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***Abstract*** – This document provides an overview for how to prepare papers for the Electrical Safety Committee Electrical Safety Workshop. It defines the **required** format style for Electrical Safety Workshop papers for publication in the Electrical Safety Workshop Conference Record. In general this format also complies with the style requirements for the Industry Applications Society, and Institute of Electrical and Electronic Engineers. Information regarding text style, margins, headings, abbreviations, figures, tables, etc. is included. Note that the layout, margins, and style of this paper follow the requirements described in this paper. Authors using Microsoft Word® may use this paper as a template for preparing their own papers by substituting their own text for the text of this paper.

*Index Terms* — ESW Paper Format, Style requirements (Authors shall insert key words for their papers here).

1. **INTRODUCTION**

In general, Electrical Safety Workshop (ESW) conference papers are created using a personal computer (PC) word processing program such as Microsoft Word® or Word Perfect®. This paper provides a general overview for authors preparing papers on PCs. Papers must be formatted in the style described and shown in this document. Papers must be submitted electronically per ESW requirements for printing on clean, plain white letter size bond paper (8 ½” X 11”). The electronic copy will also be used for the paper review process. Paper length, including any appendix, shall be no longer than 10 pages in length, when produced in the format described below. This maximum length is required due to publication considerations for the ESW conference record, *Industry Applications Magazine*, and *Transactions on Industry Applications*.

In general, this format also complies with the style requirements for the Industry Applications Society (IAS) [1], and Institute of Electrical and Electronics Engineers (IEEE).

1. **STYLE FOR ESW CONFERENCE PAPERS**
2. *Organization*

An ESW paper generally consists of nine major sections. Each of the following sections is required and shall *always* appear in this order: title; author information; abstract; index terms; introduction; body; conclusion; references; and vitae. This order shall be altered only if the author chooses to use the following additional sections: nomenclature (glossary of symbols); acknowledgment; appendices. The conclusion must *always* follow the body of the paper. The references must *always* be the *last* part of the paper. The vitae is always at the very end of the document, following all other sections, excluding any appendices. The requirements of style and content for each of these sections are discussed next. The order of discussion for the various possible sections of a paper shall be as they appear in this paper. The nomenclature, acknowledgement, and appendices sections may be added if applicable to a particular paper. Bibliographies may be included as an appendix.

1. *Title*: The title shall indicate the subject of the paper as clearly and succinctly as possible.
2. *Author Information:* The name of each author shall include a full first name and last name. Use of middle names, middle initial, suffixes, or previses is optional. If the number of suffixes and prefixes for an author creates significant formatting problems in the author information section, the suffixes and prefixes should be included in the vitae section. Each author’s IEEE membership grade (where applicable), shall appear under the author’s name. These parts of the author information shall be typed in upper and lower case letters as shown in the title of this document. Finally each author’s business affiliation and mailing address, complete with post office box number, zip code, country, and e-mail address, are required; this information shall be typed below each author’s name (and IEEE membership grade, where applicable) in upper and lower case letters. Do not include telephone information. The author has the option to place the email address for each author in the author’s vitae section rather than with the author information when paper spacing or email address length results in an undesirable presentation of the email address in the author information section of the paper. The maximum number of authors for a paper is four (4).
3. *Abstract*: The abstract is a very important part of the paper. It is used for library purposes and may appear by itself in an abstract journal and/or be stored in a database. Its contents will determine how and where those who compile the annual indexes of the literature reference it. It shall therefore be written with extreme care.

The abstract is a concise, one-paragraph collection of statements that describes the most significant ideas, procedures, and/or results of the paper. It typically contains 125 - 200 words but is never longer than 250 words and never explores concepts beyond those actually described in the paper. A satisfactory abstract will briefly answer these questions. 1) What is the problem being discussed, and what is the scope of its treatment? 2) What is the author’s unique approach or important contributions; and is it primary information, a review, or tutorial in nature? 3) What is the principal result or typical application?

The abstract does not serve as an introduction, nor does it contain acronyms, abbreviations, footnotes, tables, figures, or references. It is indented, then identified by the italicized word “Abstract,” followed by a dash, which is immediately followed by the text of the abstract, as shown above. The writing style is confined to the passive voice; for example, instead of “We measured the results of the test,” the author should write: “The results of the test were measured.”

1. *Index Terms*: Not more than eight (8) index terms shall be on this line, under the Abstract, starting on the same line as the heading ‘Index Terms’. The section is indented, then identified by the italicized words ’Index Terms”, followed by a dash, which is immediately followed by the index terms, as shown in the Index Terms section of this document. These terms be selected to entice the data base searcher to look further into this paper. The index terms may be a mixture of phrase(s) and words, with each phrase and separate word separated from the others by a comma.
2. *Introduction:* The introduction prepares the reader for the body of the paper by giving historical and/or background information and by serving as a guide to the author’s approach to, and organization of, the material. It should include the author’s statement of the problem to be addressed in the paper. The introduction shall not be a repetition of the abstract and, unlike the abstract, may be as long as is necessary.

The introduction will serve as the first major part of text and is therefore the first section of the paper to be enumerated, when and if the author chooses to use an enumerated headings system (See Section II-B).

1. *Body*: The body of the paper contains the primary message of the paper in detail. Its purpose is to communicate information efficiently and effectively to the reader. Frequent guideposts are essential for non-specialists who want to understand the general nature and significance of the work, and even workers in the same field appreciate clear indications of the line of thought being followed. Therefore, the body of the paper should be broken down into specialized sections that are identifiable by the use of an orderly headings system (see Section II-B).

In any breakdown of the body into several sections, the author’s significant contribution should be the subject of the longest section; the supporting or peripheral material should be condensed in shorter sections. This gives proper emphasis to the main subject of the paper and yields a high information density in the overall structure.

Some of the sections into which the body may be broken down include:

1. *Analysis.* Present any theoretical mathematical analysis of the problem you are covering.
2. *Description*. Describe any apparatus or equipment which is the topic of the paper, or which is used in experimental work covered by the paper. Describe experimental procedures.
3. *Experimental data*. Present the data collected in the experimental phase of your work, or at least so much as is necessary to demonstrate the conclusions reached.
4. *Data analysis.*  Analyze the data to demonstrate the validity of your conclusions.

Major sections such as these would ordinarily have a PRIMARY HEADING. The word “BODY” shall not be used as a heading.

1. *Conclusion*: The conclusion should be a clearly stated finish to the paper and should cover the following issues. What is shown by this work and what is its significance? What are the limitations and advantages of the information? Where applicable, the following points should also be included: applications of the results and recommendations for further work.
2. *Nomenclature:* The nomenclature consists of the symbols and meanings of those symbols used in the paper. The symbols are indented from the left margin; separated from their definitions by space only with the first letter of the definition capitalized and the remainder lower case. Each definition is ended with a period; and no articles (introductory words such as “the” or “a”) precede the definition. An example follows.

**NOMENCLATURE**

Ei Initial energy (J).

M0 Initial drop mass (kg).

M2 Sibling mass (kg).

M1 Residual drop mass (kg).

1. *Appendices*: Mathematical details that are ancillary to the main discussion of the paper, such as many derivations and proofs are among the items to be placed in the appendices. Other items that bear on or support the topic as developed by the author may also be included in the appendices.
2. *Acknowledgement:* If the paper deals with prior work by other author(s), and/or others have made important contributions to the paper, this fact should be clearly stated in the acknowledgement section. If contributions by others are a substantial portion of the paper, consideration should be given to their inclusion as coauthors.

Acknowledgement of financial support (e.g., grants or government contracts) shall appear as a footnote to the title or to the introduction of the paper. However, in no case shall it appear in the abstract. Any financial support by a company or trade association, except for the authors’ employers, must be acknowledged. Footnotes shall be avoided as far as possible by integrating the information into the text.

1. *References:* Reference information must be complete. Reference shall be made to any prior publications on the subject by either the authors or others. Any excerpt, quotation, figure, or table taken from another publication must be referenced. Titles of papers must be given, as well as beginning and ending page numbers, where appropriate. Normally, references should be commonly available publications.

Prior publications not specifically referred to in the text are not considered to be references. Authors of a paper that is a survey of its subject may want to include additional prior publications in a Bibliography following the references.

1. *Vitae*: The vitae (a short biographical or autobiographical account) shall provide background information about the author(s) and would typically include degrees received, granting institution and year granted, current employment and other activities items related to the paper such as previous papers, activities within IEEE and other standards organizations, licenses and similar information. The biography shall be limited to no more than 100 words per author. The biography shall not include photographs. The section title shall be changed to vita if the paper has only one author.
2. *Style for Headings*

An organized headings system serves to divide the body of the paper into clearly marked sections that help the reader locate areas and items of the paper that interest him or her. They also help the author to develop his or her topic in an orderly manner, with the focus of each division of the paper indicated by its heading. The following will describe and give examples of the proper style for headings.

1. *Primary Heading:* A primary heading is separated from the text that follows by one full line of space, is centered above that text, and is all capital letters. When enumerated (author’s option), the primary heading is assigned a roman numeral followed by a period. Note: Once an author begins enumeration of the headings, he or she must continue the enumerated headings style throughout the paper (in the manner described in this section). An example follows.
2. **PRIMARY HEADING**
3. *Secondary Heading:* A secondary heading is separated from the text that follows by one line of space. It is flush with the left margin, with initial letters of all words capitalized; the rest are lower case. Enumeration of the secondary heading is in capital letters followed by a period. The entire secondary heading is underlined or italicized. An example follows.
4. *Secondary Heading: An Example*
5. *Tertiary Heading:* A tertiary heading is the same as a secondary heading, except that the heading is not separated from the text; it is joined to it by a colon. The tertiary heading is enumerated using Arabic numerals and a closing parenthesis. It is indented once and underlined or italicized. An example follows.
6. *Tertiary Heading*: This is an example.
7. *Quaternary Heading:* A quaternary heading is styled the same as a tertiary heading, except for the following. It is indented twice; only the first word of the heading is capitalized; and it is enumerated using lower case letters followed by a closing parenthesis. An example follows.
8. *Quaternary heading*: This is an example.
9. *Style for Figure and Tables*

The following are the criteria the author should use in preparing figures and tables for an ESW technical paper.

1. Page space is costly. All unessential figures and tables should be eliminated. The author should combine the information of different tables and/or figures whenever and wherever it is practical and possible. However, do not clutter or crowd the figure or table so that the information is not understandable.
2. All figures and tables shall be numbered consecutively, be mentioned in the text in the order of their appearance and shall be centered in the column or the page.
3. Figure captions shall be centered neatly below their respective figures. Both in the text of the paper and in the caption, the figure shall be identified by an Arabic numeral and the word “Figure” abbreviated. For example: Fig. 1 (plural is “Figs.”). Parts of the figure shall always be labeled and referred to using lowercase letters enclosed in parentheses. For example, in text: Fig. 2(a); in captions: Fig. 2. (leave a space here) (a) Measurement for phase-controlled rectifier.



Fig. 1 ESW Logo

Used with permission from the IEEE IAS Electrical Safety Committee

1. Photos, illustrations, and similar items must follow IEEE publication requirements to note the source of those images. If the image is not original by the author, the author must obtain permission from the source if the image is copyrighted and the source must be noted in the paper otherwise use of the image would be either plagiarism or a copyright infringement. A proper notation can take the form of a statement such as “Photo use with permission from ABC Company.”
2. Table captions are bi-level in nature and are centered above the body of the table. The top line of the caption shall be in all capital letters and shall identify only the number of the table using a Roman numeral. For example: TABLE I. The lines of the second caption shall be centered below the top caption and written in all capital letters. This second caption shall describe briefly the information of the table. For example: TYPE SIZES FOR CAMERA-READY PAPERS.

*Note:* Both figure and table captions should use as few words as possible.

Tables are typically inserted into the text of the paper, as long as they are simple and brief. Longer, bigger, or more complicated tables may be separated from the text. Table I is an example of a table. It also provides information on the size of fonts for ESW PC generated papers. Tables should appear on a single page and not broken between page breaks.

TABLE I

TYPE SIZES FOR PAPERS

|  |  |  |  |
| --- | --- | --- | --- |
| Type size | Appearance | | |
| (pts.) | Regular | Bold | Italic |
| 8 | Table captions, a table superscripts |  |  |
| 9 | Section titles, a references, tables, table names, a first letters in table captions, a figure captions, footnotes, text subscripts and superscripts |  | Reference publication name |
| 9 | main text, Authors’ affiliations, equations, first letters in section titles | Abstract | Subheadings |
| 10 | Authors’ names | Primarya headings |  |
| 14 |  | Paper title a |  |

a Uppercase.

1. All lettering used on or in figures and tables shall be large enough to be visible, especially in formats resulting in a final, reduced size. This final size shall never be less than 3/64 in (1.2 mm) high.
2. The size of the lettering used for figures and tables shall be kept uniform throughout the paper. Hand lettering shall not be used. All figures, both line art and photographs, shall be inserted in the paper electronically. However, the author should preserve the original electronic file for possible future use.
3. The ESW conference record is printed in black and white, so all figures, both line art and photographs, must be suitable for black and white reproduction. No figure should depend on color to convey its meaning. If the paper’s electronic file includes figures using color, the author should print the file in black and white and verify that these figures can be understood by the reader without color being present.
4. Digital photographs may be inserted directly into the electronic text of the paper. Glossy prints of conventional film photographs may be scanned and the files created by scanning inserted in the paper. Do not attempt to use scanned images of previously published photographs that have already been screened, as these do not produce images of acceptable quality.
5. Figures shall never exceed 6 ½ X 9 in (16.5 X 22.9 cm), to fit on an 8 ½ X 11 in (21.6 X 27.9 cm) page with 1 in (2.54 cm) margins on all 4 sides.
6. Graph-type figures shall show only the major co-ordinate lines; and the author shall use short “ticks” that extend but a short distance from the axes, for convenience in reading intermediate values. Two or more simple graphs having the same scale often may be combined to save space and increase effectiveness.
7. *Style for Mathematical Notations and Equations*

Handwritten letters and symbols shall not be used. All equations should be created using the equation editor furnished with the word processing program used for the manuscript, or other equation editing software. To prevent errors by readers, subscripts, superscripts, Greek letters, and other symbols shall be identified very clearly, with explanations included wherever ambiguity may arise. The following are examples of terms that often are confusing.

1. Capital and lower-case letters, when used as symbols.
2. Zero and the letter “o”.
3. The small letter “I,” the numeral one, and the prime sign.
4. The letters “k” and kappa; “u” and mu; “v” and nu; and “n” and eta.

Vectors and matrices shall be in boldface type, if available to the author. Symbols, markings, and/or lines (except underlining) below letters shall be avoided. A new symbol for a complicated expression that will be repeated often shall be introduced in the text. Care should be taken in the use of solid (slants), vertical bars, radical signs, parentheses, and brackets to avoid ambiguities in equations. The author shall adhere to the conventional order of brackets: {[( )]}.

When fractions are typed on one line, ambiguities often arise. For example, 1/2 r may mean 1/(2r) or (1/2)r. The author should write fractions to ensure that the meaning cannot be misconstrued.

To facilitate the reading of numbers and to eliminate confusion arising from different uses of the comma and the period in different countries, IEEE editorial practice is to separate numbers consisting of more than four digits with a space. Such numbers are separated by the space into groups

of three, counting from the decimal sign to either the left or the right. Examples are as follows.

12 351 7465 9.216 492

If the magnitude of the number is less than unity, the decimal sign shall be preceded by a zero; for example: 0.102.

Where more than one equation is displayed in the paper, the author shall be consistent in his or her style for fractions: either built up or broken down. Equations shall be separated from the text with a line of space above and below, and numbered consecutively. The numbers shall be enclosed in parentheses and flush with the right margin. In text, equations shall be referred to only by their number in parentheses. The word “equation” precedes the number in parentheses only when used at the beginning of a sentence; for example: “Equation (23) enables us to write (17) in the form…”.

Samples of typical equations with concluding text are as follows.

 (1)

 (2)

where

 firing angle of upper and lower thyristor group i = 1,2;

ui commutation overlap angle of upper and lower thyristor group i = 1,2;

toff thyristor turn-off time.

1. *Style for Units and Abbreviations*

The use of the International System of Units (SI units) is required for use in IEEE publications because of its international readership and inherent convenience in many fields. This system includes as a subsystem the MKSA units, which are based on the meter, kilogram, second, and ampere. However, this practice may be impractical for certain industrial specifications, such as those giving drill sizes or power ratings of motors. In such cases, use of conventional imperial units is acceptable.

All units shall be abbreviated when they appear with numerals; for example: 480 V or 18 ft. Units are written out only in such cases as “… the distance in inches is measured from…”.

The unit of frequency used in IEEE publications is the “hertz” rather than “cycles per second.”

The use of abbreviations, other than for units, is optional. Authors shall avoid abbreviations that are not generally accepted. All abbreviations and acronyms must be defined where first mentioned. Abbreviations and symbols used on illustrations shall conform to those used in the text.

1. *Word Usage*

It is most important that the paper be correct, concise, and clear. Attention to grammar fosters clarity. Here are some suggestions on usage.

1. Write in complete sentences.
2. Avoid jargon. Introduce new terminology only when it is indispensable.
3. Do not write one-sentence paragraphs. In revising, combine any series of very short paragraphs where possible.
4. Do not use slang or contractions. Avoid expressions that are used only in familiar speech.

***No:*** “Taking a time interval, say, t = t2 - t1, in which the quantity…”.

***Yes:*** “Taking a time interval, for example, t = t2 - t1, in which the quantity…”.

1. Write in third person, not first or second person.
2. Avoid overuse of *italics* and overuse of “quotation marks” around single words.
3. Capitalize adjectives and nouns derived from proper names, except in the case of units of measures, which are lower case. For example: “Gaussian noise”; “Cartesian coordinates”; “The Hamiltonian of the system is …”; “The inductance is in henrys.”
4. Abbreviations and acronyms shall be defined where first used, even those considered by the author to be commonly used and understood. The full text shall be spelled out, followed by the abbreviation or acronym in parentheses.
5. *Typing*

The typeface shall be 9-point (e.g. Arial, Univers, Swiss or Helvetica). Arial is the preferred font. (This document was produced using Microsoft Word® with typeface Arial). The paper shall be prepared in double column format. The left and right margins shall be 0.70 inch (18 mm), the column width is 3.45 inches (88 mm) and the column spacing at 0.20 inch (5 mm). Justification shall be both left and right sides. The top and bottom margins shall be 1 inch (25 mm) each (If you are using A4 paper, set the right margin to 12 mm and the bottom margin to 43 mm). Paragraphs shall be indented about 0.14 inches (3.5 mm) and spaces shall not be left between paragraphs.

Center the title on the page so as to run across the upper portions of both columns as illustrated above. The title of the paper is typed in upper case letters only, bold, typeface size 14-point, and spaced 1” below the top of the page. As a general rule, the title shall fit on one line. If the title exceeds this length, the author shall seriously consider shortening the title.

There shall be one (1) 10-point blank line below the title. This blank line shall be followed by the words “Copyright Material IEEE” in 10-point font as shown above. The next line shall have the words “Paper No. ESW-”. The ESW Publications Chair will assign the paper number after authors have submitted their final drafts.

The name(s) of the author(s) shall be one (1) 10-point space below the paper number line. The lead author shall be listed first and the other authors in alphabetical order, left justified and listed in column format as illustrated on the author section of this document. The name information shall be typeface size 10-point. Other author information shall be in typeface size 9-point. There shall be two (2) 10-point blank lines below the author(s) information.

Primary headings are centered in the column. Use only upper-case letters. The typeface is bold size 10-point. All other headings typeface is 9-point.

Page numbers shall be included on both draft and final copies. Page numbers shall be typeface size 9-point font and shall be centered at the bottom of the page. No other information shall be included in the footer.

1. **COMMERCIALISM**

The ESW is recognized as a technical conference free from commercialism. To assure that the ESW remains free from commercialism, a policy regarding commercialism was developed and is enforced.

In summary, the technical papers and the oral presentations shall be free from commercialism by all authors whether affiliated with manufacturers, users, contractors, or non-profit institutions such as universities, governmental organizations, or learned societies. It is acceptable to present valid technical data. It is not acceptable to show company logos, use company names, use trade names, use trademarks, use facility names, or use facility locations. Since the initiation of electronic presentations only, all authors need to review, not only their presentations, but their screen savers to assure a commercialism free presentation. Please refer to the complete ESW Commercialism policy. The policy can be found at https://electricalsafetyworkshop.com/commercialism-and-ethics/..

1. **PLAGIARISM**

Plagiarized work can lead to expense and embarrassment for both the paper authors and ESW. All ESW papers are automatically checked for plagiarism through a service in ScholarOne Manuscripts.

Plagiarism includes items such as the following.

* Copying text from any published source without referencing the source in the Reference section.
* Copying graphics, photos, tables, graphs, and similar material without obtaining written permission from the source.

Some organizations, such as IEEE, requires formal permission from their organization to use information from their document. IEEE requires a copy of the release letters for graphics, photos, and similar items for papers that are chosen for publication in IEEE publications such as the *Industry Applications Magazine* or *Transactions on Industry Applications*.

Authors not addressing plagiarism issues with their papers may have their paper removed from the ESW conference program, will be excluded from the ESW prize paper selection process, and authors may be subject to discipline.

1. **CONCLUSIONS**

This paper describes the basic format and style for ESW papers. For additional information, contact the ESW Technical Committee Chair.

1. **ACKNOWLEDGEMENTS**

It is common practice when writing technical papers to acknowledge people who have contributed to the paper, but are not authors. It is acceptable to specifically name an individual and company affiliation for those who have provided significant contributions to the paper and in general note their contribution. It is not acceptable to thank companies, or promote any product.

1. **REFERENCES**

List and number all bibliographical references at the end of the paper. All references shall be numbered consecutively in the document. When referring to them in the text, type the corresponding reference number in square brackets as was shown for reference [1] above in the abstract. It is also acceptable to include an abbreviated description of the reference with the reference number, such as NFPA 70E [2].

In the reference list, the number shall be listed left justified with brackets. The reference title and publisher information shall be indented as shown below. Examples are given for pamphlets [1], transaction papers [2], standards [3], conference records [4], books [5], National Electrical Code [6], and web sites [7].

[1] IEEE, January 1997, *IEEE Industry Applications Society Author’s Guide and Guide to Procedures for Processing Technical Papers for use in IAS Conferences and Transactions, and for the IEEE Industry Applications Magazine*, Piscataway, NJ: IEEE.

[2] D. S. Baker, "Generator Backup Overcurrent Protection,” *IEEE Transactions on Industry Applications,* vol IA-18, pp 632-640, Nov/Dec 1982.

[3] ANSI/IEEE C37.102-1990, *IEEE Guide for AC Generator Protection*, New York, NY: IEEE.

[4] J. S. Dudor and L. K. Padden, “Protective Relaying on Medium and High Voltage Systems, Some Lessons To Be Learned,“ in *IEEE PCIC Conference Record*, 1994, pp 53-61.

[5] J. L. Blackburn, *Applied Protective Relaying, Principles and Applications*, New York, NY: Marcel Dekker, Inc. 1987.

[6] NFPA 70, 1996 *National Electrical Code*, Quincy, MA: NFPA.

[7]  The 9/11 Commission Report: Final Report of the National Commission on Terrorist Attacks, July 22, 2004.  Online at <http://www.gpo.gov>.

1. **APPENDIX**

If the paper has an appendix, it shall start on a separate page following the vitae. Each Appendix shall be lettered A, B, C, etc. The words “Appendix A” shall be typeface size 12-point, bold, all capital letters, and centered. The appendix identification shall be below the appendix identification with 12-point a line between them. The title shall be typeface size 12-point, bold, all capital letters, and centered. Refer to Appendix A for an example.

The text, headings, subheadings, figures, and tables shall follow the same format as the paper. Figures shall be numbered A-1, A-2, A-3, etc. Tables shall be numbered A-I, A-II, A-III, etc. The text may be presented in two columns (like the main body of the paper) or one column.

A section titled Appendix is not required in the paper.

1. **VITA**

This section provides a short biographical or autobiographical account of the author(s).The author has the option to place the email address for all of the paper’s authors in the author’s vita section rather than with the author information when paper spacing or email address length results in an undesirable presentation of the email address.

The section title shall be “vita” if the paper has only one author and “vitae” if the paper has more than one author.

An example biographical account follows.

John Smith graduated from State University in 1995 with a BSEE degree. He has been a design engineer for the Ace Engineering Company of Houston TX since 1996. He is a member of the IEEE 1234 subcommittee, an author of two previous ESW papers. He is a member of the ESW Standards subcommittee and a registered professional engineer in the states of Texas and Kansas.