



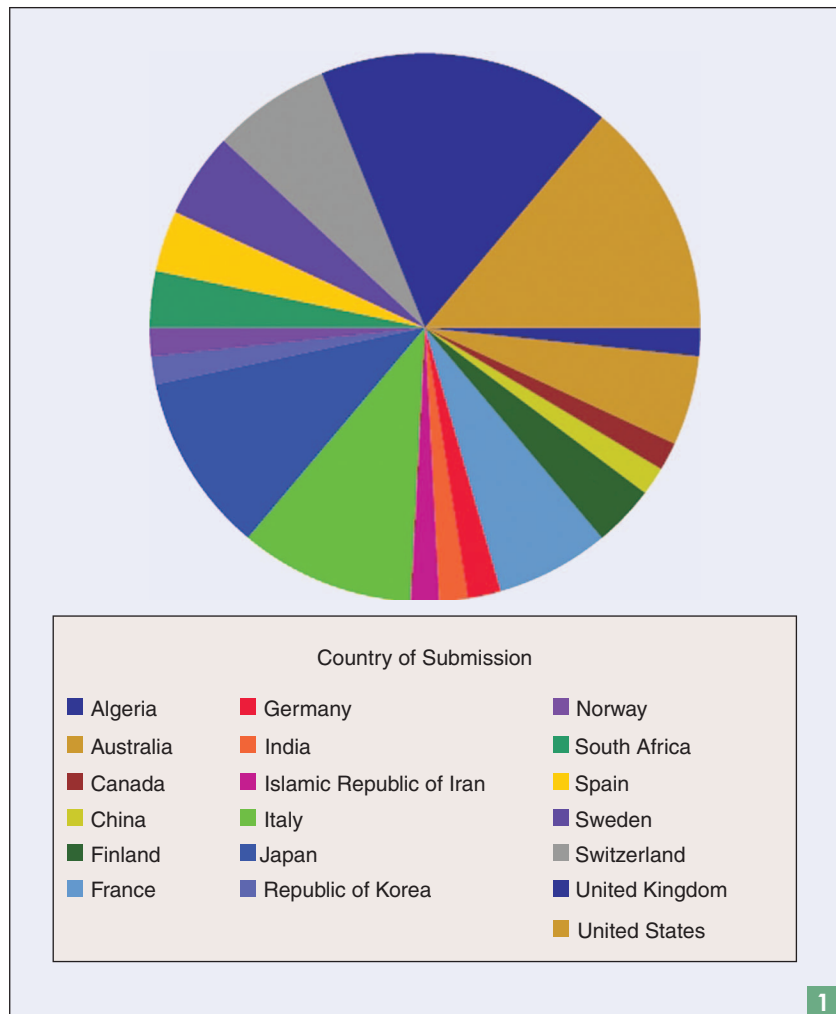
# From Power to Applications— A Two-Year Journey

J. Herbert Johnson, Guest Author

**P**erhaps few people know the origin of the IEEE Industry Applications Society (IAS) Electric Machines Committee (EMC). EMC is one of the most active committees in the IAS. It sponsored 44 technical papers at the 2008 IAS Annual Meeting, and, as of September 2009, it had received 140 manuscript submissions to the IAS ScholarOne Manuscripts site, making it the most prolific technical committee in IAS. Many of these papers originated at cosponsored technical conferences held by non-IEEE organizations outside North America. Figure 1 depicts the global reach of EMC as measured in the list of countries from which papers have been received for review within the past year. Typically, each year, one or two papers are awarded prizes for their originality, technical content, and expertise.

## Review of Papers

Before the presentations and publication of papers in the IAS meeting program, potential authors are invited to submit one-paragraph digests of their proposed paper. Three or four EMC members read and critique these digests, and some are selected for presentation as complete papers. Before acceptance for presentation and publication at the IAS Annual Meeting, a careful review of the papers is done for correct presentation, spelling, and possible plagiarism. Then, the papers are ready to be printed in the conference



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record (proceedings) of the IAS Annual Meeting.

After conference presentation, the papers are eligible for formal peer

review for potential publication. Most of the papers sponsored for publication by EMC have been published in *IEEE Transactions on Industry Applications*,

but there are usually one or two EMC papers in *IEEE Industry Applications Magazine* each year.

### Origin of EMC

The story of how the EMC came to be a part of IAS is fascinating. The EMC began as the Single-Phase and Fractional Horsepower Subcommittee, a branch of the Induction Machines Committee of what was then the IEEE Power Engineering Society [now the

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Power & Energy Society (PES)]. Since most members attending the PES Winter Meeting were interested in large power transformers and huge turbine generators, the small subcommittee had little to offer those attendees. The subcommittee chair had to literally plead with acquaintances to present a paper.

In the mid-1970s, prior to my retirement from General Electric (GE) and the

A.O. Smith Corporation, I became the chair of the subcommittee. After leading several Single-Phase Subcommittee meetings with only a meager response, I decided that drastic measures were needed. The event that triggered me to act was a meeting held in Dallas, Texas, where only two or three papers were presented. One of those papers described a "Green's Theorem" approach to the analysis and understanding of the rotor cross currents flowing in skewed single-phase induction motor rotors. The authors of that paper flew all the way from France to Dallas only to find that the audience for their paper was miniscule.

I discussed the dilemma of the Single Phase Subcommittee with my friend and former GE colleague John L. Oldencamp. That conversation led



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me to contact the presidents of both PES and IAS with a proposal to transfer the subcommittee from PES to IAS. It took two years for formal approvals to occur, but in the early 1980s, the president of IAS wrote a letter to me, welcoming the Single-Phase group to the IAS. The Single-Phase group was assigned to the Industrial Power Conversion Systems Department as the EMC. I served as the chair and Prof. Donald Novotny of the University of Wisconsin as vice chair.

### Growth of EMC

Attendance at the EMC technical sessions soared along with membership in the committee itself. Interest and attendance was so great that technical sessions were held during the mornings and afternoons of all four days. While originally focused on

single-phase machines, the range of interests of the EMC today encompasses anything that rotates.

We now have some of the finest technical papers, treating the design, testing, and application of electric machines. These machines could be ac or dc. They could encompass induction, permanent magnet, or switched reluctance machines. They could be motors or generators. They could be fixed-speed or variable-speed machines. The authors could come from literally any part of the world and from either industry or academia. In other words, we have some of the finest technical papers

EMC IS ONE  
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that have application to thousands of uses involving rotating machines.

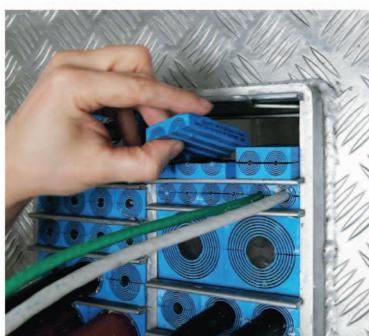
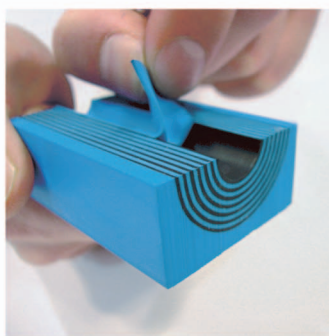
In the Fall of 2009, the EMC conducts its primary technical sessions at the Energy Conversion Congress and Exposition (ECCE) and Applied Power

Electronics Conference (APEC), and it continues to receive papers from cosponsored conferences around the world.

### Acknowledgments

The author thanks both his colleagues and friends in the IEEE IAS for their support and encouragement in his endeavors. **IAS**

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