

REFERENCE DRAWINGS AND DIMENSIONS ARE ATTACHED AT THE END OF THE PAGE

## PAPER FORMAT

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The following is a general guideline for the paper format. Note that both a cover page and a title page are required.

1. Cover page (see at the end of document)
2. Title page (see at the end of document)
3. Abstract (not more than one page)
4. Problem
5. Assumptions
6. Body of paper (should include complete design and drawings)
7. Conclusions and Recommendations
8. References/Bibliography
9. Appendix

The paper should be double-spaced using a font no smaller than 10 point. The Introduction, Body, Conclusions, Design & Drawings and References together may not exceed 10 pages while these sections together with the Appendices may not exceed 12 pages.

## JUDGING

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The papers will be ranked based on the creativity, original thinking and application of cost effective engineering solutions, sum of written and oral scores. Finalists are encouraged to bring three hard-copies of their papers for distribution to the judges at the time of the oral presentation.

## SCORING

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The rubrics used to score the written content and oral presentation of each paper are given on the following:

1. The paper will be evaluated based on the creativity, original thinking and application of cost effective engineering solutions.
2. Originality should be interpreted to give credit for results, investigative procedure, and conclusions that are primarily those of the author. A general guidance from the literature is acceptable.
3. Originality can be evidenced by an unusual, imaginative, or concise treatment of the subject.
4. Both (1) and (2) should be present to a reasonable degree to receive full credit.

**Analytical Treatment:** The fundamental nature of the subject should be clearly revealed, and the component parts of the topic should be carefully related to yield a unified analysis.

**Interest:** The paper should be of general engineering interest and a sound engineering reason for the subject should be evidenced. Looking for a real practical solution and should be able to demonstrate live at ETA Technology state of the art R & D Center.

## MODE OF EXPRESSION

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1. Material should be organized logically and presented clearly.
2. Thoughts should be expressed concisely and coherently.
3. Mechanical theory should be used effectively and judiciously.
4. The introduction should properly orient the reader for the main body of the material. The closure should include a summary of the writer's contributions, forecast, or conclusions.

## ORAL PRESENTATION

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Each presentation will be allotted 30 minutes for oral presentation and 15 minutes for questions and answers. ETA will use a random process to determine the order of oral presentations and will endeavour to inform the participating team the date of presentation

Looking for a real practical solution and should be able to demonstrate live at ETA R & D Center.

Presentation should be made by one of the authors.

**Speaking Technique:** The presentation should be clear and easy to understand.

**Style:** Presentation of the material should follow a logical course and should stimulate the thinking of the audience.

**Introduction and Conclusion:** The presentation should begin with a proper introduction. The background of the problem should be made clear before proceeding to the main body of the presentation. Conclusions should be briefly summarized

**Technical Presentation:** The person presenting the topic should exhibit a clear understanding of the topic, of the important related literature, and of the associated theory. The presentation should be technically sound, and the fundamental nature of the subject should be clearly described.

**Question & Answer Session:** The team should display a reasonable knowledge of the subject by answering the questions adequately.

## COVER PAGE

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TITLE OF PAPER

Author(s) Name(s), Stream (Engineering Branch)

Name and Mailing Address of College/University/Alumni University

Submitted for consideration in ETA Technovation Challenge 2

Head of the Department (HOD) Name

## TITLE PAGE

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TITLE OF PAPER

ABSTRACT



## Challenge Details

Design a self-centering chuck which can hold both ID of brake flange and OD of a spindle. Maximum weight of the job would be 20 Kgs. The actuation to be automatic.

Parts to be held

a) Spindle

- Max OD-150mm
- Min OD- 94mm
- Holding length available on spindle OD-20mm only.
- Max weight of spindle - 20kgs
- Max length of spindle - 380mm

b) Brake flange

- Max ID-152mm
- Min ID- 96mm
- Thickness of flange- min 20 to max 46mm
- Max weight of flange- 15kgs

**spindle and flanges attached below**



