

Design and Manufacture of a Pneumatically Operated Fixture to Secure the Tin Bands to a Hurley

Connie O'Connor, Michael O'Connor, Jakub Kaczmarowski, Jason Nevin

Aim of the Project

The aim of this project is to build a pneumatically operated system using a pressure regulator with a pressure gauge, a 5 port 2 way flow valve lever operated, 2 speed controllers to drive the piston up and down and a double acting cylinder with a stroke length of roughly 50mm. The main aim is to study the reason for bands to go onto hurleys and how it helps stop the breaking of hurleys. The aim of this project is to make it easy and fast to attach hurley bands on, to help reduce the usage of ash.

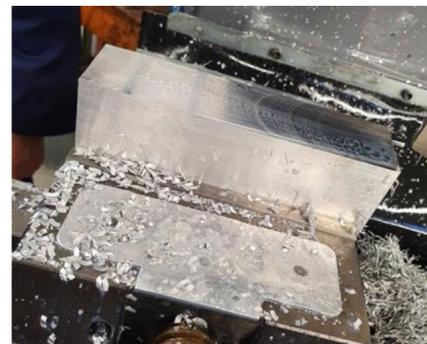
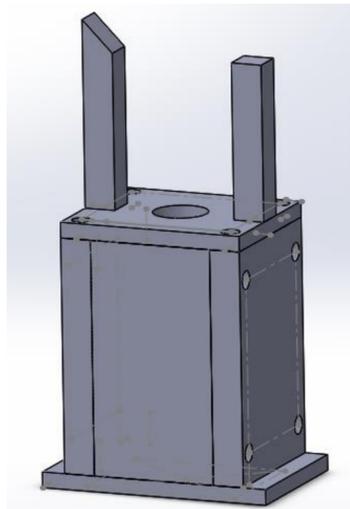
Background

Ash trees that have been infected by the disease suffer wilting foliage, crown dieback and bark lesions. The disease can kill an infected tree directly as over time necrotic lesions gradually encircle and permanently damage the phloem, which is the layer of living tissue that carries organic nutrients to the other parts of the plant.

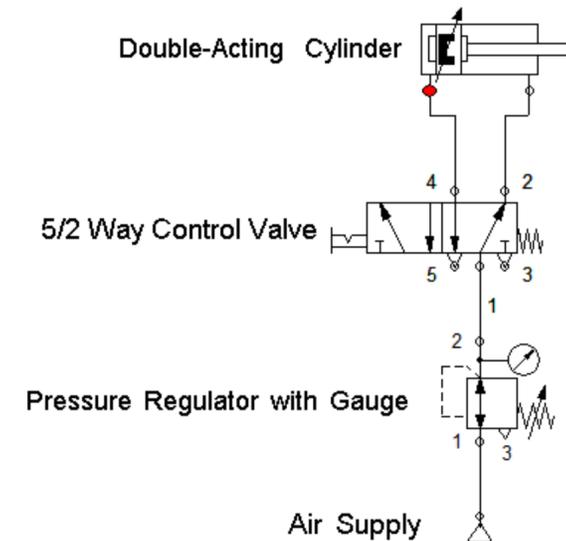


Manufacture

The manufacturing in this project mostly consisted of the mill and bench work. Most of the holes needed to be tapped M5. Counter bores were also drilled so that all screws would sit flush with the piece.



Pneumatic Schematic



Radionic Parts



Conclusion

The pneumatic hurley bander proved to be a difficult project, with 4 team members having to do 8 parts in a space of 10 weeks. Having all team member together one day per week was far from ideal and communication between the group members has been difficult due to the covid-19 pandemic and social distancing. The following outcomes were learnt which included:

- Pay more consideration to time constraints.
- Do not leave work until the last minute.
- Time constraints decided the machining processes carried out.
- Start the design and manufacturing processes earlier on in the project to ensure a high-quality project can be made.
- Detailed working drawings make manufacturing much easier.
- Learning our team's strong points such as Solidworks, Machining skills and report writing skills proved vital to the completion of the project.

References

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