Assignment: Central Plant Flow Meter Report*

The Cain Project in Engineering and Professional Communication

This work is produced by OpenStax-CNX and licensed under the
Creative Commons Attribution License 2.0†

Abstract

This is an assignment for Central Plant Flow Meter Report in the field of Mechanical Engineering.

During the field trip to the university's central power plant, you observed several different types of flow meters handling different fuel measurement tasks. Your task following the field trip will be to demonstrate your understanding of flow meter technology and its application in plant operation. Your report is due on ___(date)___ at ___(time)___.

Write a report in which you are serving as the principal design engineer in the construction of a university central plant such as the one you just observed here at Rice University. Your client (the university) needs to select flow meters to handle three different functions:

- Steam flow
- Natural gas service
- Chilled water flow (40 °F)

Your report will educate your client on flow meter technology and recommend the best flow meter type for each task. Your report should describe, discuss, and compare the performance of three types of flow meters:

- Ultrasonic
- Coriolis
- Turbine
- Extra credit: Vortex shedding meters

It should also make specific recommendations to the client based on your discussion of the technology. You will be graded on how well your report discusses flow meter technology and the strength of the case you make to the client. Your report should be no more than 3000 words (8 double-spaced pages).

Your report should include the following information, organized in a way to guide the reader through your reasoning and make a case for your recommendations:

- An abstract of no more than 100 words that summarizes the main points of your report. The abstract should succinctly state the purpose of your report, provide your client with high-level take-away points about flow meter technology, and summarize your recommendations. Remember that the abstract always stands independent of a report. If readers only read the abstract, they should learn the key points in your argument and your conclusions. Similarly, if they skip the abstract, they shouldn't miss information critical to your report.

*Version 1.1: Jun 28, 2008 4:08 pm -0500

†http://creativecommons.org/licenses/by/2.0/

- Background material on flow meters explaining why flow meters are employed, discussing the importance of flow meter accuracy, and summarizing the theory behind each flow meter type. You should also include background on the client's needs and expectations and on the applications that you are targeting.
- Analysis of the relative advantages and deficiencies of each flow meter that make them particularly well- or ill-suited for the applications being considered. The analysis of flow meter performance issues with respect to the client applications will constitute the bulk of your report and the largest percentage of your grade.
- Specific recommendations based on your analysis. Justify your conclusions with reference to the analysis you have conducted. Be sure to consider the ramifications (if any) of your client rejecting your recommendations
- Tables, graphics, and other visuals to support your argument. Tables and charts can be particularly useful in helping readers compare features, advantages, and disadvantages.

Your report will be judged on the organization of your argument and the persuasiveness of your writing. Note that it is often tempting in this type of report to reproduce your thought process to justify your claims. Clients, however, are interested in the bottom-line and want to know **why** your recommendations are the right ones. Be kind to your client—distill your thought process to critical details and use topic sentences and headings to signal to readers what they are about to learn as they work through sections of your report. In other words, don't use subheads like "Introduction/Background"; pick something more descriptive of the content and the argument you are making in a section.

The following references may be helpful in your research. Other references can and should be consulted in the course of producing this report.

- Ultrasonic Flow Meters[1]
- Coriolis Flow Meters[2]
- Turbine Flow Meters[3]
- Vortex Shedding Meters: (link 1[4]) and (link 2[5])

Flow Meter Report Grading Rubric

	Excellent (max pts)	Good (mid pts)	Poor (low pts)
Quality of flow meter description/background (20%)	Provides context on the purpose of flow meter technology. Accurately and completely describes the theory behind each type of flow meter.	Provides somewhat inaccurate or incomplete context. Leaves reader with questions about why he/she should care.	Context and background is incomplete and inaccurate (or omitted). Fails to provide enough context to support discussion.
			continued on next page

[1] http://www.google.com/search?hl=en&ie=ISO-8859-l&q=ultrasonic+meter&btnG=Google+Search
[2] http://www.emersonprocess.com/micromotion
[3] http://www.google.com/search?hl=en&ie=ISO-8859-l&q=Turbine+Flow+Meters&btnG=Google+Search
[4] http://www.foodengineering.com/CDA?ArticleInformation/products/BNPPorductItem?0,2376,122507,00.html
[5] http://www.google.com/search?hl=en&ie=ISO-8859-l&q=vortex+shedding+meter&btnG=Google+Search

Quality of technical analysis(35%)	Accurately describes application needs. Fully considers client expectations. Relates application requirements to flow meter technology. Provides appropriate evidence to support recommendations. Makes use of tables or visuals to aid understanding.	Omits two or more of the requirements under "Excellent" or inadequately considers material in two or more of these sections. Analysis omits key details.	Omits significant material in analyzing the application of flow meters. Rationale leading to conclusions is unclear or inaccurate.
Quality of conclusions(15%)	Derives conclusions logically from the points raised in the discussion. Provides clear, well argued recommendations to client.	Conclusions are weakly connected to discussion or are wishy washy. Action client should take is unclear or poorly stated.	Fails to make any conclusions or fails to consider audience needs and interests in the recommendations offered.
Abstract(10%)	Summarizes entire report succinctly and in appropriate number of words.	Omits 1-2 aspects of the report or exceeds word count by up to 25 words.	Provides an inadequate summary of the paper, writes abstract as an introduction, and/or exceeds word count by more than 25 words.
Organization and style(15%)	Organizes discussion logically, uses forecasting topic sentences to guide reader through argument, uses correct grammar.	Occasional grammatical errors; document not organized to aid understanding.	Organization or grammatical errors are distracting.
Format and references(5%)	Word count as specified; document is fully referenced with reputable sources; report cover included.	One formatting or reference criterion missing.	Two or more formatting or reference problems.

Table 1