

Assignment 6: Observations

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Location: Precision Feed screws Inc

Day and Time: March 6, 10 am

Duration: 2 hours

Location

This is my grandpa's machine shop in New Castle, PA my home town. This shop focuses on machining new feed screws for industrial uses and the maintenance of these parts. The maintenance and manufacturing of this part is comprised mostly of welding and re-welding the threads of the screws. This is done by an automated welder that will be shown in the pictures.

Who The two people that I talked to was my grandpa, David Wilson who is the owner and one of his welders, John. My grandpa looks like a old man he used to work in the shop everyday but now he is really just supervising so he has a lot of knowledge on the subject. John on the other hand is one of his newer employees he is a younger guy and his main job is to weld the new threads this is done by him sitting at the machine adjusting its movements and other parameters to get a successful weld.

Potential Problems

The first potential problem that I found during the day was during the welding John was really just making the adjustments based on feel and experience and not really any data. From the temperature of the metals to the amount of current is being put through the welder. This could be a problem because if the welder is not moving in the right location or the current is too high then the weld could be compromise. This did not happen during my time there but I was told about it being one of the biggest issues. The second potential problem that I saw was the arc being put off was so bright that it was hard to make these decisions that are needed to have a good weld. Currently John is just sitting behind a piece of wood that has a little cutout with the film needed to look at the arc. This problem is something that all welders deal with but there has not been really any solutions on the market to view your welding space better to control the arc better. The last problem that I saw during my time in the shop was The lack of standardization in the welding field. Yes there are big welding companies that create standard welders that work for most situations but

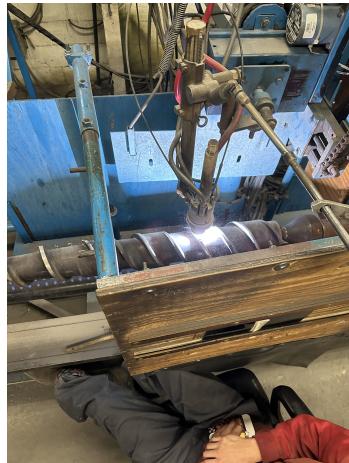


Figure 1: This is a view of the automated welder working

for this one in particular it is all custom tooling. This is not really a problem because they have the people on staff that made the equipment but this could cause us problems for our project. From my talking with the welders it is really just a learning curve for them so it is not that big of a issue but for someone wanting to make a new product will have to think about this during the design.

Experiences

I experienced a couple of the problems first hand. I saw John having to change the settings of the welder a lot to keep a good weld. I did not try changing the settings because he was working on a customers feed screw. The problem that was easy to experience was not having the best view of the arc as it is welding. I looked through the window and all you really see is a glowing spot. It is hard to see the metal and the pooling that occurs during the weld. John said he has gotten used to looking through it but I feel like it can be improved.

Other

This type of welding is not really the main focus of this project since it is a plasma weld and we are looking into stick welding. Other than that a lot of the issues will be the same.



Figure 2: Another angle of the welder showing how the metal is heated



Figure 3: This is the feed hopper on the welder that supplies the powder metal



Figure 4: This is the weld head that produces the arc



Figure 5: A rough weld that needs cleaned up

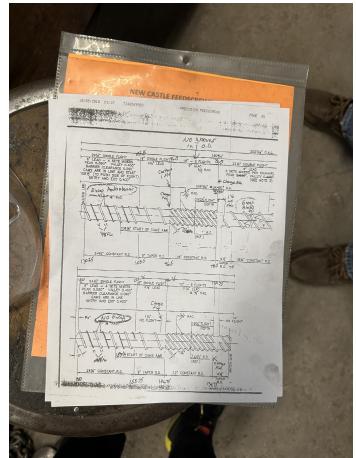


Figure 6: This is the weld sheet that they get to do the weld in spec