



## The IGTI Turbo Expo Review Process

The Turbo Expo conference and the two ASME journals it supports (*Journal of Turbomachinery*, JT, and *Journal of Engineering for Gas Turbines and Power*, JEGTP) rely on the peer review process. This process uses impartial, external experts (Reviewers) to evaluate all technical papers submitted to the Turbo Expo. Over the past several decades, IGTI's policy of "peer review *before* presentation" has earned it a reputation for presenting technically solid papers at Turbo Expo. The IGTI peer review process is unique amongst technical conferences in that the quality and content of the reviews are expected to also satisfy the requirements demanded of archival journal judgments. As such, both the review process and the Reviewers must uphold the highest standards for quality and deliver well-documented, thorough feedback to all authors.

Given the large number of technical manuscripts being processed for each Turbo Expo, and the limited review process schedule, some Reviewers may not have formal or informal instruction on how to review a paper; review standards as such may not be applied uniformly; and less-qualified individuals may be conducting some reviews. As Turbo Expo grows and the technical community expands to new areas and new people, it is important that we communicate the expectations for the review process, the Reviewers, and the technical papers (both conference and journal papers) to all concerned.

We asked ourselves the following questions:

- "What makes a good technical manuscript review?"
- "What are the appropriate standards for an archival journal paper?"
- "What constitutes an archival journal paper?"

The answers to these questions come from an ad-hoc group of members (peers) of several IGTI Technical Committees.

## What Makes a Good Technical Manuscript Review?

The purpose of review is to determine whether the paper is acceptable for publication, needs revision, or should be rejected. The review begins with the selection of qualified and knowledgeable Reviewers. The Session Organizer must consider the following questions:

- What is the subject of the paper?
- Is the Reviewer able to perform the review without a potential conflict of interest?
- Has the Reviewer published in the same technical area or has he/she sufficient knowledge of this technical area for him/her to be considered an expert by other peers?

Once selected and assigned, the Reviewer must evaluate a paper's originality, significance, relevance, narrative and correctness, keeping in mind the many facets supporting these key judgment areas.

Foremost and above all else:

- Is the paper relevant and interesting to the gas turbine technical community and readers of the journals?

Questions that should be considered regarding the narrative and correctness include:

- What is the purpose of the paper?
- Is the presentation satisfactory? Is it well organised?
- Is the paper of an appropriate length? Is it clear and concise?
- Is there an appropriate introduction?
- Is the selection of material appropriate?
- Is there validation of any theory or computational method?
- Is the experimental accuracy assessed?
- Is the method of approach valid?
- Is it technically correct?
- Are the figures and tables appropriate? Are the figures and tables clear? Are there too many figures or tables?
- Is there sufficient analysis and interpretation of each figure?
- Are the conclusions drawn from the results? Are there any conclusions or is there just a summary?
- Are the references appropriate?
- Is the use of English satisfactory?

In terms of the originality, significance and relevance:

- Is the contribution original or innovative?
- Does the work advance the "state of the art" sufficiently?
- What are the main conclusions and recommendations?
- Are the conclusions and recommendations tangible and useful to the gas turbine community?
- Has more than a small amount, say 25%, of the paper been published before in a similar format?
- Is the subject of the paper appropriate for the journal (JT or JEGTP)?
- Is it of long-term, archival value?

*The provision of written comments is the key to the review*, whether the manuscript is recommended for conference presentation and/or journal publication. A good review must provide:

- A summary of the important points of the paper in one to five sentences to indicate that the Reviewer actually understands the paper.
- A statement of the significance, relevance and originality of the research, or lack thereof.
- An critical evaluation of the methodology, accuracy and suitability of the work.
- An evaluation of the quality of the presentation.
- An overall recommendation for or against conference presentation and/or journal publication.
- Detailed reasons for the recommendation, whether it is favourable or not.
- Clear statements of both necessary and suggested changes required before conference presentation and/or journal publication.

The recommendations for or against conference presentation or journal publication must be supported by specific and critical comments. For example:

- “This paper is recommended for journal publication because...” or
- “This paper is of current interest but falls short of archival value because...” or
- “This paper is not recommended for presentation or publication because...” or
- “This paper is recommended for journal publication provided the following revisions are made by the authors...”.

If a manuscript is being recommended for journal publication, the Reviewer must clearly provide a summary of the reasons why this is so. Merely checking the box and saying that only minor revisions are required is not sufficient. If the paper is not recommended for journal publication, the Reviewer must state why this is the case, and also go one step further to comment on what would make the research of permanent interest. In cases when the review is inadequate, the Reviewer will be asked to revise his/her submission.

A bad review simply passes judgement on a paper without explaining the reasons why.

A review does not need to contain a blow-by-blow account of every single typographical error if these and/or other problems are so numerous as to render the paper un-presentable or un-publishable.

### What Are the Appropriate Standards for an Archival Journal Paper?

The standard of a journal paper is not absolute. In effect, it is established by the *average* of the papers that the technical community (you) find worth reading or are published in the journal. Using this standard, the Reviewer should be able to put the paper into one of the following categories:

1. Major results, very significant contribution, award quality (top 1%) - publish
2. Good, solid, interesting work; a definite contribution (next 10%) – publish
3. Minor but positive contribution to knowledge (next 10-20%) – publish with discretion
4. Elegant and technically correct but useless relative to state-of-the-art – don’t publish
5. Neither elegant nor useful, but not actually wrong – don’t publish
6. Wrong or misleading – don’t publish
7. So badly written that technical evaluation is impossible – don’t publish.

### What Constitutes an Archival Journal Paper?

A journal paper

- is *interesting*

- is *original*, making a unique, imaginative or innovative contribution to the field
- contains a *clear narrative* from the introduction, through the work carried out to a clear expression of substantial conclusions and recommendations
- is of *sufficient significance* and *relevance* to the gas turbine industry that it will be referred to by other workers in the field for years to come

All of the above are required, whether the paper contains new work or is presenting previously published work in a new light.

The requirement that the paper be interesting means that quite a few people will want to read it. The need for originality means that most or all of the research has not been published before in the same or a similar format. Originality can be met with new theoretical, computational or experimental techniques, new results or new interpretations or syntheses of existing results that lead to new discoveries, new research directions, new and useful methods, new design guidelines, new physical insight, new confirmations of ideas.

A clear narrative means that (1) there is an introduction that places the paper in the broader context as well as in the specific context, (2) the experimental/computational/theoretical techniques are clearly described, (3) care has been taken in choosing which results are presented, (4) there is a thorough analysis and discussion of all of the results, (5) there are explicit and substantial conclusions and recommendations and that these are based on the analysis and discussion, (6) the references are appropriate in number and are properly selected, (7) there is a clear and strong development of ideas as the reader progresses through the paper, and (8) the paper is free from the poor use of English and typographical errors.

That the paper is significant and relevant requires that (1) it contains [just] enough information to allow others to reproduce or verify the main conclusions independently, (2) the reported accuracies of experimental/computational/theoretical techniques are sufficient for the purpose of the paper, (3) there are explicit conclusions and/or recommendations and that these can be used to develop or create new ideas, tools, processes or products, (4) it makes a step forward in the “state of the art”, and (5) it will be referred to by other workers in the field for some years to come.

The better journal papers often, but not always, provide new physical insight into results obtained by a synergy of experiments, computation and theoretical analyses. They then present those results in a way that is useful not only to the researchers in the specific field but also to a much wider audience.

A paper that does not meet these standards is not acceptable for journal publication, although authors may be encouraged to rewrite or revise the paper when appropriate.