



## SST Modular Nozzle Realizes Substantial Savings

### Background

An SST customer recently shared cost data comparing the use of stainless steel nozzles and SST's **UltiLife™** modular nozzles for an identical aluminum cold spray application that uses SST-A0050 Aluminum powder at a feed rate of 20 g/min.

### The Problem

The customer indicated a concern with the quantity of stainless steel nozzles being consumed in the existing process. It was established that the current process parameters yielded the best end results for the application, therefore, temperature, feed rates and powder specification changes were not an option. CenterLine's SST Division engineers suggested that the customer consider implementing the modular SST UltiLife nozzles. This style of nozzle is designed to offer extended service life for applications using hard or abrasive materials and the holder for this series is a non-wearing component. Since the customer had captured operating data from the existing nozzles, they agreed to purchase the UltiLife for a comparative trial.

### The Solution

Initially the customer questioned the large price differential between the UltiLife and the stainless steel nozzles. It was explained that our own tests had shown that the UltiLife had a far superior life than standard nozzles and the savings in nozzle replacement costs and the improvements in production throughput would clearly justify this differential.



### Findings

Based on this specific application, the customer documented the following results:

**Nozzle life/unit:** Stainless Steel-1.5 hrs. UltiLife- 239 hrs.

The UltiLife nozzle exhibited a very large increase in product life which dramatically improved production rate and maintenance time reduction needed to replace the stainless steel nozzles.

The customer concluded that upgrading the system to UltiLife nozzles resulted in a **\$6.74/lbs. savings** in powder used (**64% improvement**) and a **\$26.33/hr. cost savings (73% improvement)** in nozzles. These savings easily justified the price differential and has provided ongoing benefits for this project.

**A detailed chart of the Analysis is shown on the next page.**



### Cold Spray Nozzle Cost / Usage Analysis

based on SST-A0050 Powder - Feed rate 20 g/min.

#### Stainless Steel Nozzle Assembly

Component Description	Qty	Total Cost	cost /lbs SST-A0050	Cost / hr	Total Hr of operation	Hrs/unit	LBS/unit
<b>Powder - SST-A0050</b>	3003 lbs				1,136		
<b>Consumable parts</b>							
Nozzle, Hydroformed, Round	757	\$ 26,495	\$ 8.82	\$ 31.02	1,136	1.50	4
Nozzle holder M14X1.5 assembled	14	\$ 3,976	\$ 1.32	\$ 4.65	1,136	81	215
Collet, 1/4	20	\$ 320	\$ 0.11	\$ 0.37	1,136	57	150
Nut, Hex, Collet, Spray Nozzle	5	\$ 750	\$ 0.25	\$ 0.88	1,136	227	601
		<b>\$ 31,541</b>	<b>\$ 10.50</b>	<b>\$ 36.92</b>			

#### SST UltiLife Nozzle Assembly

Component Description	Qty	Total Cost	cost /lbs SST-A0050	Cost / hr	Total Hr of operation	Hrs/unit	LBS/unit
<b>Powder - SST-A0050</b>	8309 lbs				3,144		
<b>Consumable parts</b>							
Modular Nozzle D2	13	\$ 18,354	\$ 2.21	\$ 5.84	3,144	239	632
Powder Injector Kit D2	37	\$ 12,878	\$ 1.55	\$ 4.10	3,144	86	226
		<b>\$ 31,232</b>	<b>\$ 3.76</b>	<b>\$ 9.93</b>			

\$ Saving from using SST UltiLife	<b>\$ 6.74</b>	<b>\$ 26.99</b>
% Saving from using SST UltiLife	<b>64%</b>	<b>73%</b>

If you require additional information about this case study,  
please contact CenterLine's SST Division.