

New, Best-In-Class Fiber

Allows Businesses to Gain More Throughput
by Minimizing Optical Power Loss

WHITE PAPER



BANDWIDTH IG

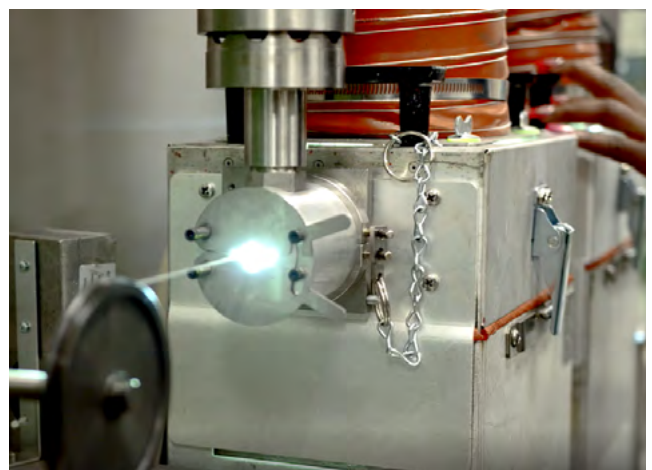
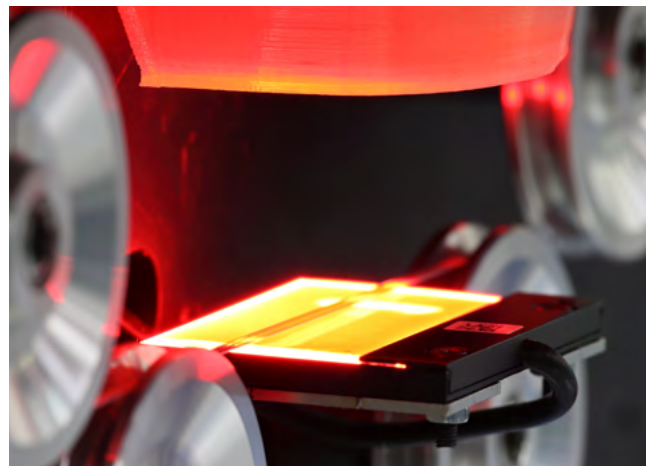
Introduction

The need for bandwidth is constantly escalating. Today's tech-driven businesses demand more and more connectivity to support their customer interactions as well as internal operations. Fiber backbones provide the critical link for enterprises to access Cloud Providers, Data Centers, and 5G broadband services. As the demand for network speeds increase, enterprise network operators are demanding lower loss budgets, even on relatively short links. With deliberate planning, Bandwidth IG has positioned itself to meet these requirements by selecting and deploying Prysmian Bend-Insensitive Fiber throughout its networks. This paper will explain the characteristics of this deployment and how it contributes to lower loss budgets.

Impacts of Optical Loss

Optical loss is a standard measurement of the degradation of signal strength over distance for light transmitted over fiber. Network operators constantly seek to minimize optical loss to ensure optimal performance of their network. Many of today's most data-intensive businesses are demanding more stringent attenuation specifications from their network in order to satisfy their bandwidth demands.

Optical loss is introduced in a network for a number of reasons, but among the most pernicious is 'stress-induced' optical loss which can occur in fibers that are far below their breaking point. Network operators consider this the worst kind of attenuation because it may develop over time and is much more difficult to pinpoint and cure. Prysmian has spent a great deal of time designing ways to decrease the sensitivity of the fiber and reduce this network risk.



Prysmian has led the world in the commercialization of Bend-Insensitive Fiber (BIF), which is dramatically less sensitive to both macro and micro-bending than conventional Single Mode fibers. This improves cabled fiber performance and can drastically reduce losses in splice closures and cabinets.

Considering how much fiber handling is required in a splice closure, every splice must be carefully stored in a tray, along with bare fiber slack. Thus, a 1728-count splice presents thousands of opportunities for individual fibers to be tightly bent or pinched. Dramatic errors can be detected, but smaller errors are easily mistaken for splice loss, since it's impractical to distinguish them in an OTDR trace. Thus, avoidable losses are often left as a permanent "tax" on the overall loss budget.

Because the Prysmian Bend-Insensitive Fiber is so much less sensitive, the same mistakes have far less impact on the loss budget. Thus, Bend-Insensitive Fiber literally takes loss out of the splice closure, which is one of the reasons Bandwidth IG was drawn to this product.

"Our customers have increasingly strict requirements on loss budgets to accommodate the enormous bandwidth demands on their networks. We deployed the Prysmian product throughout our network to ensure we were able to meet and exceed these needs," said Andrew Munn – Vice President of Operations for Bandwidth IG.



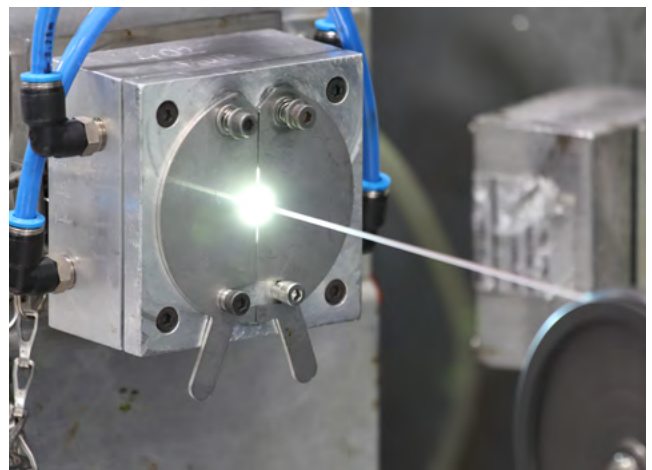
FlexRibbon™ Technology

Even Bend-Insensitive fibers will experience some increase in attenuation while under stress. To further mitigate the risk of introducing loss, Prysmian has developed FlexRibbon technology to dramatically reduce stresses on fibers that could be introduced in other, less advanced configurations.

Traditional flat ribbon cables have a preferential bending plane and tend to concentrate stresses on specific fibers. In those cables, multiple ribbons (think 'flat tape') are stacked to form a rectangular array, which is placed inside of a round tube. As a result, stresses are naturally concentrated on fibers at the corner of these stacks.

Given the way the Prysmian FlexRibbon fibers are loosely bound together and inherently more flexible, large groups of fibers can easily be formed into a round shape, which allows us to spread the stresses more evenly. **"The more we reduce stressing the fiber, the more we avoid inadvertently introducing dB loss – which results in cleaner OTDR shots and higher throughput for our customers,"** said Mr. Munn.

All network operators are driven to minimize optical loss in their networks. It is for this reason that Bandwidth IG is constantly looking for ways to improve network performance for the customers of its dark fiber networks. By reducing the sensitivity of the fiber and minimizing mechanical stresses, Prysmian's BIF and FlexRibbon technologies help to improve optical power budgets in both the cable and the closure. Which in turn, allows Bandwidth IG's customers to exceed their network objectives.



This paper has been written as a collaboration between Prysmian Group and Bandwidth IG.