



Memorandum

Date: March 13, 2008

To: Don Klepp, English Department, OUC

From: Jordan Clarke, Mechanical Engineering Technology Student

Re: **Progress Report**

Thank you for approving our proposed research project and report. Since that approval, we have faced several challenges. Some of those challenges have slowed our progress, but we're still confident that we'll successfully complete the project.

BACKGROUND

As you know from our proposal memo, we decided to look for a "real world" problem to use as a topic for our analytical report. This led us to Kalamalka Industries, where we met with Dallas Koop. Dallas needs a better way to measure the wire feed rate of his arc welders. Currently Dallas is using a tape measure and a stopwatch. Our group decided to use this problem as a basis for our English 142 research report assignment.

PROGRESS

This project began with choosing a method to solve Dallas's problem. The choices were:

1. Find a meter and analyze it
2. Design our own meter and analyze it

Our initial research determined that the meters available commercially are very expensive. We then decided to design and build our own wire feed rate meter.

Design

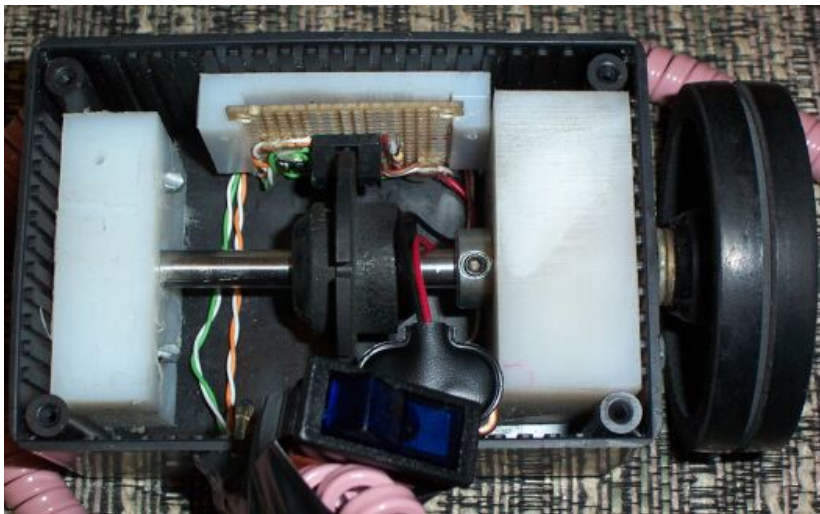
To measure the wire feed rate we are using a bicycle computer, electronic eye, and a wheel that rolls on the welding wire. As the wheel rolls it turns a disk with holes in it that passes through the electric eye. The eye then sends an electrical pulse to the bicycle computer that translates the pulses into a linear distance per minute that the wheel travels along the wire. A digital readout on the bicycle computer shows the operator the current wire feed rate of the arc welder.

Manufacturing

Over the past couple months we have built the wire feed rate meter in the mechanical engineering fabrication lab. We have had many minor difficulties in the design and manufacturing process but each one has been dealt with. The wheel and electric eye are mounted on a steel shaft set in two skateboard bearings inside a plastic box that also contains a circuit board and the power supply. A telephone wire connects the electronics inside the box to the bicycle computer. Also, a switch controls the power going to the electric eye. Page 2 shows two pictures of the wire feed rate meter.



Draft Figure 1: External view of wire feed rate meter



Draft Figure 2: Internal view of wire feed rate meter

Report

After sorting through our data, we've decided that the report will focus on whether our solution to Dallas Koop's problem meets Dallas's needs. The research report will be presented in a chronological order with the following main sections:

- Introduction (choosing a solution)
- Designing a meter
- Manufacturing the meter
- Testing the meter
- Test results and assessments
- Conclusions and Recommendations

Please see the attached working outline for details of the sections listed on page 2. Clearly, sections 4.0 and 5.0 are tentative at this point because we haven't yet fully tested the meter. Also, as you can tell from the outline, we haven't decided where to include the cost assessment, if we do include that assessment in the report.

WORK TO BE COMPLETED

The meter will be tested for accuracy and durability. We are working on a test setup that looks very promising. We're going to test the meter on a milling machine at the OUC Mech lab and then on a welder in that same lab. If we have enough time, we'll also test the meter at Kalamalka Industries. Our deadline for completing the tests is March 20.

A cost analysis will be also be done. We are hoping to recover our costs by selling the unit to Kalamalka Industries if the meter suits its needs.

When we've completed the tests and the cost analysis, we'll insert that information into our working outline and write the report's first draft. Our current schedule has us at the C286 lab the weekend of March 23 and 24. We'll split the writing duties, but we'll be able to consult with one another as we draft the sections because we'll all be in the same room.

GROUP DYNAMICS

This group has worked well together to get us to this stage of the report. All four members are mechanically inclined, so the process of designing and building the wire feed rate meter has been enjoyable. If there is an area that needs to be improved it is our communication skills. To this point, we have not communicated very well while off campus. Improvements in this area would make us more efficient. (That's one reason for booking March 23 and 24 to write and edit the first draft.)

CONCLUSION

We are on schedule to complete this project on time. All that is left to do before writing the report is to test the meter. This will only take a few hours. I do not believe we will have any future problems. Even if the testing of the meter does not go well, we will still have a set of data to analyze for the report. I am confident this project will meet the needs of the English 142 research report assignment.

Please suggest any improvements you see for the working outline. Also, do you think we should include a cost assessment, or should we stick to the technical assessment? May we discuss the outline with you, either after the March 18 class or during the March 20 lab?

Jordan Clarke

Attachments: Working Outline
Working Bibliography