
Foreword

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Biographical notes: Xubin Song received his PhD from Virginia Tech in 1999 and MSME from North Carolina A&T State University in 1996 in USA, with BS from Nanjing University of Aeronautics and Astronautics in 1986 and MS from China Academy of Launch Vehicle in 1988 in China. With the background of aerospace industry in China and vehicle industry in USA, his research interest focuses on nonlinear and non-smooth dynamics and control and energy efficient powertrain systems for ground vehicles, holding six US and one European patents and publishing more than 50 papers. He is holding membership of several ASME and SAE technical committees and serving as an Associate Editor of the *ASME Journal of Dynamic Systems, Measurement and Control*.

This project was officially launched in early 2010 by Inderscience. It has been a great honour to work with other volunteering Editorial Board members to make it happen. This team comprises renowned world-class experts in various fields of powertrain engineering, from different continents. Their enthusiasm and vision lead to the advent of *International Journal of Powertrains (IJPT)*, and their continuous persistent effort aims towards growing this baby journal as a premier forum for presentation and discussion of current technologies and future trends contributed to advancing powertrains, ranging from component design, system integration and controls, intelligent transportation systems, to environmental impacts. The Journal welcomes original papers, technology reviews, technical reports, case studies, conference reports, management reports, book reviews, notes, and commentaries. Special issues devoted to important topics and developments in powertrain engineering research arena will be published on a regular basis. We have great zeal and confidence that the emergence of the *International Journal of Powertrains* can promote communications across and among various disciplines in the development of the next generation of powertrain technology that is essentially vital for a cleaner future world.

Necessity is the mother of invention, as the old saying goes. Historically, transportation is one of the critical pillars of the human civilisation. In today's modern world the ground vehicle transportation becomes indispensable for commuting and travelling in our daily life. Current vehicular propulsion systems rely heavily on fossil fuels. Even though the energy efficiency on vehicle applications has been dramatically improved during the past century, the questions are very timely: what if fossil fuels are not the choice or the necessity in the future? How to address the energy issues globally? There are no other options than aspirations and innovations. As fumbled with stalls and

sputtering starts for decades, vehicular electrification such as hybrid technology, for example, is gaining ground in the world. There is no doubt that the electrification and addition of intelligence could make modern and future powertrains a key in the success to solve the maze of climate and mobility problems for the human society. From evolution to revolution, the research scope is being expanded so as we need to build and offer a new public forum to researchers and engineers to exchange knowledge and experience in order to facilitate innovations and technology applications.

Regulations on fuel economy and emissions become stricter (California ARB (2005), and EPA (2010)), affecting significantly the design and development of modern vehicles. However, with implementation of Euro VI, Japan09 and EPA10, it is possible that there will be no further room for lowering emissions – by the application of new standards – at least in the near foreseeable future. Thus, as anticipated, the governments are calling for higher fuel economy standards on both passenger cars and commercial trucks. This trend will copiously and favourably push forward the technology progress and deployment far beyond the propulsion system itself, since the energy utilisation efficiency on vehicles depends on both the *vehicle system efficiency* and *vehicle operation efficiency*. The former is dependent on electro-mechanical system efficiency, such as aerodynamics, rolling resistance, driveline systems and even the vehicle weight, while the latter involves other operating aspects, such as route management, driver behaviour and vehicular maintenance. It can be envisioned that powertrain technology will play even more important role on how transportation will look like in the future than what it looks like today. Simply to say, clean technology and high efficient propulsion systems are the right pursuit to benefit the world. IJPT comes at the right time to become an organic fabric of this effort, complementally archiving the ongoing researches, accomplished needs, foreseeable forecasts, and various long- and short-term goals.

Not a long while ago, exploring green technology for vehicle applications was *de rigueur*. Now the world is systematically exploring the potential benefits from alternative energy resources for electric propulsion system based vehicles. Both purely electric and plug-in vehicles seem ready to merge into the mainstream. Toyota Prius exceeds two million units up to date since the first debut in 1997. In 2011, Chevy Volts and Nissan Leafs were introduced to market. Another example is that Ford Motor is reported to try Google's Prediction API to shut off the engines to limit pollutions for hybrid vehicles according to the past driving habits. This in turn asserts the congruent effort among industry, academia and government research agencies. The latter fact extrapolates the trend to develop innovative ideas and utilise the latest technology in order to create energy efficient solutions to promote vehicular energy utilisation. Big firms are proactively conjoining this effort as those small high techs are sprouting like bamboo shoots after a spring rain with the pour-in investment. As more ground-breaking collaborative research findings in the powertrain area are launched and explored, this establishes a need for a journal that addresses complex powertrain engineering issues in a synergistic way with emphasis on the potential of innovations in multiple disciplines to pave the road towards novel powertrain architectures and technologies. Therefore, IJPT will emphasise on the potential of advanced emerging powertrain systems to achieve significant improvements in fuel economy, emissions, reliability, durability, drivability, robustness and cost efficiency. Furthermore, this journal will also recognise the rapidly growing complexity of powertrain systems, and the seamless integration between their various hardware and software components.

The dreaming goal for IJPT is that its birth can enable a variety of creative ideas to be turned into seminal benefits with a facilitated publishing procedure. IJPT is trying to provide the means to help professionals, academics, researchers and policy makers, who could get off the ground in the field of vehicle and powertrain engineering, analysis, research and development, to disseminate information and exchange views on recent advances regarding this specialty. However, in essence, it is still an early foundry deal, though the subject coverage is well defined (but not limited to those already listed). The first four issues are invited ones to reflect some cutting edge results achieved on diversified topics. In the future, IJPT will continue to invite top notch experts to make contributions to both regular and special issues. The Editorial Team enthusiastically looks forward to your contributions. Once again, I would like to thank Inderscience for providing this unique opportunity to create a platform dedicated to the powertrain technology development, since this field is experiencing revolution rather than just evolution compared to decades ago. Please join us to share your results and ideas among the powertrain community to benefit the world.

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