



Photo Credit: Boeing



# Partner Projects

## Electrification Propels Success of Unmanned Underwater Vehicles

### Customer

A global Tier 1 supplier of high-performance electromechanical motion control devices to the naval defense industry.

### Application

The escalating cost of building manned submarines, combined with the critical need for acoustic silence, long mission duration and extremely high reliability, drove the United States Navy to invest in the development of smaller, electrically driven Unmanned Underwater Vehicles (UUV's).

### Challenge

Develop a large diameter electric motor rotor and stator component solution that would provide the power required to drive the main propulsion thruster of a newly designed UUV while fitting within tight space constraints, project timeline and budget requirements.

### Solution

Windings' engineers worked closely with the customer's engineering team to develop a 24" diameter brushless DC rotor / stator solution that

provided the required power and speed in a form factor that allowed seamless integration into the allowable space within the UUV's hull profile. To meet the Navy's budget requirement, Windings' engineers recommended and received approval for a material change to forged components that offered reduced machining time and a lower component cost.

### Results

With assistance from Windings' Engineering Services team, the customer achieved a per unit 15 – 20% cost reduction versus previous design estimates, allowing them to meet the Navy's budget requirement while condensing the overall build schedule and achieving all performance objectives.

### Windings

For more than 50 years, Windings has provided engineered electromagnetic solutions for critical applications in the Aerospace, Space and Defense industries. As a full-service provider, Windings is a leader in the engineering, optimization and manufacturing of custom electric motors, generators and related components including rotors, stators, lamination stacks and insulation systems.

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