



Company Contact: Craig Helewski

Company Background

- Centered around industrial automation and electrification
- Bland, VA
- Manufacture medium voltage dry-type power transformers

Problem

- ABB is using an excess of paint on their parts.
- There is a high variation of paint causing varying thickness across the surface of all parts.

Goal

Thickness ≥ 1.5 mil

Objectives

- \$

Reduce

Reduce the amount of powder on the parts by a minimum of 20% to give us an annual savings of approximately \$100K
- 🔍

Decrease

Decrease the variation of paint thickness on parts by 25%
- ✓

Improve

Improve processes for evaluating powder paint performance in the future by creating documentation for the plant to use in the future

Painting the Future

Boyang Li | Yun Li | Christopher Murden | Christopher Rathje

Impact

- Annual Savings From Decreased Powder Volume: **\$80,000**
- Lowered Variation in Paint Thickness by 20.79%
- Created Easily Repeatable Experiment for ABB to Use in the Future

Analysis

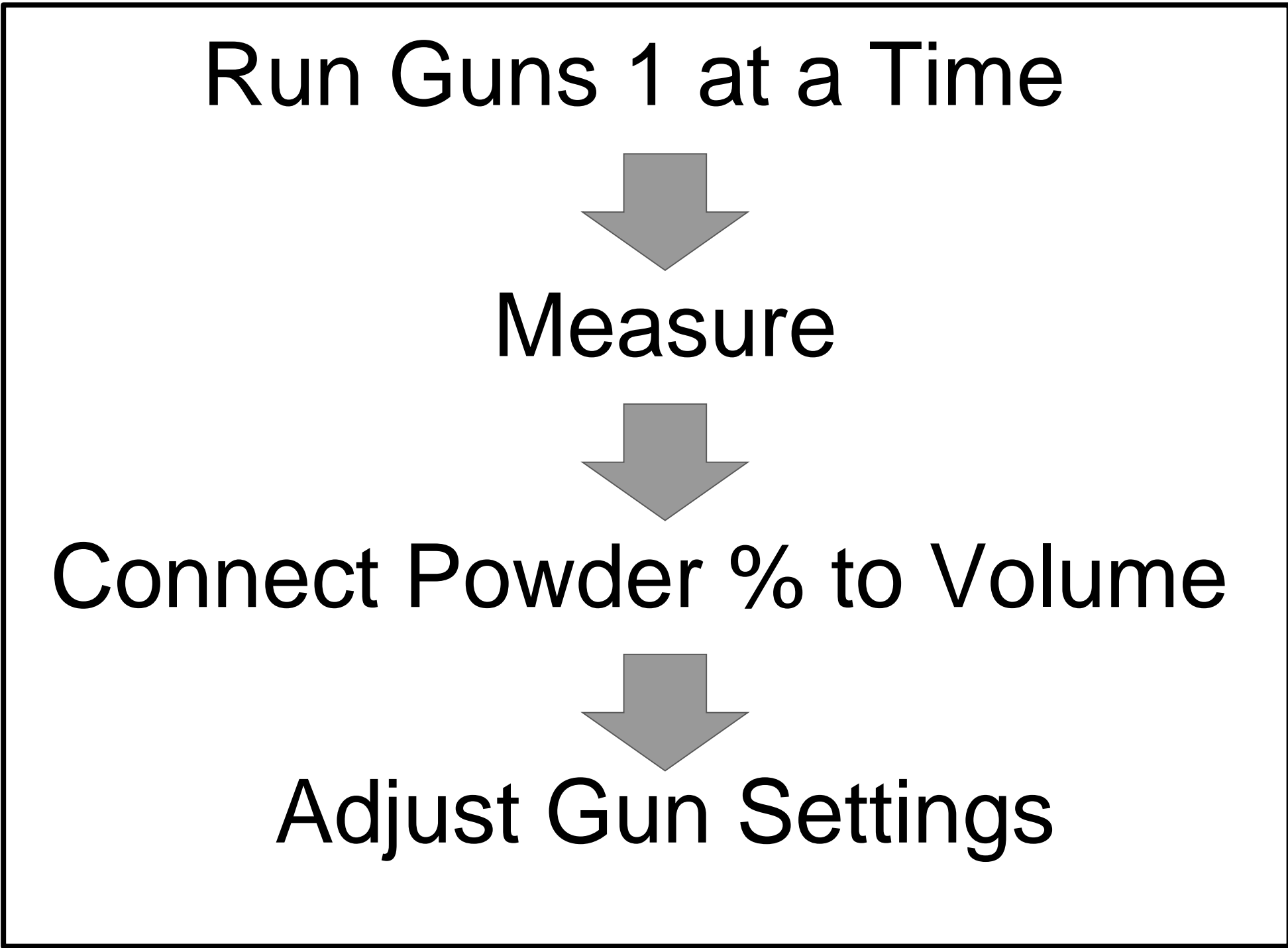
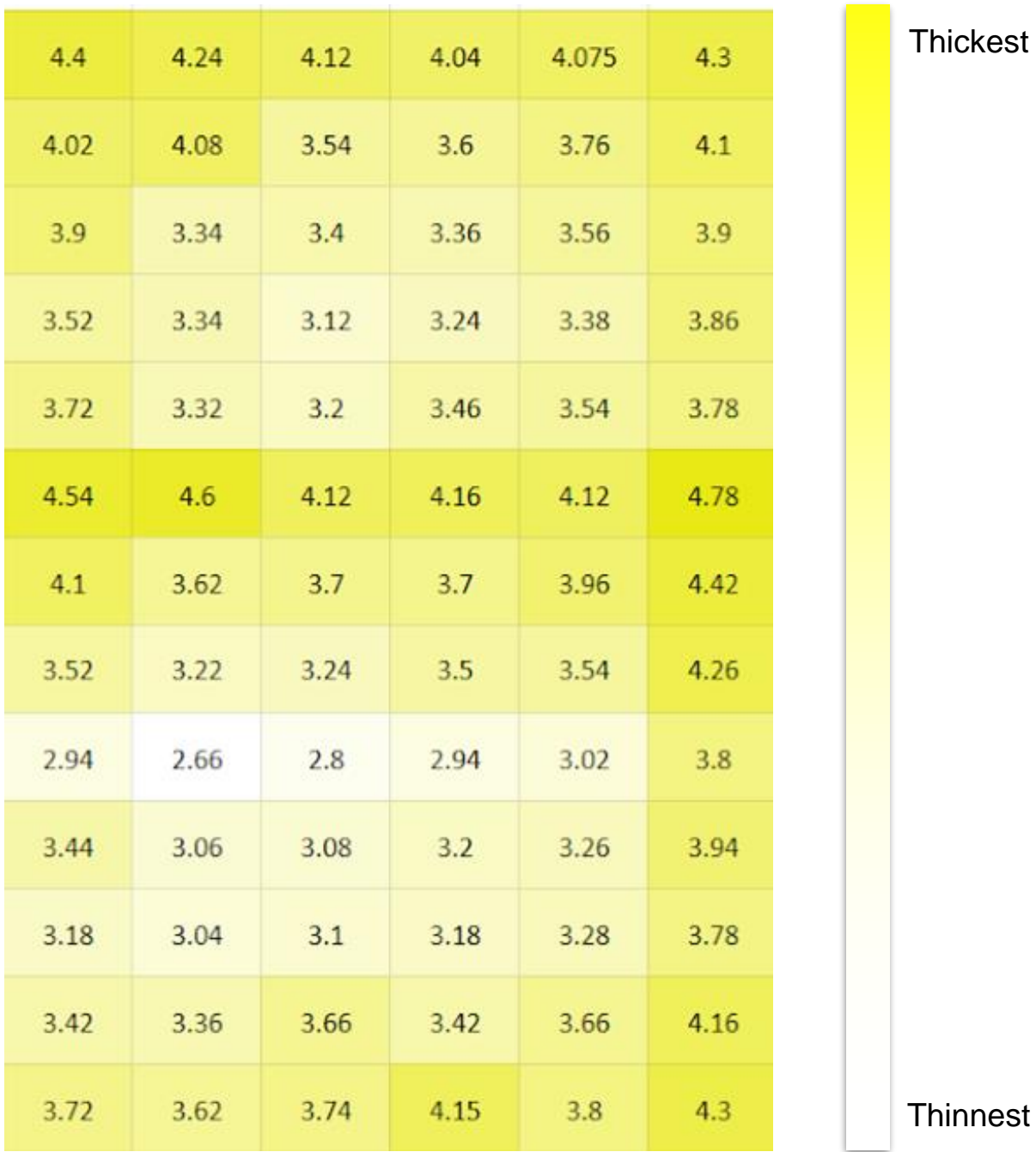
| METHOD: SLSQP coefficient | percentage of parts gun on in the experiment | percentage of parts gun on in the future (example) | powder percentage | round up |
|---------------------------|--|--|-------------------|----------|
| 0.457273 | 55% | 55% | 9.15% | 10% |
| 0.4760589 | 100% | 100% | 9.52% | 10% |
| 0.5863217 | 100% | 100% | 11.73% | 12% |
| 0.5290511 | 100% | 100% | 10.58% | 11% |
| 1.5385064 | 95% | 95% | 30.77% | 31% |
| 1.1159964 | 50% | 50% | 22.32% | 23% |
| 0 | 35% | 35% | 0.00% | 0% |

Experiment

Independent Variable Constant Dependent Variable

↓ ↓ ↓

Powder Percentage x Total Air = **Powder Volume**



Faculty Advisor: Sunwook Kim

What is Powder Painting?

- A type of coating that is applied as a free-flowing, dry powder
- Powder “Guns” are used to spray parts with powder
- Typically applied electrostatically and then cured under heat.

Importance of Grounding

- When is a part is not well grounded, less powder sticks to the part
- Buildup of paint residue on the hooks that hold the part, the part may not have a solid ground.

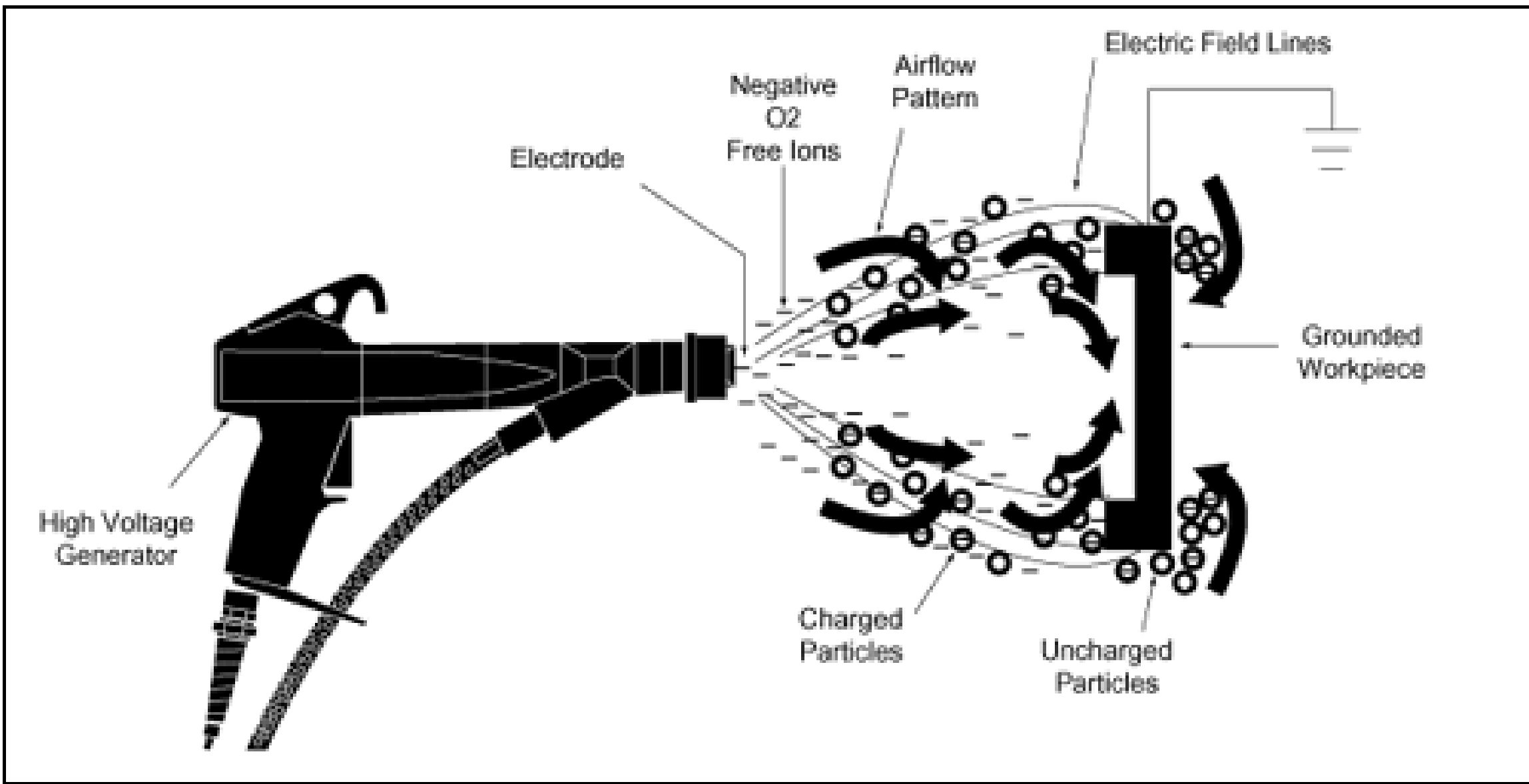


ABB Powder Booth

