

## Improving High Speed Rotor Performance

Designed specifically for permanent magnet systems, Wraptite composite sleeves offer a superior design alternative to metallic solutions, particularly in applications that require high rotational speed or the containment of high centrifugal forces, such as high speed motors and generators. Arnold Magnetic Technologies offers a customized service and is able to assist in the engineering design of your rotor and containment requirements. Arnold provides a total in-house solution, from design concept through system integration.

Wraptite composite materials include carbon fibre, Zylon fibre and glass fibre composites using a range of epoxy, cyanate ester and BMI-based resin systems. Our technology includes the winding of multi-filament tows directly over the rotor to be contained, or the production of sleeves which are pressed into position to produce an interference fit.

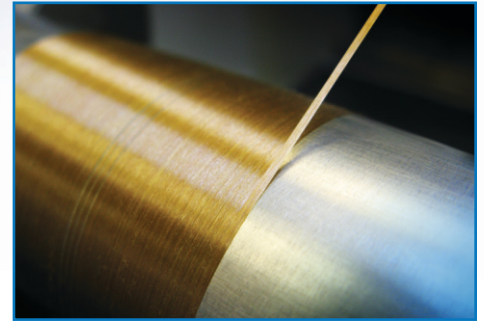
### Key Features & Benefits (compared to containment by metallic sleeves)

- ◆ Low density and high strength-to-weight ratio
- ◆ Greater containment stresses for same thickness sleeve, leading to increased rotor speeds
- ◆ Same containment stress for thinner sleeve, which reduces air gap between rotor and stator and improves magnetic and motor/generator performance
- ◆ Reduction or elimination of eddy currents in the containment sleeve, which reduces heat generation and improves efficiency
- ◆ Outstanding stiffness and strength
- ◆ Material is freely machined to tight tolerances
- ◆ Minimal interference with magnetic field
- ◆ Operating temperature up to 250°C
- ◆ Hoop stress generated by direct winding up to 1300 MPa
- ◆ Hoop stress generated by interference fit up to 2000 MPa

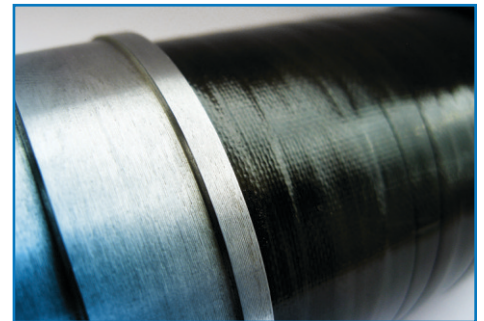
### Breadth of Applications

Wraptite can be utilized in a broad range of applications, specifically those in which high rotational speed creates demands that are not easily met or cannot be met by metallic solutions. These applications include automotive, motorsport, oil and gas, aerospace and general industrial.

Every project has unique considerations. Contact our engineering team to discuss your requirements and to determine the optimum design for your application.



Wraptite Composite Sleaving



### ◀ Wraptite Composite Sleaving

- ◆ Wound in place or pressed on sleeve
- ◆ Inconel or Stainless Steel also available