

A Guide to Writing an Engineering Report



Faculty of Engineering

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Abstract

This Guide to Writing an Engineering Report has been provided by the Faculty of Engineering at the University of Wollongong, to assist teachers and students in the Higher School Certificate subject “Engineering Studies”. As part of the assessment in this Subject, students are required to submit ten (10) Engineering Reports, five (5) in Year 11 and five (5) in Year 12.

The Guide highlights the most significant aspects of an Engineering Report. It provides examples of the generally accepted methods of dealing with the various issues in presenting technical information in an Engineering Report.

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1 Preliminary Sections

1.1 Title Page

This front page should contain the following information (in centred format)

Name of School

Name of Department (if applicable)

Name of Subject

Name of Project

Name(s) of Student(s)

Name of Teacher

An example of a title page is given in Appendix A.

1.2 Abstract (new page)

The abstract provides a summary of the report's essential information and usually is about 100 – 200 words in length. The abstract should summarise:

- (a) Background problem and purpose of the report;
- (b) Brief details of the approach, procedure and/or methods;
- (c) Important results and/or findings; and
- (d) Major conclusions.

For more complex reports, an executive summary is often required and may be several pages in length.

An example of an Abstract is given in this Guide

1.3 Acknowledgements (optional – on new page)

Significant assistance, editing or work carried out by another person or organisation should be acknowledged.

An example of Acknowledgements is given in this Guide

1.4 Table of Contents (on new page)

The Table of Contents should include:

- (a) All section headings and subheadings – numbered and worded exactly as they appear in the report; and
- (b) Page numbers for all sections.

An example of a Table of Contents is given in this Guide.

1.5 List of Figures (optional, on new page)

This list is used mainly for reports containing a large number of figures. It includes the figure number, caption and page number, ordered as they appear in the text.

All figures should be identified with a figure number below the figure along with a brief caption describing the figure.

An example of the above identification is given below.



Figure 1 – One of the UOW Formula's 8 SAE Cars

1.6 List of Tables (optional, on new page)

As per Section 1.5. All tables should be identified with a table number above the table along with a brief title for the table.

The table below is an example of the above identification process.

Table 1 – Time of exposure for each sample in the salt spray.

Sampling	Hours of Exposure
Jupiter 1 (a)	3500
Jupiter 1 (b)	3500
Jupiter 2 (a)	3500
Jupiter 2 (b)	3500
Jupiter 3 (a)	3500
Jupiter 3 (b)	3500
Aluminised (a)	2148 (failed)
Aluminised (b)	2359 (failed)
ZINCALUME (a)	3500
ZINCALUME (b)	3500
Galvanized (a)	525 (failed)
Galvanized (b)	525 (failed)

1.7 Nomenclature (optional)

Where symbols are used extensively, a list of symbols and definitions should appear at the beginning of the report. If there is a list, symbols should be defined in the text when first used. SI units should be used for all units of measurement (e.g. m, s, kg, ms⁻¹).

2. *Text of the Report*

The pages of the text of the report are numbered with Arabic numerals (e.g. 1. 2. 3. etc).

The main sections that appear in the text of the report include:

2.1 Introduction

This important section gives the reader the necessary background information .

Depending on the type of project/report, the Introduction can include:

- (a) statement of the problem(s) and description of the main aim(s) and objective(s);
- (b) review of previous work/research (using proper referencing) and relationship to the current project;
- (c) additional explanations and/or information (e.g. terminology, concepts) – if necessary;
- (d) method(s) of approach;
- (e) indications of scope and limitations of the study; and
- (f) outline of material presented in the rest of the report.

An example of an Introduction is given in Appendix B.

2.2 Main Sections

The main sections expand and develop the material in a logical and coherent manner, reflecting the structure outlined in the Introduction. Research type projects/reports can include:

- (a) theory/modelling;
- (b) methods and materials used;
- (c) results/comparisons with theory and/or previous work; and
- (d) discussion and analysis of material.

Feasibility type projects/reports can include:

- (a) problem identification; and
- (b) alternative solutions.

2.3 Conclusion(s)

The Conclusion(s) of a report must be related to, and resulting from, the material which appears in the report. The Conclusion(s) must NOT introduce new material.

An example of Conclusions is given in Appendix C.

2.4 Recommendations

If required, Recommendations should emerge from the Conclusion(s) of the report.

2.5 References

All references to other authors or text cited during the report must be listed in this section. One of the main types of referencing should be used:

- (a) numbered reference list; or
- (b) alphabetical reference list.

An example of numbered referencing is given below.

The degree of corrosion protection offered by each different coating depends on many factors such as the environment that it is exposed to as well as the constituents in the alloy layer and the thickness of the alloy coating [1].

All references in the report are then listed in a separate section. An example of this is given in Appendix D which includes the reference cited in the above paragraph.

2.6 Appendices

If needed, Appendices can be used to provide repetitive or lengthy information (e.g. figures/tables of results, statistics etc). Each separate Appendix should be lettered (Appendix A, Appendix B1, Appendix B2, Appendix C etc).

Examples on the use of Appendices are included in this Guide.

3 *Writing Styles and Presentation*

Report writing styles sometimes differ according to the purpose of the report and the requirements of a particular school, employer or publisher. Most, however, will require a formal style of writing, so “third person” and “passive voice” should be used.

What is meant by “person” in this context?

- First person – the speaker

- Second person – the person or thing spoken to
- Third person – the person or thing spoken of

What is meant by the “passive voice” in this context?

Passive voice indicates that the subject is the receiver (object) of the action the verb denotes
e.g. in “the tree was struck by lightning”, *was struck* is said to be in the passive voice.

APPENDIX A

An Example of a Title Page

Department of Materials Engineering

University of Wollongong

**CORROSION PERFORMANCE OF
METALLIC COATED STEEL IN
SPECIFIC SERVICE ENVIRONMENTS**

Alison Kiesel

9250891

INDUSTRIAL SUPERVISOR – NEIL WALLACE
UNIVERSITY SUPERVISOR – DR TARA CHANDRA

MATL 391

Professional Option 4

May, 2009

APPENDIX B

An Example of an Introduction

INTRODUCTION

The American Gear Manufacturers Association Standard, AGMA 218.01 Dec. 1982, gives the power rating formulae for spur and helical gearing as:

Where P_{ac} = allowable transmitted power for pitting resistance, kW,

and

where P_{at} = allowable transmitted power for bending strength, kW.

Thus the power capacities for strength and wear of both the pinion and wheel can be determined, the allowable power capacity for the combination being the lowest of the four values. These equations tend to become “checking” equations for gears already in service. In their present form they do not lend themselves to the design of new gears.

The work described in this Thesis is based on the author’s fifteen year continuous involvement in gear design in heavy industry. One of the basic aims of this Thesis is to take most of the “guesswork” out of the procedures for the design of spur and helical gears by the development of computer software. This aim has been satisfied by the production of software for the rating and/or design of spur and helical gears to AGMA 218.01 which is the basis of the current Australian Standard, AS 2938 June 1987.

APPENDIX C

An Example of Conclusions

7.0 CONCLUSIONS

- ◆ Various metallic coated steel products produced by SCPD were successfully exposed to several service environments and simulated laboratory tests, from which the relative corrosion performance of each material was assessed.
- ◆ It was found that each material behaved differently in the various environments, with not one material suitable for all the environments studied. This therefore emphasises the importance of material selection for a particular purpose, ensuring that no aspect of the environment is overlooked so as to obtain the maximum lifetime possible.
- ◆ Due to the limited time available for this project, all outdoor exposure samples did not have sufficient exposure time to fully determine the extent and mechanisms of corrosion in the various service environments. It is therefore recommended that further work with extended periods of exposure be carried out, so as to fully quantify the extent of corrosion in each service environment.
- ◆ Further long term outdoor exposure would allow better insight into the relevance of the accelerated weather tests to actual service conditions, therefore obtaining a better understanding of the corrosion behaviour of each material and allowing a benchmark for further investigations. Ideally, such an exercise would include other BHP products including COLORBOND steel or other prepainted steel. Although, the use of an additional barrier coating may cause an increase in undercutting at the cut edges of some coatings.
- ◆ Although the Jupiter materials performed well in the accelerated weathering tests, exposure times were not long enough to fully determine whether the performance was better than that of ZINCALUME steel. Therefore further work is required in order to determine whether it is viable for SCPD and its customers to replace some of the current galvanised and ZINCALUME steel usage with the Jupiter type produce, noting that at the present time no guaranties can be given with regard to its long term exposure performance.

APPENDIX D

An Example of a List of References

8.0 REFERENCES

- [1] SCPD Product Data Manual, Metallic Coated Products, Sheet & Coil Products Division – BHP Steel, Revision 0, February, 1995.
- [2] J. B. HORTON *et al.*, Galvalume and ZINCALUME – Sheet Steel Coated with 55% Al-Zn Alloy, Paper presented at the 12th International Conference of Hot dip Galvanisers, Paris, 1979.
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- [4] M. G. FONTANT, Corrosion Engineering, Third Edition, McGraw-Hill International Editions, Singapore, 1987.
- [5] M. DAUSMAN, Soil Corrosion – Literature Survey and Preliminary Accelerated Test Proposal, BHP Research, Port Kembla, 1995.
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- [9] T. SMITH, Incompatibility of ZINCALUME with Concrete, BHP SCPD, Port Kembla, 1994.
- [10] K. GOLDONG, Determination of the Corrosive Effect of Timber Types on Metallic Coated Steel Products, Report submitted in accordance with the requirements of MATL 381, University of Wollongong, 1994.