

Presenting Changes to IEEE Industrial Electronics Magazine [Editor's Column]

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Presenting Changes to *IEEE Industrial Electronics Magazine*

Dear readers, a new year is a fresh chance to make things better. While we all hope the IEEE Industrial Electronics Society's operations will soon feature live and face-to-face activities again, we have also learned that virtual events have quite some potential—not as replacements but surely as valuable alternatives that offer different degrees of freedom and outreach.

Besides this development, we have introduced a new feature to *IEEE Industrial Electronics Magazine*: the early access of accepted articles on *IEEE Xplore*. Because the magazine has been confronted with a growing number of submissions and since many of the manuscripts have been of the expected scope, quality, and maturity for our readers, we found ourselves in a constant fight against backlogs. One advantage that makes things a bit easier for our authors is the early availability of accepted submissions on *IEEE Xplore*, which we have now implemented. In the future, articles accepted for publication will appear there, even before they are assigned to a particular magazine issue. In a related change, we have decided to increase of average number of articles per issue. Beginning this month, we aim to include six features so that we can host all of these great submissions.

The first article, by Ramezani and Tafazoli, covers a topic to which we

will dedicate an entire issue later this year: mining. In “Using Artificial Intelligence in Mining Excavators,” the authors describe the use of sensors, actuators, and controllers in excavation. With image and object recognition, it is possible to determine bucket loads and optimize operations. This application delivers an almost classical example of the fact that machines require extensive training and sophisticated algorithms to perform tasks that are very easy for humans.

Bai, Liu, Breaz, Al-Haddad, and Gao provide the article “A Review on the Device-Level Real-Time Simulation of Power Electronic Converters,” which gives a great overview of high-precision simulation options for power electronic converters. Depending on the questions asked and the computational performance expected, there are options that come with their own pros and cons. In the end, a nice comparison shows various combinations of model and solver options applied to a variety of converters.

You can brush up your electromagnetics skills with Liu, Zhang, Shao, Song, and Ma and their article “High-Performance Megahertz Wireless Power Transfer.” The article focuses on wireless charging that can overcome, or at least ease, the limitations of current

batteries in mobile applications. It considers topics from principles to the design of such a system.

Next, Zhu, Liserre, Langwasser, and Kumar contribute “Operation and Control of the Smart Transformer in Meshed and Hybrid Grids,” where the role of the smart transformer in complex and hybrid grids is described. The transformers' superior control capabilities are described in meshed and faulty networks.

Taghizadeh-Marvast, Abouei, and Ghafoorzadeh-Yazdi present “A Design of a 15-GHz, Voltage-Controlled Ring Oscillator in 130-nm CMOS Technology,” an article about designing high-precision voltage-controlled oscillators. And Grimaldi, Mahmood, Hassan, Gidlund, and Hancke Jr. cover “Au-

tonomous Interference Mapping for Industrial Internet of Things Networks Over Unlicensed Bands.” The authors address the sometimes-poor spectrum utilization in Internet of Things (IoT) networks due to the lack of standards that can coexist without interference. They focus on the Industrial IoT, where real-time capabilities suffer from the problem.

Again, *IEEE Industrial Electronics Magazine* mirrors the diversity of industrial electronics and the field's wide area of application. There is much more to come later this year.

