Introduction to Space Division Multiplexing

In long range telecommunications, this demand is currently met by Wavelength-division multiplexing (WDM) and coherent detection techniques, to increase network bandwidth on a singlemode fiber (SMF). To date, this has enabled optical transport networks to increase network bandwidth and meet demand. However, the capability of such approaches to continue increasing the available bandwidth will soon diminish. In an impending capacity 'crunch' caused by the Shannon nonlinear limit an alternative approach to data multiplexing will be required. Moreover, the cost of increasing spectral efficiency up to the Shannon limit will become prohibitively expensive.

The use of multiple parallel optical paths in the form of space division multiplexing/spatial division multiplexing (SDM) is seen as the way forward. SDM is implemented through the use of multiple fiber arrays, multicore fibers (MCF), multimode fibers (MMF) and few mode fibers (FMF) to increase the available bandwidth.

Parallel data transmission through spatial multiplexing also has significant applications in short range communication, where the component simplicity and reduced cabling costs associated with SDM can offer significant advantages in data-centre interconnects. Our waveguide technology is an innovative and disruptive technology that reduces physical footprint and enables the transfer of volume amounts of data across both long and short distances.

For SDM solutions connecting single mode fibers (SMF) to multicore fibers (MCF) or few mode fiber (FMF) has never been more simple using Optoscribe products.