COULD NEW RESEARCH CHANGE THE WAY FLY LINES ARE MATCHED TO RODS?

Tackle tech is outpacing AFFTA's standard measurements on line compatability, claims a US company which has devised a new method. The impact on sales in store could be immense.

A new research and development company has discovered a process that it believes will lead to an industry-wide re-evaluation of the AFFTA line and rod standards.

The new methodology will, it says, resolve the age-old and increasingly difficult question of which fly line to buy for a particular rod.

Opterus Research and Development Inc. is a new engineering firm dedicated to the analysis and design of fly rods and fly lines.

The company was founded by Dr Tom Murphey, a leading innovator in the field of aerospace deployable structures. He is also a prominent composite materials scientist and holds two current IGFA records on fly.

Jim Murphy, former President of Hardy North America and long-time executive in the fly fishing industry, is the company's Business Developer and Strategic Planner.

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Talking exclusively to *Angling International*, Murphy said the work will benefit manufacturers, retailers and anglers.

"This process has been designed to add a truly incremental data cache that leads to a more predictable product development process," he explained. "The end result is better balanced tackle that performs in both the merchandising and the angling environments at a whole new level.

"Opterus has developed engineering tools that, for the first time, allow the rapid performance characterisation and quantitative design and analysis of both fly rods and fly lines."

The tools used by Opterus include a range of measurement systems, predictive analytical software and computer simulations. Importantly, they measure the compatibility of rods and lines to arrive at specific designs to enhance fly casting performance.

"This set of tools greatly accelerates product development cycles by automating and codifying the process of turning angler performance requirements into manufacturing specifications," said Murphy.

"Over time there has been a significant divergence from the AFFTA standards to measure and market both fly rods and fly lines.

"The evolution of fast light rods has resulted in the design of fly lines that load these rods with lines that are a quarter to three-quarters heavier than the AFTTA standard.

"Also, the proliferation of density-compensated fly lines, shooting heads and new materials has further obscured the predictable compatibility of a fly rod and a fly line.

"This has become a significant merchandising challenge, making it more difficult for retailers to answer the question 'what fly line is best for this rod?' There is real frustration for both the retailer and the customer, who find this an obstacle to a retail transaction."

Murphy stressed that the process is not the result of any purposeful actions on the part of rod or line manufacturers, but rather an evolutionary outcome over years of building new and better tackle by closely held and independent tackle designers."

Opterus offers 'reconciliation' and engineering services on a confidential basis to help manufacturers address product development challenges, each to their own set of unique performance preferences. Dr Murphey uses robust and validated tools to analyse and measure fly rod dynamics and fly line characteristics.

Understanding the science

Figure 1 is an example fly line analysis that provides an insight into the challenge of balancing fly rods and lines. The main blue curve shows the mass of line aloft and accelerated during casting as a function of cast length. The black dots show nominal AFFTA line weight numbers. The inset plot indicates line diameter vs length, akin to the taper plot consumers are accustomed to. The line is nominally a 5-weight at 30 feet. However, the plot shows that with a slightly shorter 25 feet cast, the line has the aerilised mass and casting behaviour of a 4-weight line. This information allows anglers to rationally select lines for specific fishing conditions.

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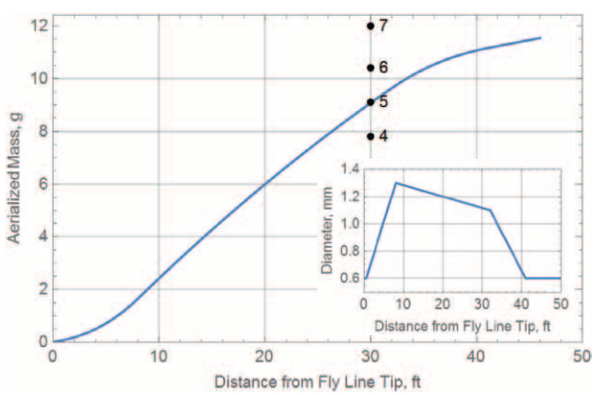

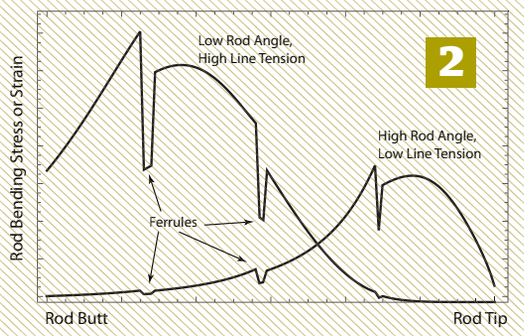

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Figure 2 illustrates a tool developed by Opterus to predict the failure of rods. The plots show two scenarios in a typical four-piece rod. The lower curve shows the large rod bending loads that occur in a tip section when a rod is held high, even with a rather low line tension (aka, candy cane failures). The upper curve shows that at low rod angles, higher bending loads develop in the lower mid and butt sections, while the tip section straightens out and has no bending loads. The jumps in the curves are due to rod diameter and stiffness changes at the ferrules. These bending strain curves allow rapid design of rod cross sections and tapers that are durable on the water and provide superior casting performance.

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