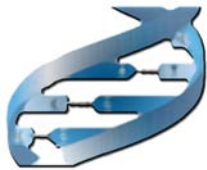




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**Independent Test
Done by**



**Helix Systems, Inc
Nitrogen Top Spray Unit Data Collection
Final Report
For
Mercedes Benz
Vance, Alabama**

The data presented here comes from the attached Nitrogen Top Spray Data Sheet, and was gathered between September 18th and September 21, 2007 from cars passing through Spot Repair in Paint 2 for the purpose of evaluating the effectiveness of the Nitrogen Top Spray units. This report attempts to show the effectiveness of the Top Spray Units by eliminating the other independent variables of spray time through averages and grouping/sorting. For comparative purposes, a spray area size estimation was added, with 1 unit being approximately 10 square inches. This was added to give more relative meaning to spray times, since some jobs required only a small spot be sprayed while others included much larger spots, or some in several different places. All times are measured in seconds, and “times sprayed” refers to the number of times the entire process was repeated for a spot.

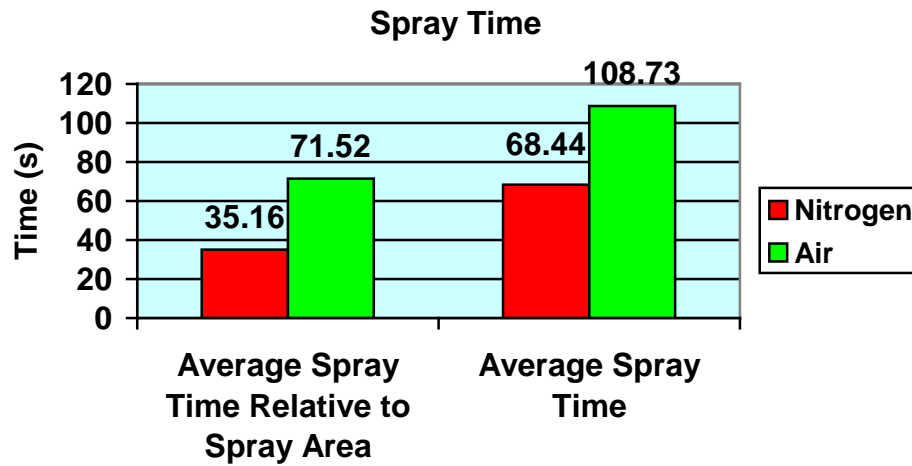
Team Member Preference

The team members spraying all seemed to go out of their way to use nitrogen instead of the compressed air. The few times a team member did grab the compressed air hose, it was for a spot they considered an easy job. All opinions were that the nitrogen

was noticeably more effective than compressed air. I often had to ask them to use the compressed air simply so I could get data on something other than the nitrogen.

Spray Times

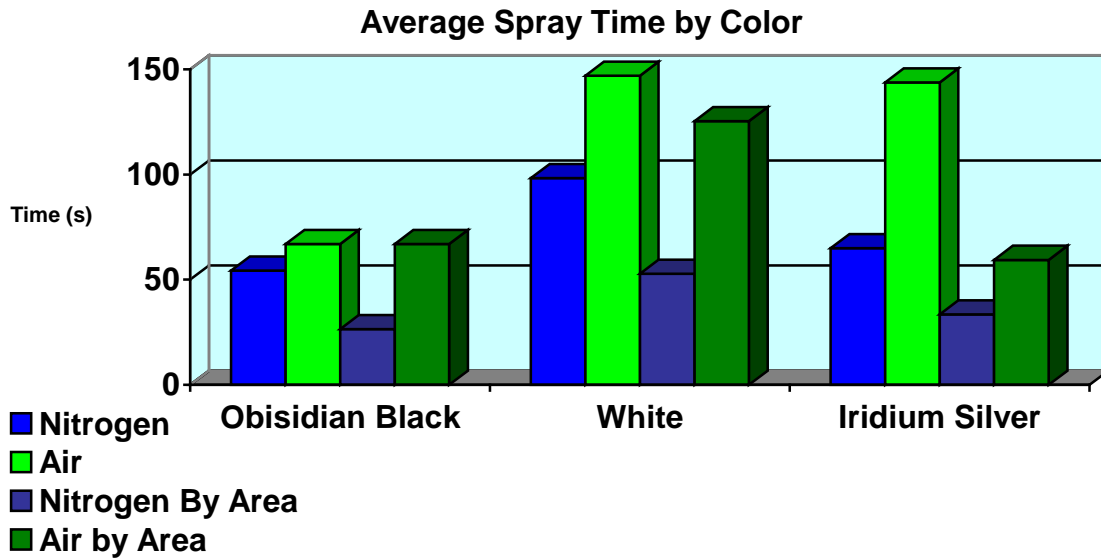
The use of the Nitrogen Top Spray Units show a much shorter average spray time than compressed air, both with and without the inclusion of the size estimation.



The average spray time with compressed air was over 2 times that of the Nitrogen Top Spray unit when spray area was factored in, and 1.59 times that of the Nitrogen Top Spray unit without the spray area estimation (the average spray area of compressed air was about 1.2 times that of the nitrogen, since the team members tended to use the compressed air for “easier” and smaller spots.)

Average Spray Times by Color

The three most common colors sprayed in spot repair were Obsidian Black (197), White (650), and Iridium Silver (775). Noticeable differences are shown in the average spray time of every color.

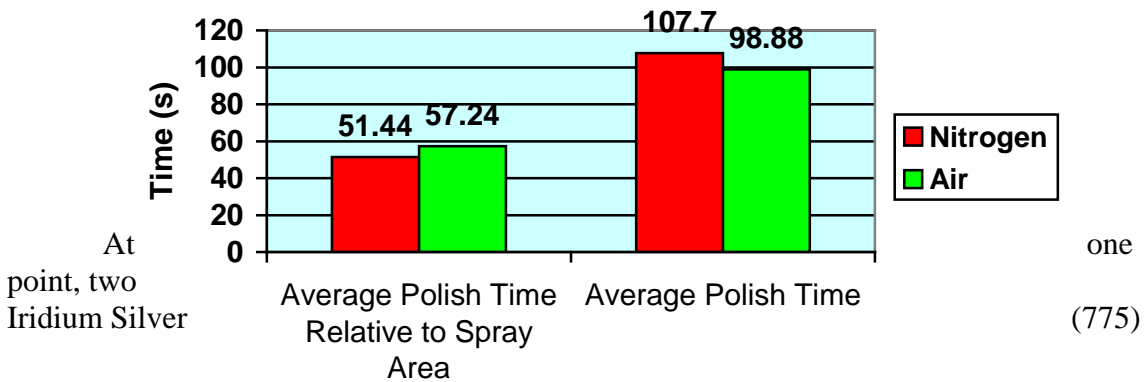


AVERAGE SPRAY TIME BY COLOR		
54.25	67.00	197
98.33	147.00	650
65.00	143.75	775
AVERAGE SPRAY TIME BY AREA BY COLOR		
26.50	67.00	197
52.78	125.33	650
33.49	59.42	775

Polish Time

Polish time didn't seem to be noticeably affected by whether compressed air or nitrogen was used to spray. From the data, personal observations, and talking to the team members in spot repair, the time it takes to polish is affected by the type and location of the damage, the color of the car, and the team member polishing.

Case Study – Vehicle Numbers 9314 and 8831 Polish Time



bodies came into spot repair with the same damage to them. The variables of damage type, location, spray area, and color were controlled, leaving the independent variables of team member spraying, and whether compressed air or the Nitrogen Top Spray Unit was used. Unfortunately, the body sprayed by compressed air was damaged by someone else polishing it, and was placed into a body to be sent off to major repair. Therefore, polish times could not be compared.

Spot Location – Front Right Fender

Color – Iridium Silver (775)

Spray Area – 3 (most of the front fenders were sprayed.)

9314: Team Member – Bob

Spray Time – 85s

Nitrogen Top Spray Unit

8831: Team Member – Jeremy

Spray Time – 140s

Compressed Air

The time to spray with the compressed air was 1.65 times as long as it was with the Nitrogen Top Spray unit.

Conclusion

The Nitrogen Top Spray Unit shows between a 33% and 50% reduction in spray times for all colors compared to the use of compressed air. While it was not measured, because of the obvious increase in transfer efficiency, and time it takes to spray, the saving of material would be proportionate to saving in time, between 33% and 50%. Polish time does not seem to be noticeably affected.

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September 24, 2007
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