



## Introduction

This past summer I worked at Progressive Surface Inc. in Grand Rapids, MI. Progressive is a local company that is a global leader in automated machinery for shot peening, grit blasting, waterjet stripping, and thermal spray systems. My internship involved designing new machines as well as finding solutions to problems on existing machines.

## Job Description

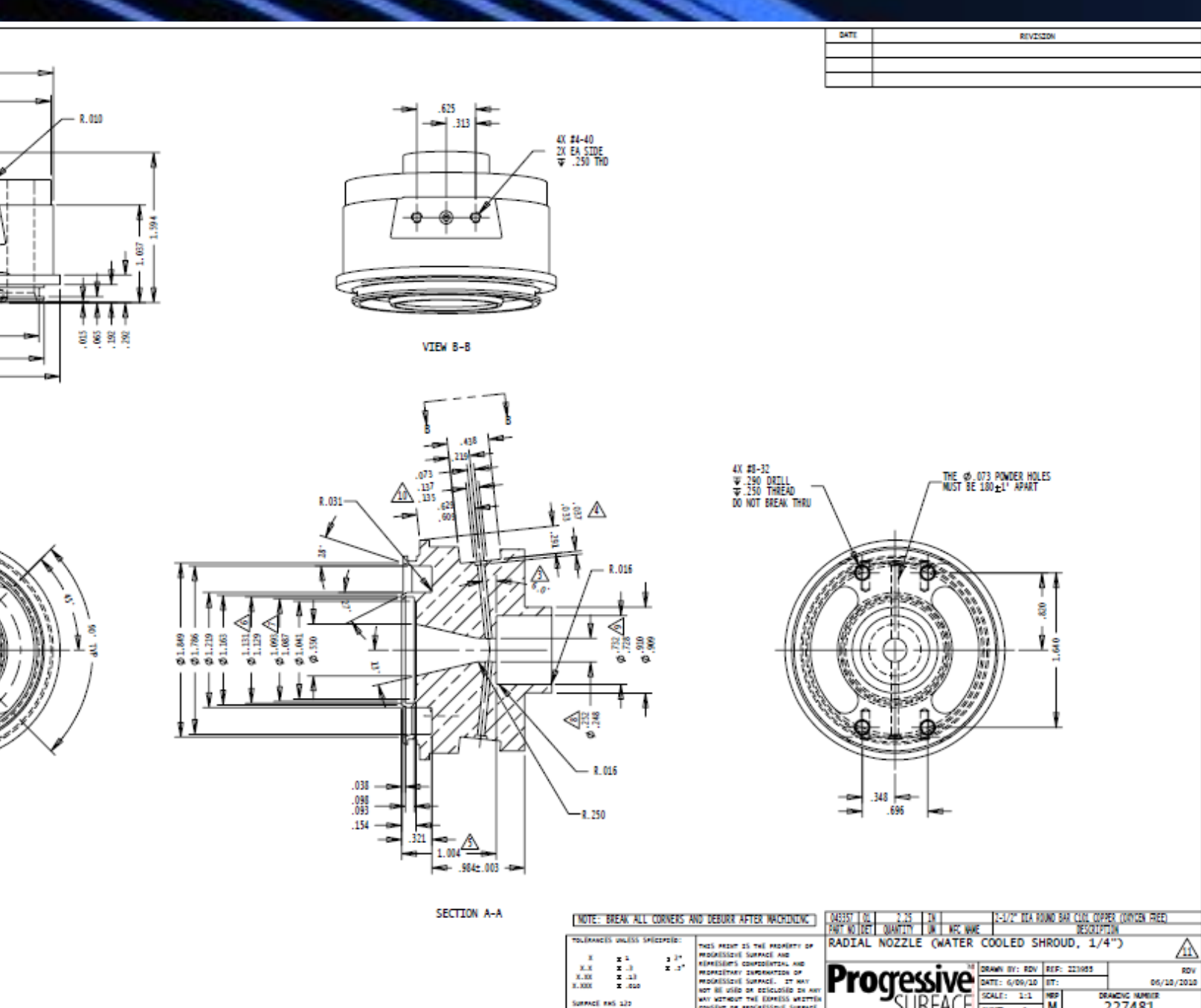
This was my second year working at Progressive Surface. The first year I worked as the floor engineer solving problems on existing machines so deadlines could be met. I was the communication between the engineering and manufacturing departments. This summer, I functioned more as a design engineer helping project engineers design new machinery for customers. This often consisted of designing new assemblies and components of machinery as well as detailing parts that had already been designed. I also spent a lot of my time redesigning components of machines to meet customer specifications.

## Projects

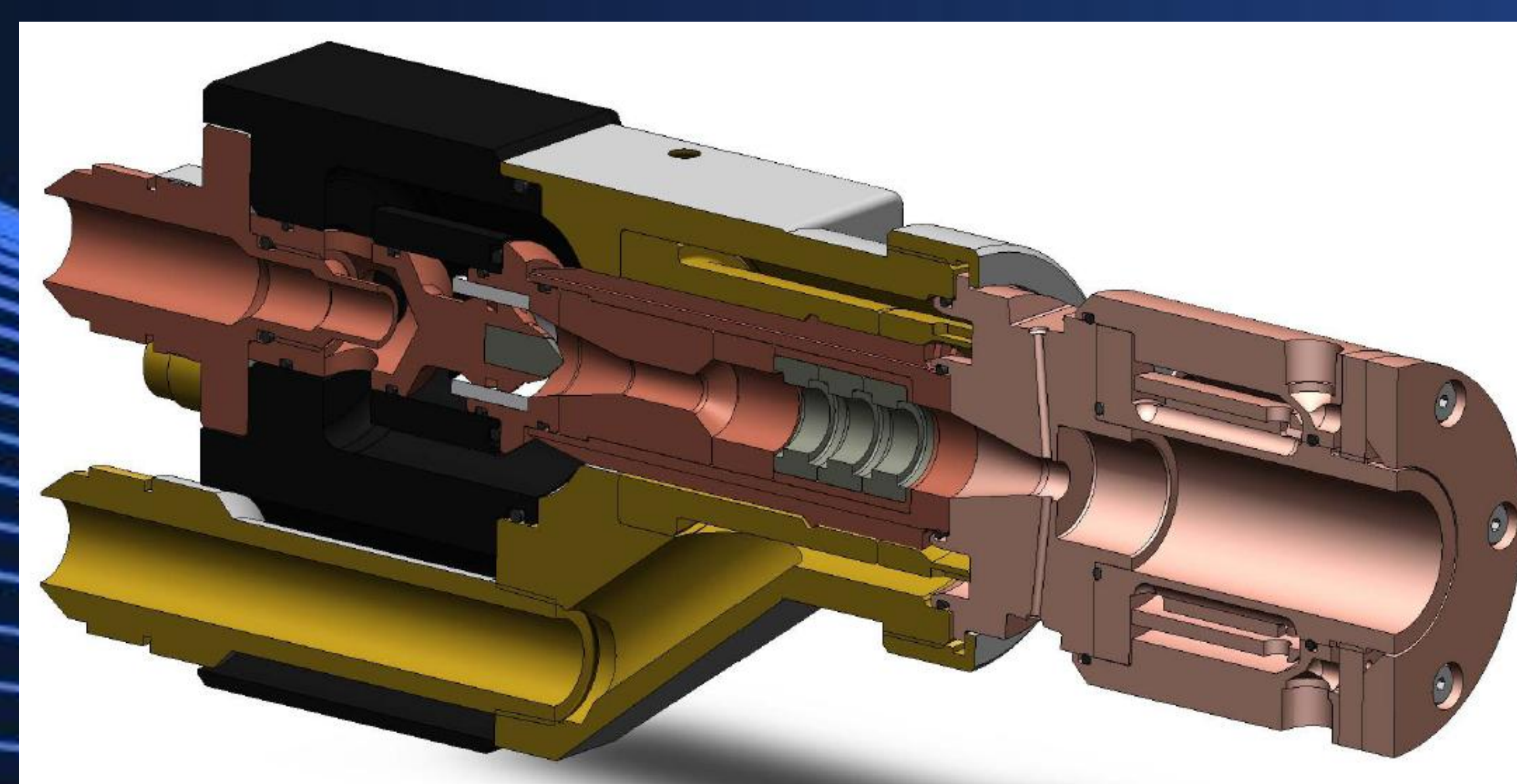
Throughout the summer I helped design components and assemblies for various blasting machines. One of the projects that I worked on was designing a water-cooled plasma gun shroud. As shown in the figure below, many plasma coatings leave voids and oxide inclusions which lead to a less dense and less desirable coating. The shroud I designed made it possible to place the plasma gun much closer to the object as well as stream a ring of inert gas to prevent oxide inclusions. We found out after many failed attempts that the shroud needed to be water cooled or it would melt from the plasma spray. The figures below show SolidWorks models and drawings of some of the components.



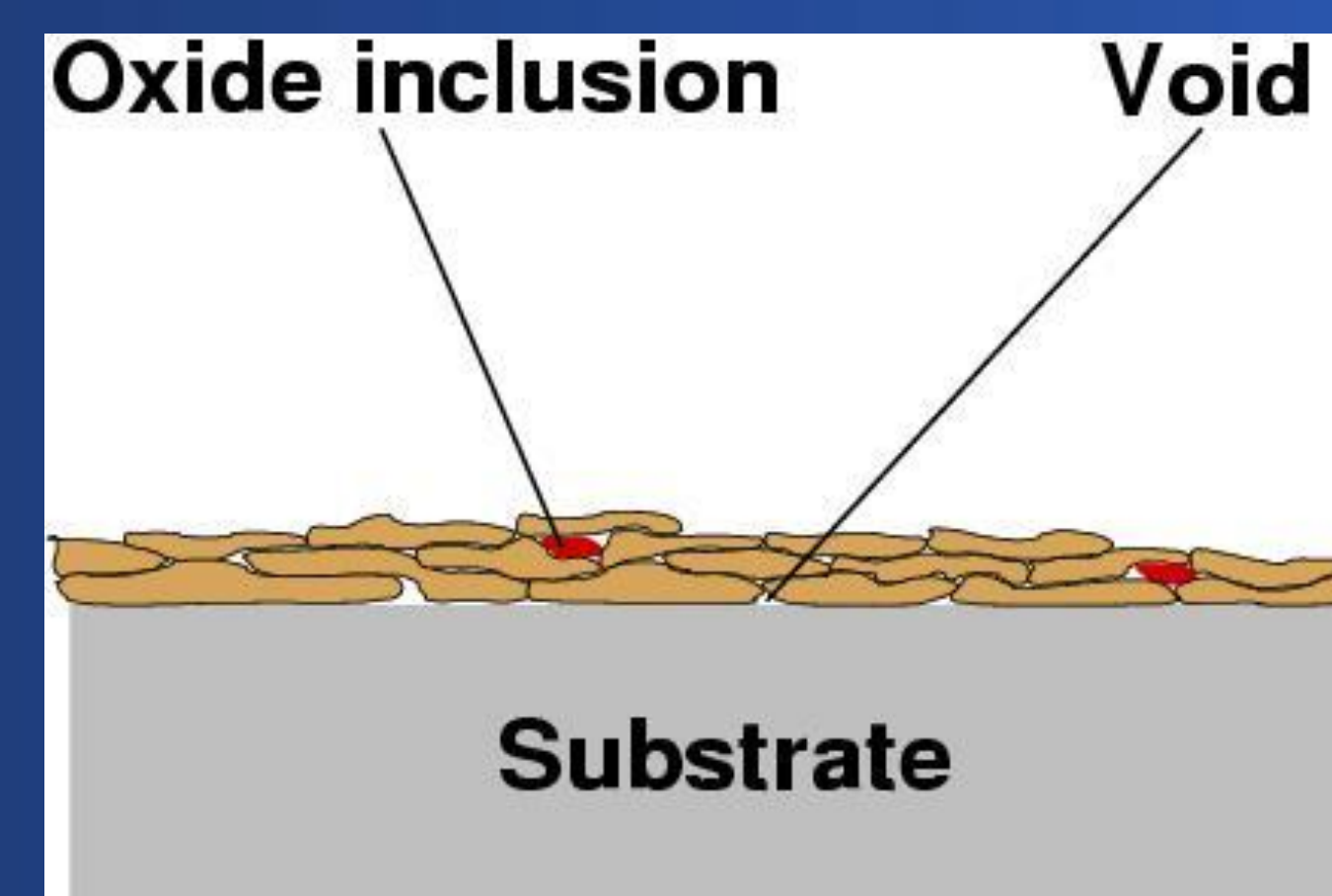
ing Plasma Torch



rawing of plasma torch nozzle



Water cooled gas shroud for plasma torch



Problem with existing plasma coating

## Progressive Customers

