Manufacturing solutions found to enable high-end product

NIST MEP Technology Scouting

The Problem/Need

As part of an enterprise transformation effort led by TMAC, Amphenol Fiber Systems International (AFSI) surveyed the competition and found they needed to add a high-fidelity, tight-tolerance connector to their own product portfolio. However, neither the in-house nor outsource solutions had been adequate. AFSI needed to identify a method and measurement system for producing the necessary high-end expanded beam fiber-optic (FO) connectors.

Amphenol

Project Outcomes

- Investigated and profiled a wide range of manufacturing and measurement approaches using global industry, laboratory, and patent searches.
- Provided more targeted scouting on the most viable micro-machining equipment and service providers.
- Identified three machining solutions with high potential. A European Union search produced two additional matches.
- Provided two alternative component and design approaches and partners.

Key Requirements

- Method to manufacture the improved tight-tolerance FO connector design with micron-level accuracy and competitive pricing.
- Measurement systems must be capable of determining bore and alignment with sufficient accuracy.
- Alternative ways of making the connector, including new materials, lenses, designs, and components.
- Include short- and long-term options.

Ultra-precision lathe

Sub-micron measurement

Project Impact

As a result of this project, AFSI:

- Established an NDA with a solution provider that has a military contract to develop a similar technology but required a connector manufacturer.
- Identified a potential longer-term impact of $2 million per year in 3 years.
- Used the scouting results to guide purchase of a precision machining center and measurement equipment.

"We knew we needed a sophisticated cutting and measurement system, but were not satisfied with the several options we had explored. TMAC was able to identify viable options and provide us with enough information to make informed decisions." — Bill Reid, VP Product Development, AFSI

TMAC