



Company Information

Company Name	<i>Corning Inc</i>	Date Submitted	<i>04/21/2023</i>
Project Title	<i>Design of Fiber Imaging Platform (CORNING_IMAGE)</i>	Planned Starting Semester	<i>Fall 2023</i>

Senior Design Project Description

Personnel

Typical teams will have 4-6 students, with engineering disciplines assigned based on the anticipated Scope of the Project.

Please provide your estimate of staffing in the below table. The Senior Design Committee will adjust as appropriate based on scope and discipline skills.

Discipline	Number	Discipline	Number
Mechanical	2	Electrical	1-2
Computer	2	Systems	

Company and Project Overview:

Corning is one of the world’s leading innovators in materials science. For nearly 170 years, Corning has applied its unparalleled expertise in glass science, ceramic science, and optical physics to develop products that transform industries and enhance people’s lives. Our innovations include the first glass bulbs for Thomas Edison’s electric light, the first low-loss optical fiber, the cellular substrates that enable catalytic converters, and the first damage-resistant cover glass for mobile devices. We’re proud of our long track record, and we believe the best innovations are still ahead.

Performance:

2022 Core Sales: Approximately \$14.2 billion

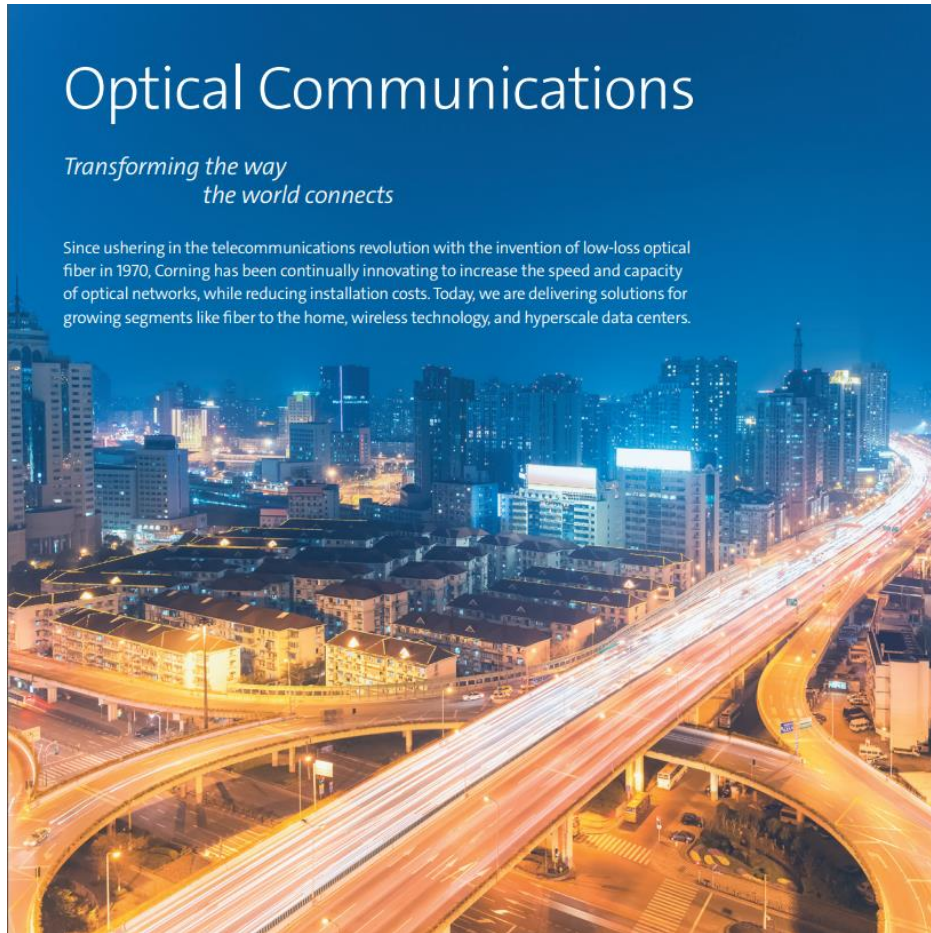
NYSE listing: GLW

Fortune 500 ranking: 263



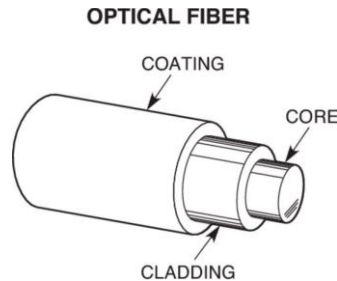
Employees:
~61,000

Research Centers:
~10 Global R&D Centers across North America, Europe, and Asia



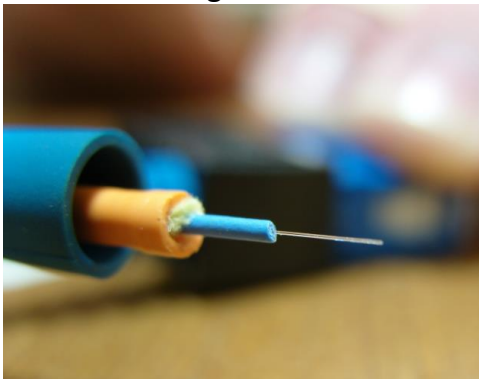
Project Requirements:

An optical fiber is typically made of several layers, these include a glass core which transmits light, glass cladding which confines light to the core, and a polymer coating which protects the cladding from air, moisture, or mechanical defects.

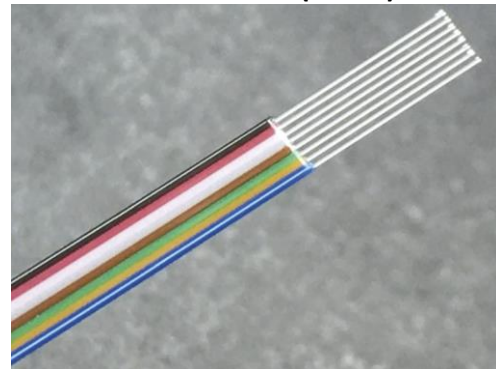


The coating is critical to the integrity of the fiber, but during the connectorization process, it must be stripped allowing the glass to properly bond to the ferrule. It is important that the coating is fully removed, and enough fiber length has been stripped. The objective is to create an imaging platform capable of inspecting and measuring the glass fiber to quantitatively evaluate cleanliness and strip length. The system shall be capable of inspecting a single fiber cable as well as cables consisting of up to 24 fibers. Each fiber is ~125um in diameter or roughly the 2x the size of a human hair.

Single Fiber



Ribbon Cable (1 x 12)



Expected Deliverables/Results:

- Design and build fixture capable of holding a single fiber (1) or ribbon of fibers (up to 24 fiber)
 - Motion axis to position fiber in focus and centered in image
 - Motion axis to rotate fiber up to 360° along axis during the inspection
- Develop imaging platform to gather appropriate images
- Analyze images to quantitatively define/measure fiber cleanliness, length, location, and other specific features



Disposition of Deliverables at the End of the Project:

Students are graded based on their display and presentation of their team's work product. It is mandatory that they exhibit at the Expo, so if the work product was tested at the supporter's location, it must be returned to campus for the Expo. After the expo, the team and supporter should arrange the handover of the work product to the industry supporter. This handover must be concluded within 7 days of the Expo.

List here any specific skills, requirements, specific courses, knowledge needed or suggested (If none please state none):

- Image capture
- Image analysis
- Designing precision fixtures
- Electrical/motion/controls
- C# programming
- Travel to Corning's Hickory, NC site