relatively old product whose success relies on its ability to deliver a better combination of cost, performance, reliability and recycleability than competing technologies.

Broadly, the demand for lead−acid batteries is driven by two factors: first, the demand for batteries in newly manufactured automobiles and, second, the demand for replacement batteries at the end of their productive life. In the 18 years since the first Asian Battery Conference in Hong Kong, the growth in demand for our products has been strong in both the developed and developing economies. In the USA, for example, the consumption of automotive batteries has increased from 74 million to over 121 million units per annum. In China, automobile production is estimated to exceed 1 million vehicles for the first time in 2003 with the rate of Chinese sales for cars now growing in excess of 30% per annum. Production of commercial vehicles is at twice the rate of automobiles and by 2004, China's total vehicle fleet will be over 26 million units. This, and similar comparisons for other developing economies, augers well for the future demand for original equipment and replacement automotive batteries.

In addition to this sturdy growth in the markets for batteries used in conventional 12-V systems for vehicles, there is the exciting prospect of a further increase as a result of the requirement greater power to supply ancillary functions in luxury cars through 36-V systems, together with a desire to increase the fuel efficiencies of conventional internal-combustion engines through hybrid technologies.

The future of the lead−acid battery in its traditional role of starting, lighting and ignition appears sound, but to meet the challenge from rival products, continued development and improvement is necessary.

It is evident that there are major challenges confronting the lead–acid battery but, more importantly, there are also still significant opportunities for growth! When the 20th Asian Battery Conference is held in 2023, changes would have occurred that today are totally unheralded.

I would like to thank the delegates, the exhibitors, the session chairpersons, and the speakers—all of whom so generously gave their time—the CSIRO, those behind the scenes, and my colleagues at Pasminco whose enthusiasm, encouragement and hard work ensured the success of the 10ABC.

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