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Introduction

The introduction should be a brief but thorough discussion of the context of the problem. This is accomplished by discussing the Company, the product, the market, etc., and transition into the area that will be the focus of the project. Discuss the current status of the product, process, or system that reasonably makes it something that should be analyzed for improvement or redesign. There should be a brief discussion of the current status of excessive costs, savings potential, or opportunity for increased revenues by addressing whatever is the focus of the project. In other words, the introduction should be both an engineering introduction and an economic introduction to the project. There must be both engineering and economic motivation discussed in your introduction. It should be clear that the sponsor will increase profits in some manner through the project that is being introduced.

Make sure that you begin your discussion in the context of the typical reader's experience – something that the typical reader can readily understand. If you don't follow this advice, you will lose the reader in the first two pages!! Do not baffle the reader with unnecessary esoteric terms or undefined technical jargon. Specific technical terms can be introduced and defined later in the body of the paper. The introduction should provide the reader with a basic understanding and motivation for the project, both technical and economic, and provide a reasonable context for the problem statement.

A typical introduction will be about 1½ to 2 pages long and **MUST** include photos or other illustrations that give the reader a good understanding of the context of the project and its eventual focus. As the reader comes to the end of the introduction, the next logical idea presented to the reader should be the Problem Statement in the next section. Do not make the mistake of putting the Problem Statement into the Introduction, or of putting the introduction into the Problem Statement. Each of these sections serves a distinct purpose.

Also, do not confuse the introduction of the paper with the body of the paper. The introduction should NOT include information from the results of any analyses you have done. Analytical results should be restricted to the body of the paper.

As one finishes reading the introduction, one should understand what the company is about, how it makes money in its business, how the focus of the project is involved in making money, and what challenge or opportunity is presented in the current status of the product, process, system, etc. One is then ready to continue to the Problem Statement which will precisely define what the Company sponsor wants to accomplish.

Problem Statement

The Problem Statement must be a concise and complete statement of the focus of the project and the specific criteria, constraints, and deliverables that will be observed and completed. The Problem Statement should also be considered a complete scope of work for everything that is to be accomplished, as viewed by the company sponsor. In other words, the Problem Statement is to be completely unambiguous in nature. It should precisely define what the project should include, and once those items are completed, the project is finished. It defines the goal line. The Problem Statement is written for the sponsor from the standpoint of asking, "What do they want?" If the Problem Statement is ambiguous, then the goal line is ambiguous and it becomes impossible to precisely determine if you have completed everything you have been asked to do – because it is subject to broad interpretation. This can result in "Scope Creep" which allows the project to be extended and expanded again and again such that you never get done. Keep in mind that if you write a precisely defined Problem Statement, you will know when you have done everything that is required, and so will your Advisor, your Graders, and your Sponsor.

Again, the Problem statement is not meant for ANY introductory information. ALL introductory information belongs in the Introduction. An efficient Problem Statement can be written by completing this sentence, "Acme, Inc. desires that ... (insert goals of the project) ... subject to the following criteria:" Then give a numbered list of the constraints, criteria, and deliverables. Continue with the Problem statement immediately after the Introduction without a page break. A sample Problem Statement is given below:

Problem Statement

Solo Cup desires that the airflow efficiency of the mold cavity of the P16 party cup be improved to reduce thermoforming vacuum cycle time. The following deliverables and criteria will be met:

1. The current airflow efficiency through the female mold insert must be analyzed.
2. New female mold insert designs must be developed to improve vacuum airflow.