1. **Project Background and Description**

The American Gem Society (AGS) is a nonprofit trade organization of jewelry industry members (retailers, suppliers, and sustaining members) committed to consumer protection, ethical business practice, and professional development. AGS is the full owner of American Gem Society Laboratories, a diamond grading laboratory known for development of light performance analysis and cut grade analysis of diamonds.

AGS Laboratories developed a proprietary metric for analyzing the cut of a diamond based on a 3-dimensional scan of exterior proportions, using a high definition non-contact optical scanner (NCOS) such as Sarine’s DiaMension™ HD or OGI’s Scanox Proportion HD. The accuracy of the scans is primary in being able to assess diamond cut. Due to their affinity for grease and static, diamonds typically attract dust particles, which can impede scan accuracy. Currently, technicians are using canned air to clean the diamonds which slows the production process and increases the risk for loss.

![Non-contact optical scanner (NCOS) with a diamond on the platform.](image)

AGS Laboratories is seeking the development of technology to automate or streamline the cleaning and dusting of diamonds.

2. **Project Scope**

This project requires the development of hardware to remove dust from diamond during the production process of obtaining a 3-dimensional scan of the geometry of the cut of the diamond.

3. **High-Level Requirements/Constraints**

Mechanical engineering, electrical and computer engineering.

The new system must include the following:

- Ability to perform process within specified time limit conducive to production requirements.
- Ability to fit on a desktop work space.
- Ability to interface with existing software/hardware.
- Ability to ensure safety, no loss of, and no damage to client diamonds.
- No safety materials or tools (goggles, gloves, hearing protection, etc.) required.