

CABLE Conductor Manufacturing Prize



Team Name:	<i>Terves LLC</i>
Primary Submitter Name:	Kurt Gilbert
City and State:	Euclid, Ohio
Member Names (including partners and affiliates):	Kurt Gilbert, Terves LLC Nicholas Farkas, Terves LLC
Submission Title:	High Strength Covetic Enhanced Magnesium Conductor



Description of Material

- To meet the growing demand for clean and efficient conductive materials, Terves will partner low density, high strength magnesium with the growing field of covetics, which involves fusing nanocarbon materials into a metal matrix to create a high strength, conductivity enhanced material with a conductivity greater than 23 MS/m, equal to the specific conductivity of current Aluminum conductors, with nearly double the specific strength.

Fabrication Approach

- Covetics research has progressed over the last 5+ years at Argonne National Laboratory with a focus on modifying aluminum and copper. Terves will use similar principals to incorporate high conductivity nanocarbon into a magnesium metal matrix. Stage 1 testing will produce small 1" diameter x 1.5" long billets of material and extrude the material into rod for resistivity testing based on ASTM B193 testing.

Potential Impact

- Combining the benefits of covetics and magnesium yield a high strength, low mass conductor that can outperform aluminum in applications that require high strength and lightweight materials such as overhead and subsea transmission cables. Cost savings include the ability to increase the distance between connections in overhead towers or tieback subsea applications. Thus reducing installation and long-term maintenance costs attached to current conductor solutions.