

EEE404 –Renewable Kinetic Energy Technologies

Lab Assignment 1 -

Determination of the Distribution Parameters of Wind Speed Data

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XJTLU

A. Marks

The marks for both the developed program and lab report will account for 15% of the total mark for this module.

B. Submission

Hard and soft copies should be submitted to the module leader no later than 24.00, 19th April, 2018.

C. The Problem

Students are required to develop a MATLAB or EXCEL based program to calculate the distribution parameters of a given wind speed data (see the attachment).

The written lab report should explain

- 1) A review of mathematical distributions to represent wind velocities data.
- 2) The role of wind speed distribution in the study of wind power generation.
- 3) The justification of using a certain mathematical distribution to fit the given measured wind velocities.
- 4) The detailed steps of obtaining the distribution parameters of the measured wind velocities.

MATLAB or EXCEL files which calculate the distribution parameters should also be submitted with the lab report.

D. The structure of a Report

The structure of a report is determined by its components and their interrelationships. An experimental report will normally contain the following sections:

1. Title page - the report cover giving the title of the experiment, the data on which it was performed and the author's name.
2. Summary (or abstract) - a short section of between 50 and 300 words which must be capable of being read and understood independently of the rest of the report. This section should briefly summaries (a) the purpose and scope of the experiment, (b) the

experimental procedures that were carried out, and (c) the main conclusions. This section is possibly the most difficult to write and you are advised to write it last.

3. Introduction - this should be a brief section, which describes, in general terms, the scope of the experiment and its relevance to the field of study you are engaged in. A statement of objectives should be given along with general comments about how the experiment will be carried out.

4. Theory - describing the theoretical background to the experiment and maybe anticipating some of the expected results.

5. Experimental method - giving details of what equipment/software was required and how it was used.

6. Results and Calculations - Present experimental readings in tabular form with estimates of reading errors. Calculations based on experimental readings should be presented in a form, which allows them to be checked. Graphs are normally more informative than tabular results and should be presented whenever appropriate, even when not specifically requested. Do not quote readings or calculated results to more significant figures than the accuracy of the experiment provides; e.g. 7.400 indicates four significant figures of accuracy whereas 7.4 indicates two.

7. Discussion - always included to give an assessment of the significance and reliability of the results, to consider the implications of experimental errors and to propose possible alternative approaches and further experiments that could be carried out.

8. Conclusion - a concise statement of what has been learnt from or confirmed by the experiment. This section must be consistent with earlier sections.

10. References.

E. Style

The style of a technical report should be clear, precise, concise and objective. Clarity and precision are often interdependent and can be achieved only when the author has mastered the subject matter, and clearly understands his terms of reference. The author must be able to distinguish important and unimportant detail so that emphasis is correctly placed.

Concise writing conveys its meaning in the fewest possible words, and is generally easy to read because it appears direct and natural. The style of a report can often be greatly improved by eliminating redundant expressions, such as "... it will be noted that...", or rephrasing a few complicated sentences.

The style of a technical report should be objective in that it excludes any personal feelings or prejudices and focuses attention on facts. The use of first person pronouns "we" and "I" referring to the writer(s) alone should be avoided. For example, "we tested the circuit" should be re-expressed in the passive voice as "the circuit was tested". "We" is sometimes used to refer to the author and reader collectively, e.g. "We now see that...", but is generally best avoided or used very sparingly.

Colloquial expressions should not be used in a report and jargon should be used only with very great care. For example, 'chip' is now probably acceptable for 'integrated circuit' but 'tweaking' a potentiometer is definitely not allowed. Ironical, cynical or

light-hearted comments are invariably out of place, and serve only to antagonize the reader.

F. Bibliography

Many books and articles have been written about technical writing. An example is the following:

H.M. Weisman, "Technical Report Writing", 2nd Edition, Charles E. Merrill Publishingco., Columbus, Ohio, U.S.A., 1975.