

Case Study

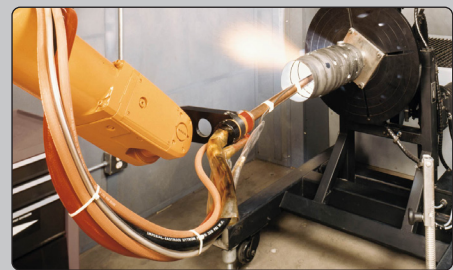
Pre-Cut Masking Profiles

The Challenge

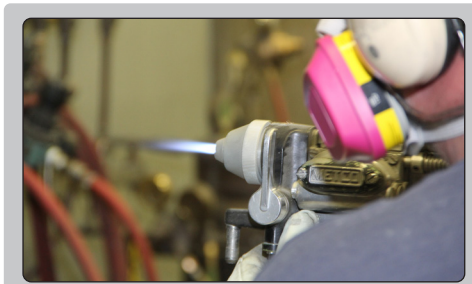
Reduce masking time, tape consumption, and turnaround time in the new Thermal Spray Department of a Global Manufacturer.

Green Belting Industries recently developed a relationship with a global manufacturer who was just beginning to apply plasma spray coatings onto the materials produced in their plants. This company had been fabricating aviation engine components for years but was sending the parts to an independent Thermal Spray Job Shop to apply the coatings. On paper, outsourcing the thermal spray function allowed the manufacturer to concentrate on the actual production aspect of the components. In reality this outsourcing created another set of issues which had the potential to disrupt the entire manufacturing process.

The turbomachinery manufacturer identified two primary threats to their business that had arisen due to contracting out the thermal spray process: a lack of control over the supply of finished components and a bottleneck in the production line that was created by waiting for coated parts to be returned from the Job Shop for final machining. A decision was made by the manufacturer to move the thermal spray coating process back in-house.



Robots are often used to apply thermal spray coatings.



Flame spray coating applied using a hand-held gun.

The parts being coated had very intricate and challenging profiles that required operators to spend over three hours masking a single component using multiple layers of tape.



A part masked with multiple layers of tape.

The cost of labour and materials per coated component quickly escalated and the manufacturer began searching for a way to reduce their costs.

A search began for a less expensive alternative to the thermal spray masking tape that the company had been using. At this point Green Belting was able to offer their assistance with a detailed analysis of the manufacturer's thermal spray masking process by a Green Belting Key Account Manager.

The Analysis

The current process takes three hours to mask one component using multiple layers of tape in addition to the time required to remove adhesive residue after spraying is complete.

During the process analysis, Green Belting could see that operators were spending considerable time masking intricate profiles using multiple layers of tape. After thermal spray was complete, operators then spent additional post-coating time reworking components to remove adhesive residue left behind from the multiple layers of masking.

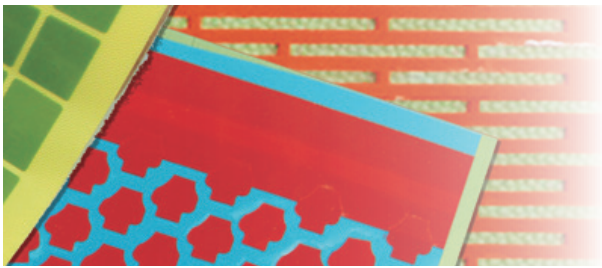
Like many other companies today the manufacturer was under pressure to cut costs, to fabricate a higher volume of product, and to do it all within an increasingly tighter time frame.

In order to save the manufacturer time and money Green Belting needed to identify a solution that would not only reduce the costs associated with the masking process but improve the turnaround time required to get coated parts back onto the production line.

The Solution

Faster (and safer) masking using pre-cut masking profiles from Green Belting for repetitive parts. Green Belting tape is stronger so most jobs can be masked using one layer and Green Belting tapes leave no adhesive residue, eliminating the need for rework.

Green Belting determined that rather than the cost of tape, labour was the single largest influence on the cost of the manufacturer's in-house thermal spray coating process. By reducing the amount of time operators spent prepping, masking and reworking components the manufacturer would be able to save time and reduce costs.



“By using pre-cut profiles, masking time was reduced by 75%, overall tape consumption decreased by 15%, and total cost per job was reduced by over 68%!”

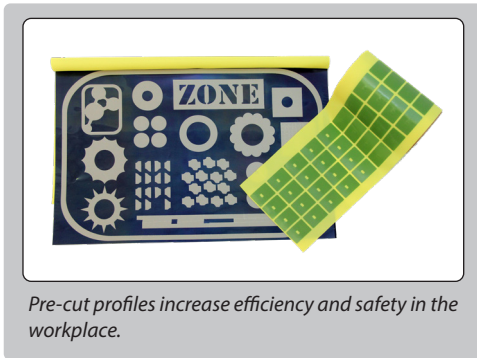
The Result

For this manufacturer Green Belting recommended that operators use a stronger thermal spray masking tape, 170-10S Green, which oftentimes only requires one layer of masking (as opposed to the multiple layers the previous tape required). In addition Green Belting™ 170-10S Green tape leaves no adhesive residue so it eliminated the need for rework of the component after spraying was complete.

By using pre-cut profiles made from Green Belting™ 170-10S Green tape, masking time was reduced by 75%, overall tape consumption decreased by 15%, and the total cost per job was reduced by over 68%!

Once the manufacturer implemented the changes recommended by Green Belting, a process audit was performed to determine the effectiveness of the changes. Using pre-cut pieces of Green Belting™ 170-10S Green tape shaved an average of 45 minutes off of a typical masking job; going from 60 minutes to 15 minutes. Most significantly, if the manufacturer is completing eight jobs per week this equates to a total of six hours per week of time savings.

“Using pre-cut pieces shaved an average of 45 minutes off of a typical masking job; going from 60 minutes to 15 minutes.”



“Pre-cut profiles include tighter coating lines, a reduction in masking time, a reduction in tape consumption, and a reduction in operator injuries from razor blade handling.”

Because there were a lot of repetitive parts being masked, Green Belting also recommended pre-cut profiles to speed up masking. Pre-cut profiles are created by Green Belting from CAD drawings developed with the client and are presented similarly to a label pad where the operator just peels the tape profile off of the pad as needed. Benefits of pre-cut profiles include tighter coating lines (profiles are precision cut on a plotter to the client’s specifications), a reduction in masking time, a reduction in tape consumption (due to less waste), and a reduction in operator injuries from razor blade handling (less razor work equals fewer opportunities for cutting injuries).

Green Belting Industries is a leading manufacturer of specialty-coated performance fabrics, tapes and belts used in a wide range of manufacturing, packaging, maintenance and repair environments around the world. From the aviation industry to consumer products, we supply performance materials and technical expertise to 21 different industries for use in over 100 applications.

| | Cost Per Job | |
|---------------------------------|--------------|----------------|
| | Rolls | Pre-Cut Pieces |
| Quantity (Rolls) | 1 | 0.85 |
| Cost per Roll | \$15.00 | \$15.00 |
| Prep Time per Job (minutes) | 10.00 | 5.00 |
| Masking Time per Job (minutes) | 60.00 | 15.00 |
| Clean-up Time per Job (minutes) | 5.00 | 5.00 |
| Rework Time per Job (minutes) | 5.00 | 0.00 |
| Total Time per Job (minutes) | 80.00 | 25.00 |
| Number of Jobs per Shift | 6 | 6 |
| Number of Shifts per Day | 2 | 2 |
| Length of Shift (Hours) | 8.00 | 8.00 |
| Labour Rate | \$20.00 | \$20.00 |
| Total Labour Cost per Job | \$26.67 | \$8.33 |
| Total Cost per Job | \$50.56 | \$16.22 |