

National Aeronautics and Space Administration  
John F. Kennedy Space Center, FL

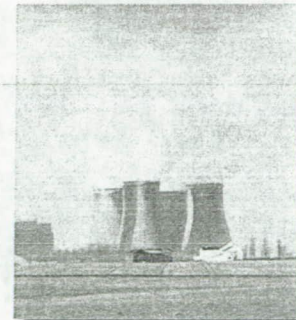
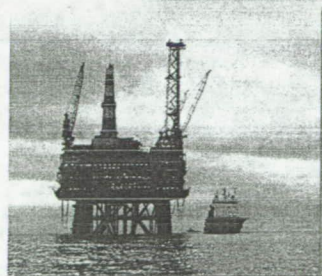
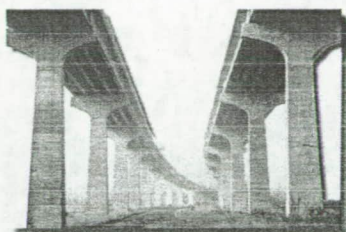


## Technology Opportunity

# Anti-Corrosive Powder Particles

The National Aeronautics and Space Administration (NASA) seeks partners for a new approach in protecting embedded steel surfaces from corrosion. Corrosion of reinforced steel in concrete structures is a significant problem for NASA structures at Kennedy Space Center (KSC) because of the close proximity of the structures to salt spray from the nearby Atlantic Ocean. In an effort to minimize the damage to such structures, coatings were developed that could be applied as liquids to the external surfaces of a substrate in which the metal structures were embedded.

The Metallic Pigment Powder Particle technology was developed by NASA at KSC. This technology combines the metallic materials into a uniform particle. The resultant powder can be sprayed simultaneously with a liquid binder onto the surface of concrete structures with a uniform distribution of the metallic pigment for optimum cathodic protection of the underlying steel in the concrete. Metallic Pigment Powder Particle technology improves upon the performance of an earlier NASA technology, Liquid Galvanic Coating (U.S. Patent No. 6,627,065).



### Potential Commercial Uses

The KSC-developed coating may be used to prevent corrosion of steel in:

- Highway and bridge infrastructures
- Parking decks, ramps, and garages
- Cooling towers
- Pipelines
- Engineered structures (commercial and civil)
- Concrete piers, offshore platforms, piles, pillars, pipes, and utility poles above water line
- Buildings and foundations

### Benefits

- Powder applied to the outer surface of reinforced concrete, not to the rebar
- Corrosion prevention is achieved after construction is complete
- Quick and repeatable application by brush or spray
- Reduces maintenance costs over the lifetime of the structure

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## The Technology

The new technology improves the previous technology by combining the metallic materials into uniform particles. The resultant powder can be sprayed together with a liquid binder onto the surface of concrete structures, thus uniformly distributing the metallic pigment for optimum cathodic protection of the underlying steel in the concrete. After the coating is applied to the outer surface of reinforced concrete, an electrical current is established between the metallic particles and the surfaces of the embedded steel rebar. The intrinsic electrochemical properties of the material, which make this metallic pigment perform in a corrosive environment, can be maximized if the materials are uniformly distributed across the concrete surface.

## Options for Commercialization

NASA is seeking a partner to cooperatively develop and test a new technology entitled, "Metallic Pigment Powder Particle for Use in a Liquid Coating System to Protect Reinforcing Steel in Concrete Structures." This and other technologies are made available by the KSC Technology Transfer Office through a variety of licensing and partnering agreements.

## Contact

If your company is interested in the Metallic Pigment Powder Particle technology or if you desire additional information, please reference Case Number KSC-12631 and contact:

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### Commercialization Checklist

- ✓ Patent Pending
- U.S. Patent
- Copyrighted
- Available to License
- Available for no-cost transfer
- ✓ Seeking industry partner for further codevelopment

KSC-12631/TOP10-90/07/05