Electrostatic Coating System Replacement

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Company Description

- Facility located in Radford, VA

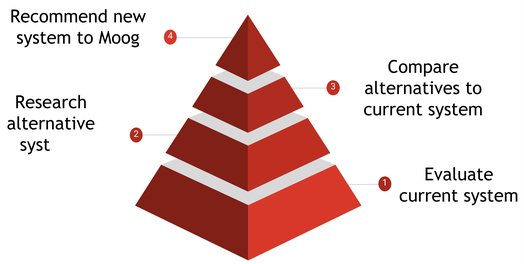
(Radford Facility)

(Brushless Motor)

- High performance brushless motor and control systems
  - Medical
  - Data storage
  - Military and more

Project Background

- Outdated electrostatic coating system
  - Coating time variation (3-4 minutes)
  - Coating thickness variation (10 - 20 mils)
  - 14 % of work week spent on rework
- Outdated dust collection system
  - Worker safety concerns
  - Failed insurance inspection



- Goal: update current system with 4 coating stations and 4 cleaning stations

Objectives

1. Improve first time through parts by 50% for improved productivity
2. Coating thickness variation of 10 - 15 mils to fit maximum amount of copper wire
3. Coat parts between 3 and 3.5 minutes to even flow of parts to the oven

Results

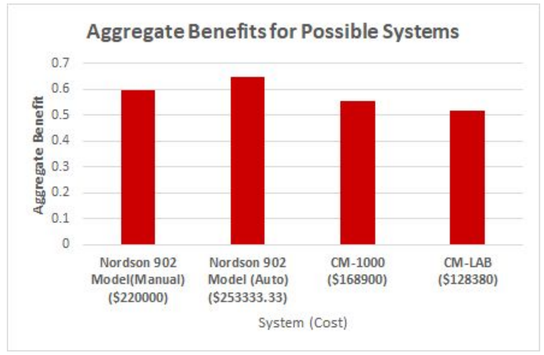
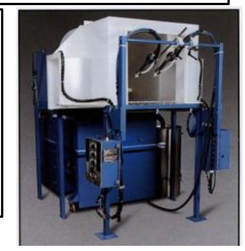


Figure 1 - Aggregate Benefits of Systems vs Cost

Final Recommendation of New System
Nordson 902 Model (Automatic Option)
$253,333

Criteria for selection:
- Throughput Capacity (8)
- Coating Thickness Precision (9)
- Ability to use 3M powder (10)
- Size of system (4)

*1=not important, 10=very important



Impact

Notable Impact and Savings:

- **$3,007 /year** in Material & Labor savings
- **$5,712,000 /year** in additional sales
- Extremely precise coating thickness control
- Automatic system allows more time for possible reworks

Current Coating System		New Coating System	
Rework Cost	$10560/year	**Rework Cost**	Waiting on installation and data collection
Material Cost	$22548/year	**Material and Labor Savings**	$3007/year
System Breakdown Cost	$750000/week	**Implementation Cost**	$253,333

Table 1 - Comparison of Rework Cost, Material cost and System Breakdown Cost

	Current Coating System	New Coating System
Sales	$20400000/year	Additional $5712000/year
Efficiency	14% time spent reworking	Waiting on installation and data collection
Variation	5 - 10 mils	1 - 5 mils
Coating Time	3 - 4 minutes	1 - 2 minutes

Table 2 - Comparison of Sales, Efficiency, Variation and Coating Time

Comparison of Machine Specifications

Model	Price	Lead time to Install	Coating Thickness Control	3M Dust Compatibility	Automatic vs Manual
Nordson Model 902 (manual)	$55,000	4-8 Weeks	1 - 5 mils	Yes	Manual
Nordson Model 902 (automatic)	$67,000	4-8 Weeks	1 - 5 mils	Yes	Automatic
CM-Lab	$42,225	8-9 Weeks	8 - 25 mils	Yes	Manual
CM-1000	$32,095	8-9 Weeks	8 - 25 mils	Yes	Automatic

Table 3 - Comparison of Machine Specifications

Possible Solutions

Nordson

- Nordson Model 902 Powder Spray Booth
  - Spray powder gun application
  - Closed loop recycling powder system

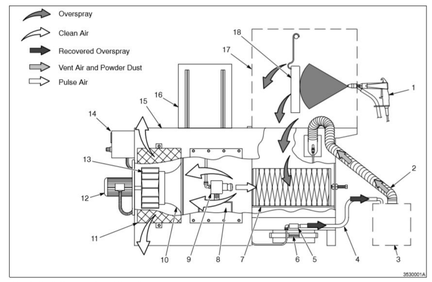
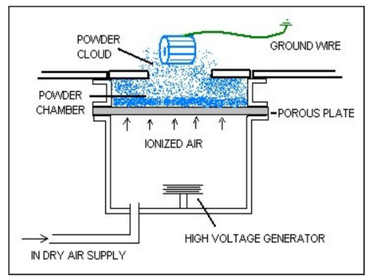


Fig. 1 Booth Components and Operation

  - Pricing:
    - Automatic gun: $67,000
    - Manual gun: $55,000

Creative Method

- CM-1000 Powder Coating Booth
  - Aerated fluidized bed application



  - Pricing:
    - CM - 1000: $42,225

Dust Collection Solution

Donaldson

DFE 3-6 Model
- Used to recycle powder and keep facility floor safe from fire hazards
  - Required after insurance walkthrough
- 6 filter system
- NFPA Rated and UL Listed
- Lead time: 8 - 9 weeks
- Price: $85,378.39