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Letter to the Editor
Review Papers

Dear Editor,

I read with interest your editorial of the issue 183 of DYNA (February 2014) [1], in which you discussed the revised aims and scope of the journal. I was specially pleased by your clear description of the review papers that DYNA is expecting. Therefore, I decided to write this letter to contribute to the description of the characteristics, aims and importance of review papers in engineering, using my experience as author of some review papers.

It is my opinion that review papers are essential to speed up knowledge development in engineering by the following reasons:

1. Some review papers provide a general description of the main topics in a research field, which helps new researchers to acquire the required knowledge to understand up-to-date papers in the reviewed topic.
2. Review papers are also intended to organize the scientific literature of a topic according to the characteristics of the proposed solutions. This type of paper helps the reader to find the most relevant contributions in a particular field without spending a long time searching in the specialized databases.
3. Other review papers provide statistical data concerning the characteristics of the reviewed solutions, which is useful to identify open problems in literature. In this kind of review papers, some questions are formulated to evaluate if a particular subtopic is addressed in the reviewed literature. Then, the relative number of papers dealing with the subtopics allows one to identify problems not fully addressed, by revealing the open problems.

The previous items evidence the existence of, at least, three types of review papers. Examples of the first kind of review papers can be found in [2-4]. A particular example, reviewing the components and operation of grid-connected photovoltaic systems, was published in [2]. Such a paper provides the reader with the main concepts required to model the photovoltaic source, to define the system architecture, and to select the power converter and control strategy. Hence, the review paper is mainly focused on providing general concepts, using the references as examples.

Examples of the second and third kind of review papers can be found in [5-8]. A particular example concerning the second approach is given in [5], where the architectures to track the optimal operation conditions of photovoltaic systems are reviewed. Such a paper presents a large number of published approaches, organizing them depending on the solution granularity: centralized solutions, distributed solutions, reconfigurable solutions. Therefore, the paper is focused on presenting the most relevant works, and providing comparison between them. Such information help readers to select one solution over another depending on their particular needs. In addition, a reader looking to start research activities on a particular granularity level, e.g. distributed solutions, will find a list of the most relevant papers on that particular topic.

Similarly, a particular example concerning the third kind of review papers is given in [7], where the approaches used to identify excitation systems for synchronous generators are reviewed. This review paper gives a basic background on the topic, but dedicates a large part of the manuscript to analyze the characteristics of the reviewed solutions: operating conditions of the generator (online or offline), type of perturbation signal (pseudo random, step, etc.), source of identification data (power plant, prototypes, simulation), detail of the identified model, among others. Then, the number of papers dealing with each approach, e.g. number of papers using online identification, are used to detect the most recent tendencies, the old approaches replaced by new practices, and the approaches not addressed, e.g. on-line identification of a detailed model. Hence, this kind of review paper helps the reader to identify opportunities, or even emerging research topics, to start new projects.

Another important topic concerns the number of references that a review paper must have. There is no clear tendency followed by scientific publications nowadays: some journals impose a lower threshold, e.g. QUID journal (ISSN 1692-343X), Ingeniería y Ciencia (ISSN 1794-9165), and now DYNA; while other journals do not impose any constraint (apart from the reviewers and editor opinions). But the number of references in a review paper must be carefully analyzed:

- Review papers with large amount of references are commonly well received, but are all the references analyzed? Or are the authors just increased the number of references by citing marginal works just to reach a given threshold? It is expected that both editor and reviewers detect this situation, otherwise the review paper could be useless for a reader looking for the most relevant papers on a particular topic.
- Review papers with small number of references could provide an incomplete overview of the literature on a particular topic. But, new research topics with few relevant contributions also deserve review papers. In fact, review papers on new topics could significantly

accelerate the knowledge generation since new researches have access to a complete background of the topic, as well to a list of relevant references, all in one document. Again, it is the work of the editor and reviewers to evaluate the pertinence of the research topic and the review paper.

Similarly, the number of pages available for review papers is an important factor. Short review papers could provide an incomplete overview of the literature, therefore some journals increase the maximum number of pages available for review papers, e.g. the IEEE journal of photovoltaics (ISSN 2156-3381) limits regular papers up to eight pages and review papers up to sixteen pages, Electric power systems research (ISSN 0378-7796) from Elsevier limits regular papers up to twenty-two pages and review papers up to thirty pages. Such a concession comes from the large number of readers and citations attracted by well written review papers, which even drives some publishers to create journals focused exclusively in review papers from a particular topic, e.g. Renewable and Sustainable Energy Reviews (ISSN 1364-0321) from Elsevier with an ISI-Impact factor of 5.627. Similarly, other journals attract readers by publishing a short review of the newest relevant papers on the journal topic, in every issue of the journal, e.g. Progress in Photovoltaics: Research and Applications (ISSN 1062-7995) from Wiley with an ISI-Impact factor of 7.712.

In conclusion, I deem it very valuable that DYNA considers review papers for possible publication. Such a correct approach could have, and I'm sure it will have, a very positive effect on the journal impact factor, on the visibility of our works published in DYNA, and on the knowledge of our community concerning the reviewed topics.

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References

[1] Velásquez, J.D., Review of the aims and scope of the journal, DYNA, 81(183), pp. 6-6, 2014.

[2] Romero-Cadaval, E., Spagnuolo, G., Franquelo, L.G., Ramos-Paja, C.A., Suntio, T., Xiao, W.M., Grid-connected photovoltaic generation plants: Components and operation, IEEE Industrial Electronics Magazine, 7(3), pp. 6-20, 2013.

[3] Ramiro, I., Marti, A., Antolin, E., Luque, A., Review of Experimental Results Related to the Operation of Intermediate Band Solar Cells, IEEE Journal of Photovoltaics, 4(2), pp.736-748, 2014.

[4] Hum, S.V., Perruisseau-Carrier, J., Reconfigurable Reflectarrays and Array Lenses for Dynamic Antenna Beam Control: A Review, IEEE Transactions on Antennas and Propagation, 62(1), pp.183-198, 2014.

[5] Bastidas-Rodriguez, J.D., Franco, E., Petrone, G., Ramos-Paja, C.A., Spagnuolo, G., Maximum power point tracking architectures for photovoltaic systems in mismatching conditions: a review, IET Power Electronics, 7, pp. 1-18, 2014.

[6] Rodriguez, J., Rivera, M., Kolar, J.W., Wheeler, P.W., A Review of Control and Modulation Methods for Matrix Converters, IEEE Transactions on Industrial Electronics, 59(1), pp. 58-70, 2012.

[7] Saavedra-Montes, A.J., Ramos-Paja, C.A., Ramírez, J.M., A systematic review on identification of excitation systems for synchronous generators, Revista EIA, 18, pp. 33-48, 2012.

[8] Franck, C.M., HVDC Circuit Breakers: A Review Identifying Future Research Needs, IEEE Transactions on Power Delivery, 26(2), pp.998-1007, 2011.