Industrial Electronics—Keeping Abreast of the Times

I am delighted to write this first message as the incoming president of the IEEE Industrial Electronics Society (IES) for 2018 and 2019. The last year has been a challenging one that required some tough decisions and actions. I am pleased that, under the strong leadership of past president Kamal Al-Haddad, we have had many successes, including further strengthening the impact of our flagship journals and our magazine with improved quality, our record-breaking attendance at conferences, our ever-growing active membership, and our expanding technical and professional activities. These successes have created a solid foundation for a bright future. I am privileged and humbled to take up the IES presidency at this time, and I will do my best to work with you to move the IES forward.

I have been thinking about what industrial electronics means to the technical community, the broader community, and the current industry at large. The IES has been around since 1951, and our field of interest encompasses the “theory and applications of electronics, controls, communications, instrumentation and computational intelligence to industrial and manufacturing systems and processes.” The applied and practical nature of industrial electronics—defined in the Cambridge Dictionary as an industry that manufactures electronic equipment for industrial purposes—explains who we are and what we do.

Industry engagement and impact are certainly something central to the IES, along with our expectations of community and industry for relevance and impact. This should not be interpreted, however, as though we are applied and practical only because technological breakthroughs require scientific advances and vice versa. After all, a harmonious balance between fundamental and applied research is the key to future development. As many of us have experienced in our own way, these components are, in many cases, intertwined.

I saw my early work in the detection of leakage currents in wooden poles for power distribution result in a change of asset-management practices in a local electric utility to reduce the risk of pole fires, which was an impactful outcome beyond academia that brought much personal satisfaction on top of publications and citations that we, as academics, appreciate. My other work on detecting money-laundering networks using a complex network technique provided law-enforcement agencies with an effective tool to combat crimes of this nature. I am glad that my research has been used to solve practical, significant problems. I am equally excited about the new perspectives and challenges that applied research has brought to my fundamental research, which will bring more discoveries, a sentiment that I am sure you have all experienced. Applied research and fundamental research have been shown to be complementary, and we can do both interchangeably to reap benefits.

The world never stops changing, and it is always changing for the better. The IES has kept and will continue to keep abreast of the times. We are growing in size, with just over 7,000 members worldwide, and in influence, with a record 2,068 paper submissions at the 43rd Annual Conference of the IEEE IES (IECON 2017) in Beijing, China. As the technological world is moving toward more system-wide levels of thinking and doing, so should industrial electronics. We need to embrace the technological changes to reshape industrial electronics in this increasingly networked large-scale, complex world. We should continue to bridge the gap between industry and academia; it is only when academia and industry work together that a greater impact is delivered.

I recently read articles about key characteristics of successful nonprofit organizations, which included the quality of people, sound finances, an effective management team, a clear and concise mission statement, strong member relations and marketing, supportive volunteers, and agility. The fact that the IES has been successful is a testimony to our strengths in these areas, and we will continue to strive for improvement to better the IES.

As an organization growing in size, we need to look at how to organize, from a managerial perspective, to meet the expectations of our stakeholders, i.e., our members, the technical
community, and the industry around us. Our operation and management need to be scalable and subject to scrutiny. Our young professional engineers are our future and should be considered a priority.

We must encourage underrepresented stakeholders to participate, including women in engineering. The very successful organization of the inaugural IES Women in Engineering Forum during IECON 2017, with more than 40 participants, including more than 30 women engineers, is a very good start. We need to do more to develop tailored incentives and promotional strategies to push this initiative further. Our trademark of being the most international Society in the IEEE should be celebrated, and we will continue our campaign and exert our influence in underrepresented countries and continents. In 2017, we saw a sharp increase in Chinese participation. At IECON 2017, 52% of the paper submissions were from China, which is expected to translate into membership growth. We will continue to look for new opportunities to expand in 2018 and beyond.

Our flagship publications—IEEE Transactions on Industrial Electronics, IEEE Transactions on Industrial Informatics, and IEEE Industrial Electronics Magazine—have continued to grow, thanks to the outstanding leadership and services of our editors-in-chief and their teams. We have reached a stage where the growth trends and future needs in our existing publications will be difficult to accommodate. We will consider new publication initiatives in anticipation of our membership growth and widening scope by working with our sister Societies in the IEEE and other organizations outside the IEEE.

All of this will be on my mind, and I am sure on your mind as well, for the next few years, but I am certain that with your support, we will succeed. I will share my thoughts and the progress on our initiatives for all aspects of the operations and activities for the future of the IES in my future “Message from the President” articles. I also welcome you to e-mail me any new ideas and suggestions.

I wish you and your families the best in 2018, which coincides with the Year of the Dog in the Chinese lunar calendar, symbolizing a good year full of action. I hope that the IES will continue to prosper and will bring you the satisfaction and benefits you expect and deserve.

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