

Protect carbon  
fiber parts from  
failure due to  
impact & erosion



### Adding Durability to Composites

Nanovate™ NS is an extremely strong and resilient nanocrystalline metal coating that protects carbon composites from impact and erosion. In conjunction with Nanovate™ NS, carbon composites can be used in more demanding applications.



Tel: 416.675.6266  
Fax: 416.675.1666

integran.com  
crm@integran.com

THE NEXT GENERATION OF HIGH PERFORMANCE MATERIALS

## Performance Benefits

- 01 High strength Nanovate™ NS protects composite parts while minimizing added weight compared with bonded metal foils
- 02 Nanovate™ NS reduces catastrophic failure of composites due to impact or erosion damage
- 03 High yield strength and elastic limit of Nanovate™ coatings allows for structural reinforcement of composite parts
- 04 Nanovate™ NS coatings are impermeable to gases or liquids
- 05 Conforms to complex geometries, avoiding awkward foil forming and integration steps
- 06 Directly deposited Nanovate™ cladding achieves high levels of adhesion

## Application Examples



Lightweight Composite Pressure Vessels



Lightweight Composite Rocket Casings

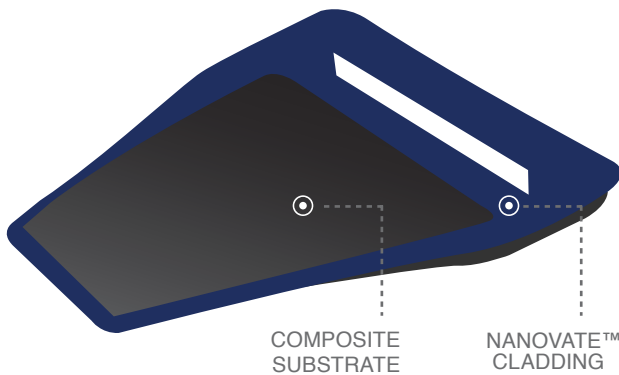


Protect Turbine Blades

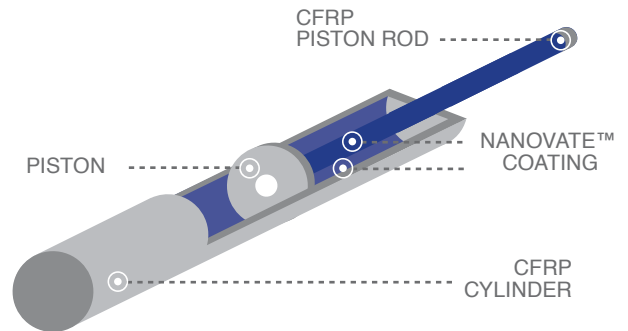


Improve Torsional Stiffness of Golf Shafts

## Concept



Selectively Clad  
Composite Air Scoop



Nanovate™ Protected  
Composite Piston Rod & Cylinder

## Integran Provides its Customers

- Design input & material selection.
- Prototyping & adhesion testing.
- Manufacturing or supply chain set-up.

## Partners

- Advanced Composites Group
- NASA
- US Navy