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Discussion Topics and Threads on Thermal Spray

Compiled and edited by Dr. R.S. Lima, National Research Council of Canada (NRC). These questions and answers were extracted from the e-mail discussion group of the Thermal Spray Society of ASM International. The content has been edited for form and content. Note that the comments have not been reviewed. It is important to point out that the e-mail discussion group was relaunched on August 29, 2007. To sign up to the e-mail discussion group, previous and new subscribers will have to follow the instructions listed below:

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Question 1

Removing chromium carbide based coatings without damaging the substrate. What is the best method for removing chromium carbide based coatings without damaging the substrate?

Answer 1.1: You may try sandblast, which damages the substrate a little.

Answer 1.2: You should use alumina-zirconia, because it is a very tough material and much better than white or brown fused alumina.

Answer 1.3: You did not mention the substrate material, or shape, nor the method used to apply the unwanted chromium carbide base. In my experience, the best removal method with least damage to the substrate is grinding. The substrate would necessarily need to be flat or cylindrical. Other abrasive methods, such as grit blasting, would change the substrate surface and likely impart deforming stress to the component. Additionally, the process is not very selective; i.e., you lose more material at edges and ridges.

Question 2

Thermal spraying on small vessels. I have been discussing about thermal spraying stainless steel or perhaps an alloy 825, or higher nickel alloy in small diameter vessels (perhaps 30 in. in diameter). Any experiences?

Answer 2.1: Certainly stainless steel alloys can be thermally sprayed as a coating onto other metals. You mention ''small vessels'' (30 in. in diameter). You must work on a grand scale. Did you wish to coat the interior or exterior? If the vessel is extra deep, I can envision problems with thermal spraying a cylinder (internal diameter) of great depth.