Ribbon fibre technology

What is ribbon fibre technology?
Ribbon fibre technology means that a number of fibres (commonly 4 or 8) are laid parallel to each other and are joined by a common protective sheath, so as to form a ribbon. The protective sheath is called a matrix. The fibres are the same as are used in other cable designs.

What are the most important main advantages of ribbon fibre technology?
This is a technology which makes it easy and economical to handle a large number of fibres in the cables, which is becoming increasingly common. Ribbon fibre technology also offers higher fibre packing density if the number of fibres is high. Combined with a cable design that uses a so-called slotted core, this offers a smaller cable diameter. This means that you can install more fibres in the same duct. This also results in smaller cable drums and lower weight in transport and handling.

The combination of ribbon fibres and slotted cores offers greater overall economy for applications with a medium or high number of fibres.

Why is it important to use ribbon fibre technology in combination with cable designs that have a slotted core?
It is this combination that allows cables with many fibres to be made compact, since ribbon fibres can be laid in the slotted core without tubes. If ribbon cables are installed in cables without a slotted core, they still have to have tubes. This makes the cable outer diameter just as large, and the opportunity of making a compact cable is lost. However, it is still entirely possible to use ribbon fibre technology with a so-called unitube design, i.e. cables with only one centrally located tube.

Slotted cores

What is a slotted core?
This is a central component in cables, providing strain relief and is frequently glass-fibre reinforced. A helical (spiral) polythene profile is then extruded round it. The optical fibres are then placed in the slots, either directly if ribbon fibres are used, or in jelly filled tubes.

What are the advantages of a slotted core?
This gives far better protection to the fibres against mechanical action such as pressure, impact, twisting or bending. It allows dry cable designs to be made which are still capable of preventing water from creeping along the cable. A slotted core in combination with ribbon fibre gives high fibre packing density. This also facilitates identification of the fibres, compared with fibres in a tube.

When is it suitable to use slotted core cables?
They are suitable for all underground, undersea and suspended installation, and also indoors in mains supply networks, on cable ladders, in ducts etc. Slotted core cable design is especially suitable in suspended installation, where the cable is subjected to long-term mechanical action from suspension and tensioning devices.