

A photograph of a surgical team in an operating room, illuminated by blue overhead lights. The team is focused on a patient, with various medical instruments and equipment visible. The scene is set in a modern, well-lit surgical suite.

**timbercon**

Photonic design at the speed of light

**FIBER OPTIC  
MEDICAL & SENSOR  
SOLUTIONS**

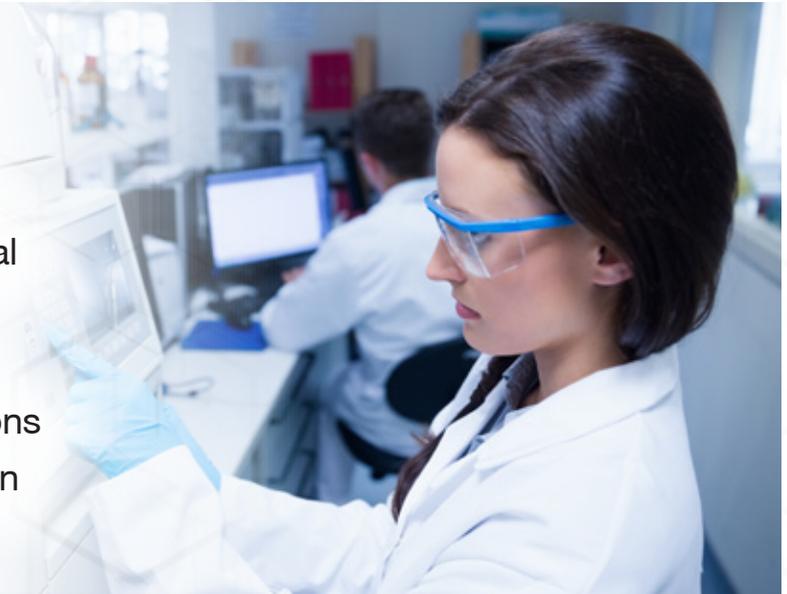


AS9100C  
ISO9001:2008  
ITAR

# MARKETS AND INDUSTRIES

## Medical

- Surgery
- Bio-medical
- Pharmaceutical
- Dental
- Mechanical
- Communications
- Instrumentation
- Testing



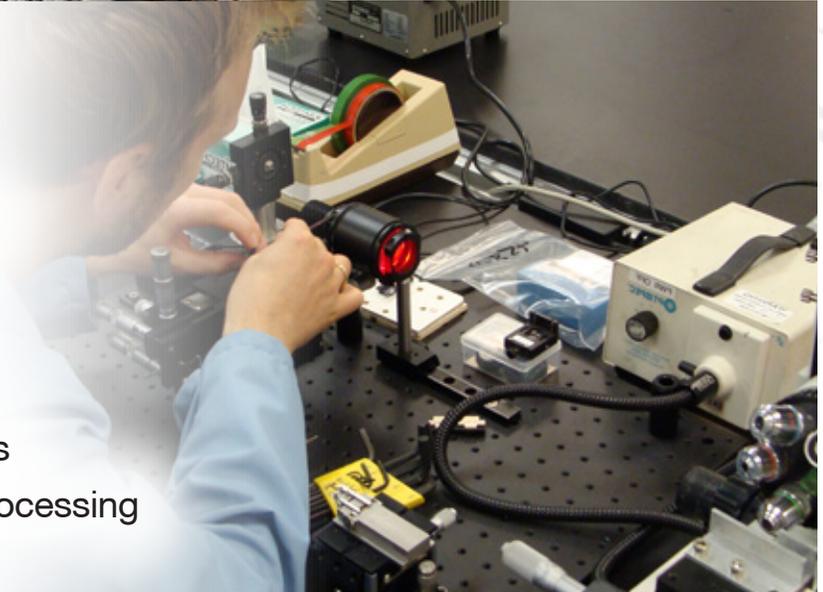
## Sensors

- Medical
- Structural
- Feedback
- Dynamic
- Oil and Gas
- Energy
- Automation



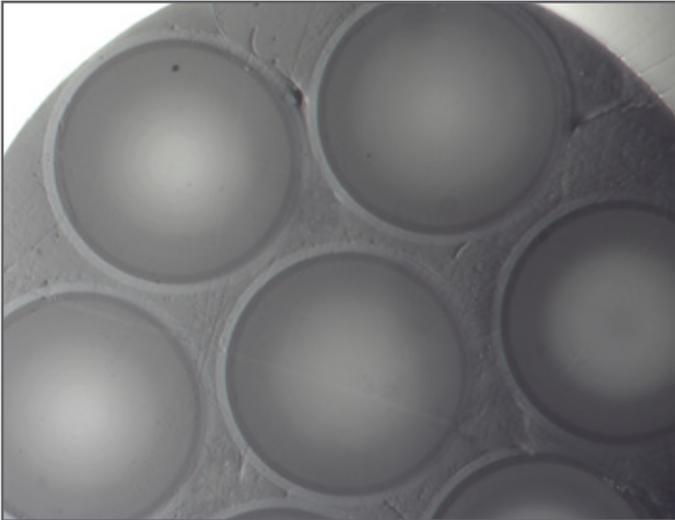
## Lasers

- Medical
- High Power
- Welding
- Cutting
- Marking
- Fused Fibers
- Materials Processing



# A FIBER FOR EVERY APPLICATION

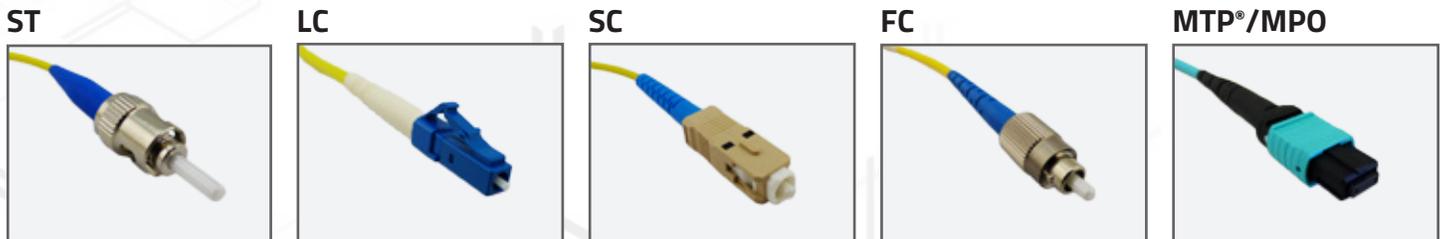
As the utility of fiber continuously grows, Timbercon is interested in taking part in new applications that advance fiber optic technology. Timbercon's experience and capital equipment is optimized for, but not limited to, the fiber types below.



## Solutions

- Single mode (SM) and multimode (MM) fiber
- Large core silica and plastic optical fiber (POF)
- Polarization maintaining (PM) fiber
- Fiber Bragg Gratings (FBG)
- Custom supplied specialty fiber
- Indoor/outdoor armored cables
- Multi-channel and hybrid cables
- Doped fiber
- Bare fiber
- Coated fiber

## Standard Commercial Connectors



## Semi-rugged Connectors

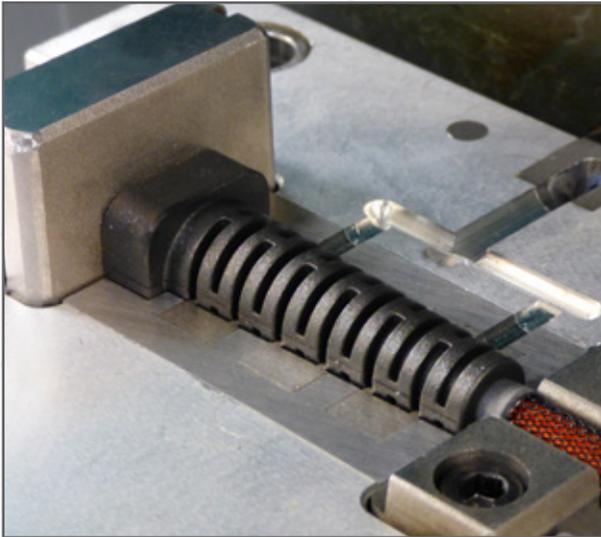


## Mil-spec Connectors



# OVERMOLDING CAPABILITIES

A variety of customer requirements have driven the need to offer molded components. Timbercon can design and produce the required tooling and mold these solutions in-house. An assortment of material types are available and render different degrees of flexibility, texture, and density.



## Overmold Breakout Assemblies

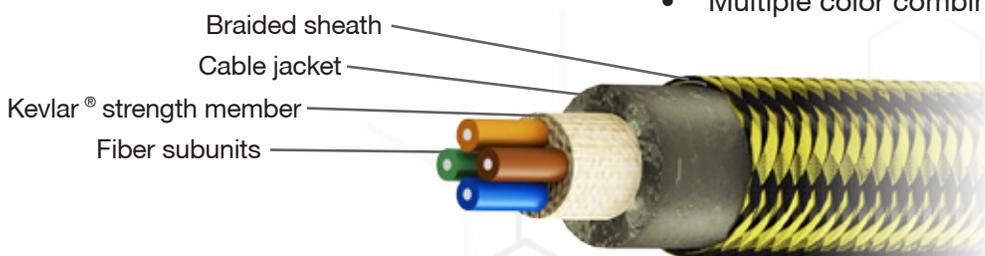
- Rugged fan-out transitions
- Flanged connectors
- Backshells
- Optional and electrical potting
- Molded strain relief
- Overmolding for up to 24-fiber channels
- Multiple transition styles provide flexible mounting options
- 100% optically tested to ensure reliability and performance
- Ability to customize to your requirements



# BRAIDED JACKETING

Our custom braided jacketing allows you to bundle multiple channels together for improved cable management. This specially braided jacketing aids in abrasion resistance, cable identification, and environmental protection.

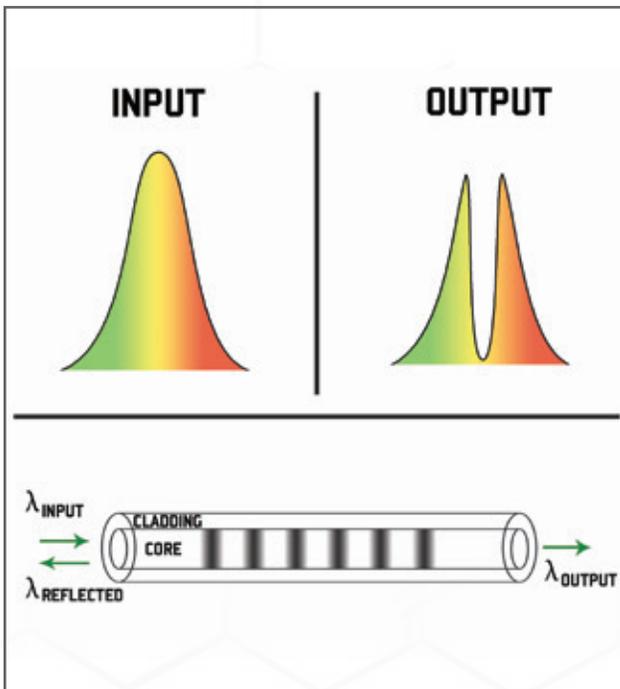
- Increased abrasion resistance and environmental protection
- Available in stainless steel, copper, monofilament, polypropylene, Kevlar<sup>®</sup>, Nomex<sup>®</sup>, and nylon
- Multiple color combinations available



# FIBER BRAGG GRATING SENSORS

Fiber Bragg Gratings (FBGs) are single mode optical fibers which reflect a specific spectrum of incident light. Monitoring the transmitted or reflected spectrum of an FBG can allow for sensing physical properties such as temperature, strain, or vibration.

Higher durability options and customization make FBG sensors an excellent harsh environment alternative to traditional electrical and mechanical sensors.



- Measure changes in temperature, pressure, strain, vibrations, etc.
- Monitor ultra-high speed events
- Higher accuracy, longer stability, and smaller in size than thermo couples and strain gauges
- Immune to electromagnetic interference (EMI)
- Available in single-mode or PM fiber
- Customized assemblies for specific applications
- Can include multi-channel detector modules, including ASE light sources and interrogation monitors
- FBG fiber types include high or low reflectivity, apodized and non-apodized, high temperature fiber coatings, PM gratings, long-length gratings
- Buffer options include acrylate, Polyamide, and Ormocer®
- Available with FBG arrays in a single fiber for multiple sensors

## FBGs with Columbia Gorge Research, LLC

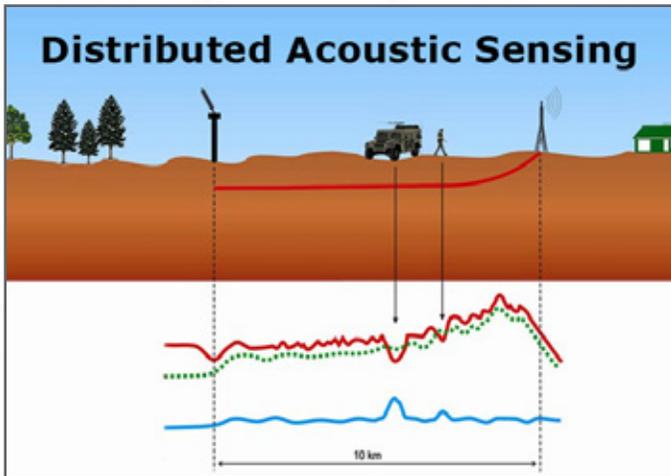
Columbia Gorge Research, LLC (CGR) supports the fiber optic field utilizing fiber sensors intended to measure physical parameters such as longitudinal and transverse strain, pressure, temperature, vibration, acceleration, rotation, and acoustics. CGR has also developed fiber optic sensors to measure relative humidity and moisture content and to assess corrosion. Customers range from the Department of Defense, Department of Energy, and NASA to commercial customers supporting aerospace, defense, oil & gas, civil structures, medical, electric power, and other applications.

Founder and President of CGR, Eric Udd, has been working full time on fiber optic sensor technology since 1977 with McDonnell Douglas, Blue Road Research and now Columbia Gorge Research. CGR has had a long history of cooperation with **Timbercon** on a variety of defense, medical and electric power projects.



# FIBER OPTIC SENSING TECHNOLOGY

The production of fiber optic sensing cables is a critical element for the success of any sensing instrumentation project. The monitoring of distributed strain & pressure, temperature, and pressure waves require specific cable designs. Timbercon cables and testing equipment can meet the unique operating environment and program requirements for a variety of applications: energy (extraction, exploration); security (perimeter, surveillance); telecommunications (fiber optic infrastructure and monitoring).

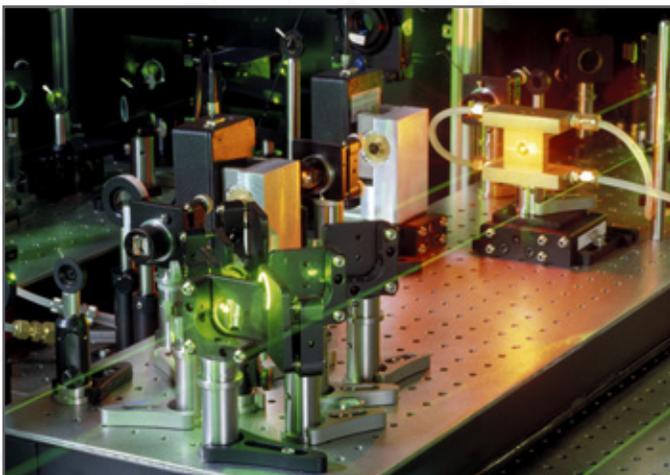


## Solutions

- IP 67/68 cable assemblies
- Crush-resistant cables
- Chemical-proof connections
- Direct burial cable assemblies
- Up to 192 channels
- Rodent deterrent
- Optical-electrical hybrid capabilities
- Overmolding options

# LAB/TEST ENVIRONMENT

The test and measurement industry is comprised of service providers, equipment manufacturers and end users. Solutions range from optical testing and simulation to diagnostics and troubleshooting of products and/or networks. A clear signal is mission-critical to the success or failure of a given procedure as weak or unreliable signals can skew results. Timbercon has the equipment and expertise to produce high performance assemblies including a number of optical components.

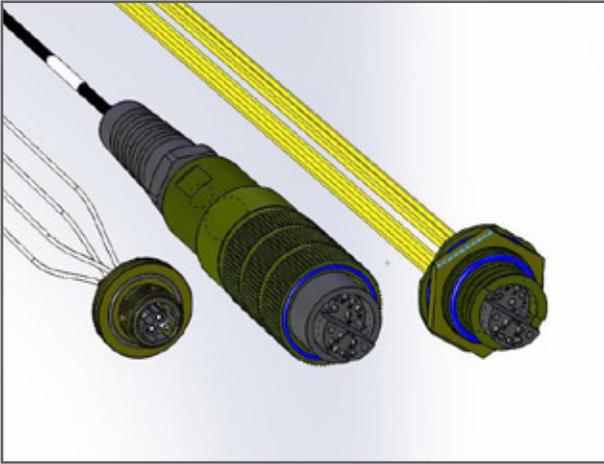


## Solutions

- Polarization maintaining cable assemblies
- Couplers/splitters
- MTP®/MPO cable assemblies
- Patch cables
- Attenuated cable assemblies and bulkhead adapters
- Optical and electrical loopbacks
- Cleaning kits

# ENGINEERING DESIGN, PROTOTYPING AND TESTING

## Product Design



Timbercon's product design services are focused on creating the highest quality possible solutions for your application, while ensuring each performance, physical, budgetary, and any other deliverable needs are satisfied. Through the entire prototyping and product design cycle, our product development engineers will work with you on defining a custom product development plan designed to produce the results you require.

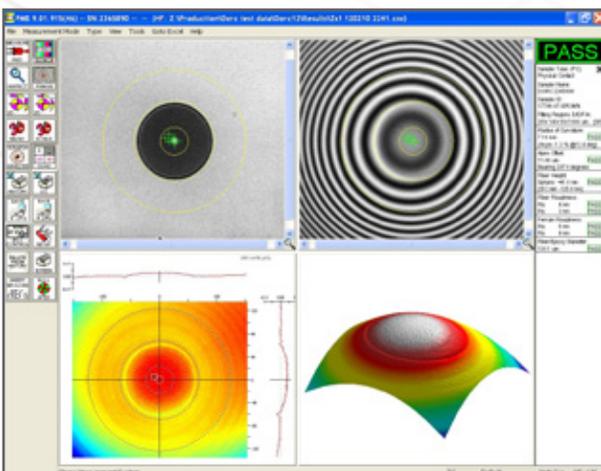
Through programs such as SolidWorks, Timbercon's product development services incorporate some of the latest in 3D modeling, 3D printing, precision fiber processing, and testing. Assemblies are produced onsite and controlled at our Tualatin, Oregon facility.

## Contract Manufacturing

Services include mechanical, electronic, and software design, prototyping services, new product introduction, testing development, final system box build, fulfillment, and sustaining services. This range of capabilities provides for the seamless transition of products from one service offering to another, reducing time-to-market and total cost.

## Test & Analysis

Timbercon invests heavily in technology to support our test and analytical services. This investment allows us to ensure that each service offered is backed by the latest and most accurate equipment available on the market. Our engineers will design any stress, compression, and thermal tests your fiber optical cables require in order to provide you with a durable and long lasting fiber optic system. We provide a number of test and analysis options from simple insertion loss testing to root cause failure analysis. We offer expedited repair, replacement, and recertification services, reducing the time it takes to return your product to the field.



# PRIZM LIGHTTURN® ASSEMBLIES

The US Connec PRIZM LightTurn® 12-fiber connector consists of a multi-fiber floating ferrule with a photonic TIR lens enclosed in a protective housing. The unique perpendicular mating capability increases real estate opportunities on dense printed circuit boards rather than using traditional parallel edge-mount solutions. It improves cable management and allows for tight spacing of transceiver modules internal to the board.



- Multi-fiber floating ferrule with a unique perpendicular mating capability
- Photonic TIR lens in a protective housing
- Bidirectional passive assembly
- Utilize 50µm multimode fiber for OM2, OM3, and OM4
- Available in 2mm round jacket
- Increases real estate opportunities with mid-board transceiver mounting
- Improves cable management and optimizes air flow on PCBs
- Provides high density data communications with excellent signal integrity

## ABOUT TIMBERCON



Timbercon has been a leader in the military and aerospace communications industries for over 19 years.

Our fiber optic products are fully assembled at the Timbercon manufacturing facility in Tualatin, Oregon, USA. The on-site sourcing, research and development, and production teams enable Timbercon to maintain stringent controls across the build process from sourcing to finished product. Our manufacturing processes and products are RoHS compliant, ISO 9001 certified, and AS9100C certified.

When quality workmanship is your priority, choose Timbercon USA manufactured fiber optic products.

