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Many articles have been written about corrosion avoidance using thermal spray coatings. The original methods primarily used combustion wire and some combustion powder. The disadvantages to these methods were the slow application speed and, as a result, the high cost compared to paint. The factors that have changed this are:

1. Studies showing that zinc thermal sprayed coatings last at least thirty years compared to seven years for paint systems.

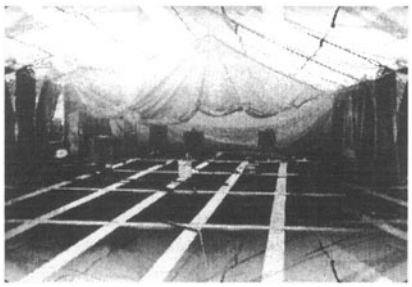

Fig. 1 A required enclosure on a bridge repair in New Jersey. Zinc was sprayed with a high output arc system.)

Fig. 2 Arc spraying of 85-15 Zinc Aluminum on a Panama Canal lock movement. An in-depth training program was instituted to certify the operators.

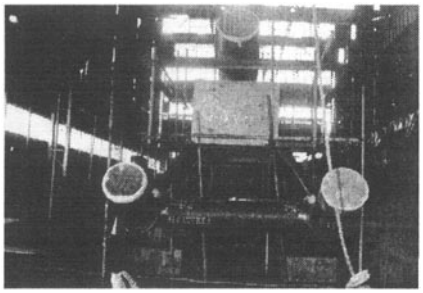

Fig. 3 A flare boom from an off- shore oil platform ready for spraying with aluminum. The coating was sealed with an aluminum silicon sealer.

2. Technological improvements to arc spray systems, including the high output systems, which are driving application costs down.

3. Environmental regulations requiring dust and debris control have caused the cost to maintain a bridge with a paint coating to rise dramatically. Consequently, structure owners are seriously considering life-cycle costing and alternative processes. Thermal spray coatings with at least three times the life of a paint coating are becoming the protection of choice.

Around the world, corrosion avoidance is big business and growing rapidly every year. Some application examples follow.

In Seabrook, N.H., the nuclear power plant cooling tower shown in figure 6 had many pipes and supports with serious corrosion problems from the salt air attacking poorly protected structures. The tower is a forced-draft counterflow-mechanical cooling tower constructed of reinforced concrete, situated on solid bedrock. A contractor was hired to apply pure aluminum. The operators and foreman were trained and certified to spray aluminum. The contractor's quality assurance manager wrote the procedures and designed a written test for operator certification.

The coating was sealed with an epoxy sealer. Nuclear plant maintenance engineers are rapidly becoming more aware of the capabilities of arc spray.

Existing thermal spray job shops, painting contractors and individuals are entering this field, creating a demand for new and improved equipment, certified training courses, materials and material development. Besides pure zinc and pure aluminum, the best known and most widely used alloys are 85-15 Zinc/Aluminum and 95-5 Aluminum/Magnesium. These alloys have been sprayed on everything from oil field equipment to grandstands in Indianapolis. More information is needed about different material's characteristics and corrosion resistance. Universities, National Labs, Military Corrosion programs, power companies and private industry must work together closely to understand the coatings produced and prioritize and focus everyone's efforts to present the proper material and appropriate process for the application.

Contact: Please fax Elliott Sampson if you would like to contribute to this column at 603-225-4342.

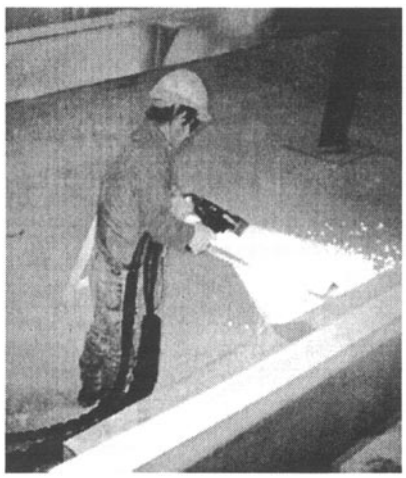

Fig. 4 Aluminum arc spraying in a Canadian fabrication shop.

Fig. 5 In New Zealand, 85-15 Zinc Aluminum is popular for spraying on new steel bridge structures.

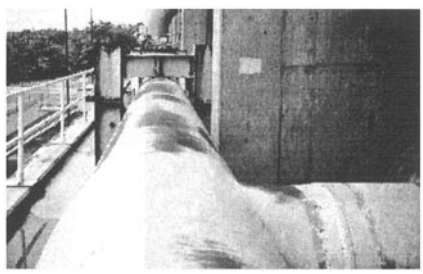

Fig. 6 Nuclear power plant cooling tower with serious corrosion problems