

Industry Solutions: Fiber Optics

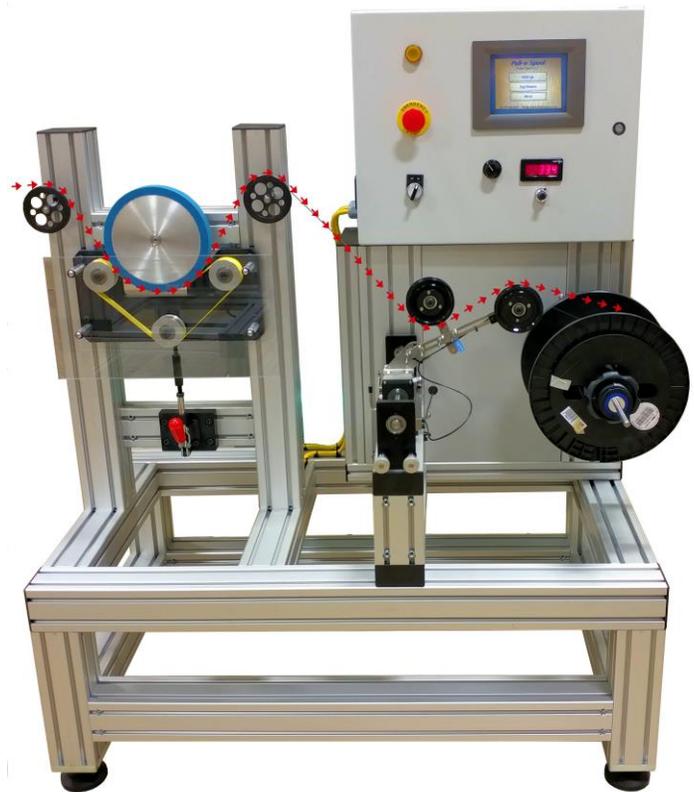
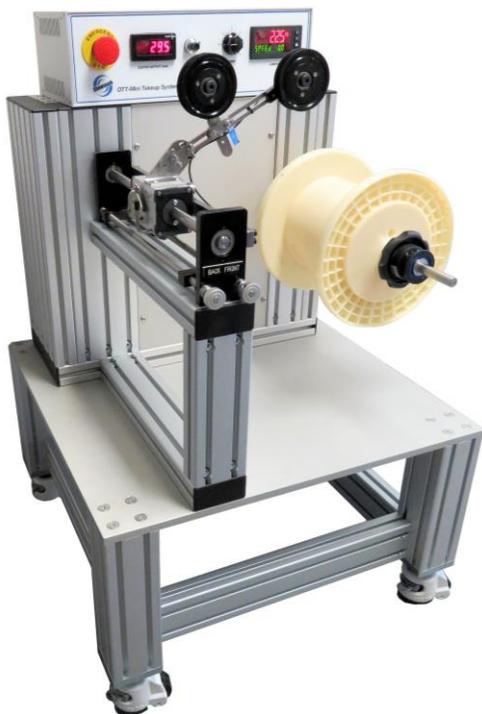
Spooling Systems for Optical Fiber Production and Processing



Showmark got its start building respooling machines for the fiber optics industry. Our first machines were optical fiber coilers for producing Erbium Doped Fiber Amplifiers (EDFA's). We now offer spooling machines for several key areas of optical fiber manufacturing and postproduction work. For production of optical fiber, we provide: Draw Tower Take-up Units, Proof Testers, and Fiber Respoolers. For production of optical fiber based products we offer spooling solutions that assist in the manufacturing of EDFA's, Delay Coils, Fiber Piezo Coils, Downhole Sensors, Fiber Bragg Gratings, Fiber Optic Gyroscopes, and other custom solutions.

Draw Tower Take-up Systems

The Draw Tower Take-up System produces spools with neat and even layers of fiber at a settable tension. It has a servomotor based belt capstan that controls the fiber diameter within microns by pulling at a rate based on analog feedback from a tower mounted laser micrometer. It can also be used without micrometer feedback to pull the material at a very consistent linear speed. Most settings can be adjusted on the fly through a touchscreen interface. The capstan can be oriented to receive the fiber in a direction as required by the process.



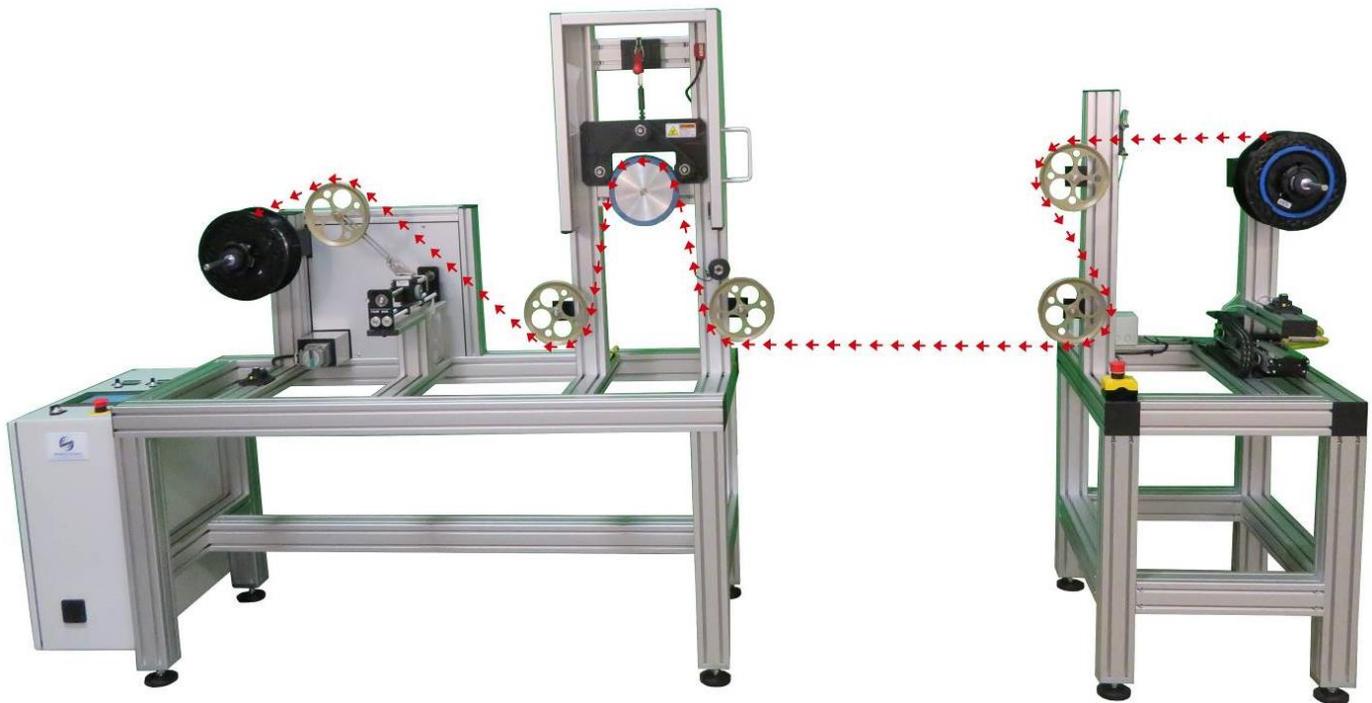
Secondary Operation Take-up Systems

Showmark's standard take-up units match up nicely with extruders in fiber jacketing applications. They automatically synchronize with the rate from the process and maintain a desired tension as they neatly wind the material onto a spool without snags or tangles. Our take-ups also function well in cable marking or inspecting applications. A Showmark OTT-Mini is pictured at left on an optional floor cart. An OTT-Medium and OTT-Max are also available for accommodating spools up to 40 inches in diameter, weighing up to 300 pounds.

Pull Type Proof Tester - The PT-5KG is an economical and easy-to-use solution for meeting optical fiber proof testing requirements. The 1-meter long proof test zone uses dual servomotor driven capstans to provide continuous tension testing with a settable range up to 5Kg. The winding speed can be as high as 200 meters/minute. Separate tension control is provided in the payoff and take-up sections. The system also doubles as a general purpose fiber respooler.

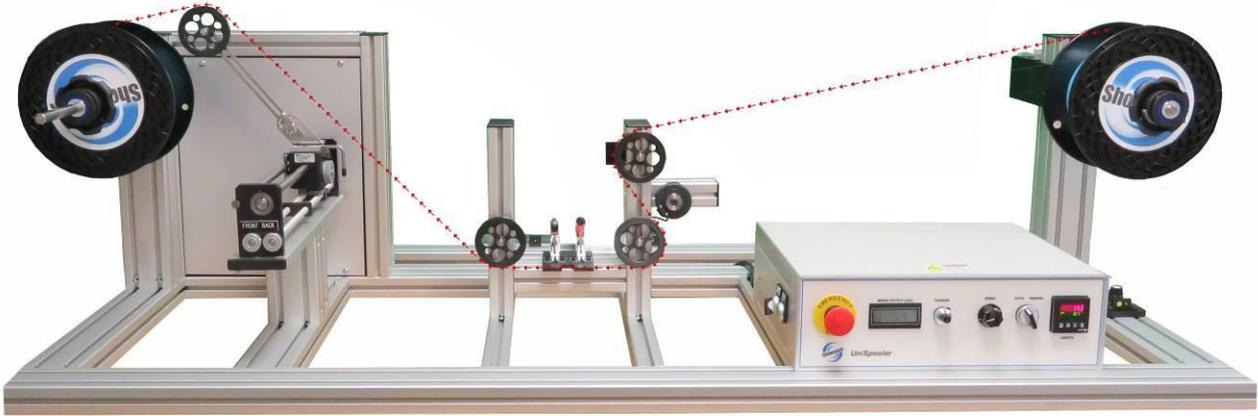


Bend Type Proof Testers pull fiber at an accurate speed through a customer supplied bend test apparatus; usually consisting of a series of guide wheels sized specifically for the type of fiber being tested. The machine is designed with two physically separate sections that can be positioned as far apart as necessary for insertion of the bend test assembly. A servomotor driven belt capstan pulls the fiber from the payoff section. The fiber travels in a straight horizontal path at a desired tension through the bend test zone. It winds up neatly onto a new spool after the capstan.



Respooling and Coiling Systems

Showmark has many solutions for simple spool to spool transferring or more complicated coiling requiring precise tension control and fiber placement. We manufacture simple to use general purpose rewinders and fully programmable respoolers for more sophisticated applications. They are used for production of EDFA's, Delay Coils, Fiber Piezo Coils, Downhole Sensors, Fiber Bragg Gratings, Fiber Optic Gyroscopes, and other specific applications. A UniSpooler general purpose respooler is shown below.



Coating Respoolers

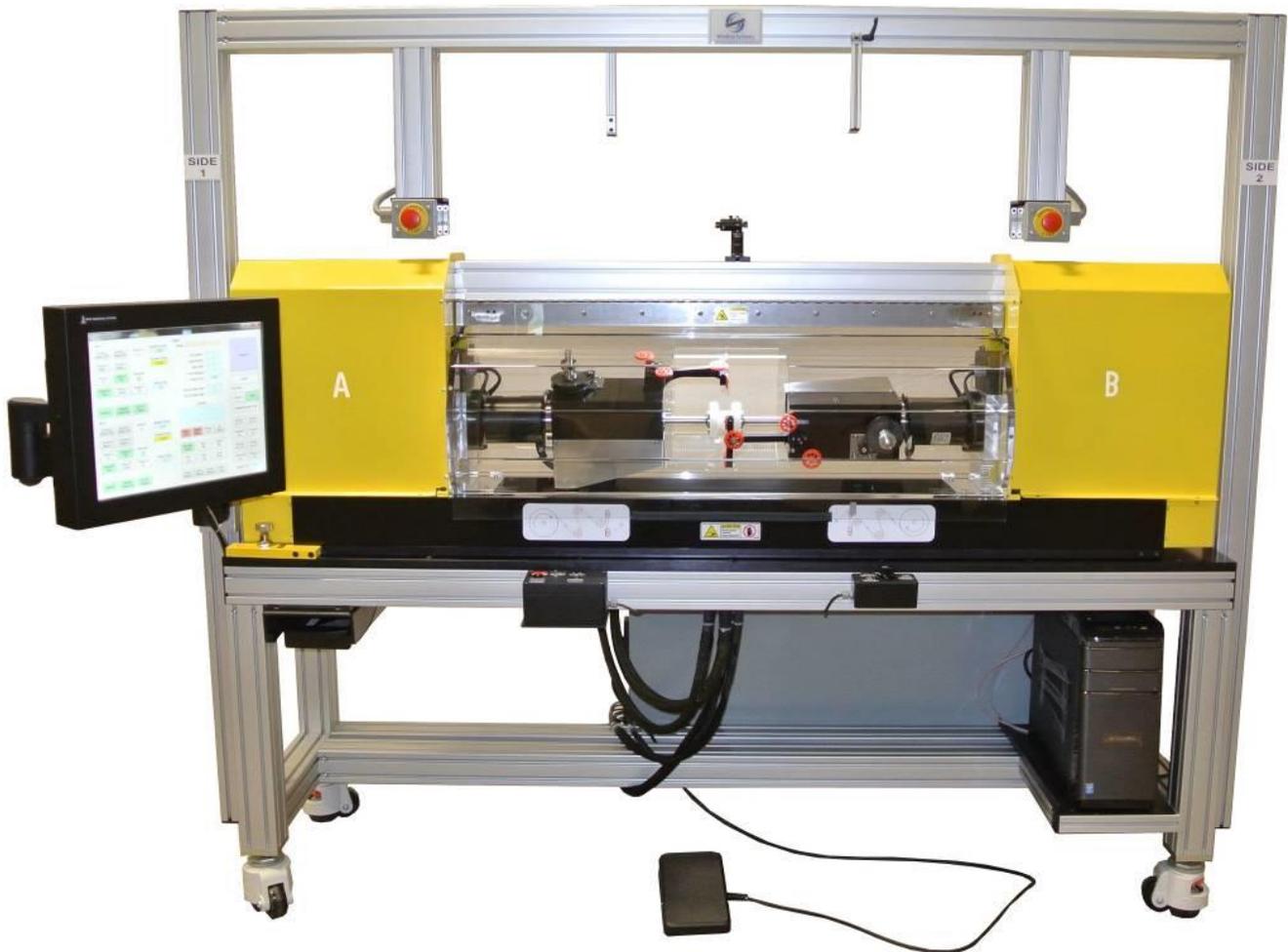
The machine at right is a complete respooling system designed for optical fiber coating applications. It includes two long, straight sections of vertical travel in the fiber path where the fiber passes through customer supplied coating and curing equipment.

The supply of fiber comes from a payoff spool near the bottom of the machine. The payoff includes a smooth turning electronic brake that generates consistent tension in the fiber as it is pulled at a precise speed by a servomotor driven belt capstan. The material is pulled from the capstan at a desired tension by the take-up section and wound neatly onto a new spool. All setup and control is accomplished using a touchscreen interface.



Coil Master - Fiber Optic Gyro Coilwinder

The Coil Master is a high precision semiautomatic system designed to wind Fiber Optic Gyro (FOG) coils. It produces wet or dry wound quadrupole, octupole, and other user designed coils. The coil is wound from a length of fiber shared by two supply spools. No spool swapping is typically required. The goal in designing the machine was to allow any operator with reasonable training to be able to wind precision coils.



A sampling of spools and coils wound on Showmark optical fiber spooling machines.

