

# Getting to Grips with Steel Belt Growth

## Milliken's European division unveils a new approach to the application of Cap Ply.

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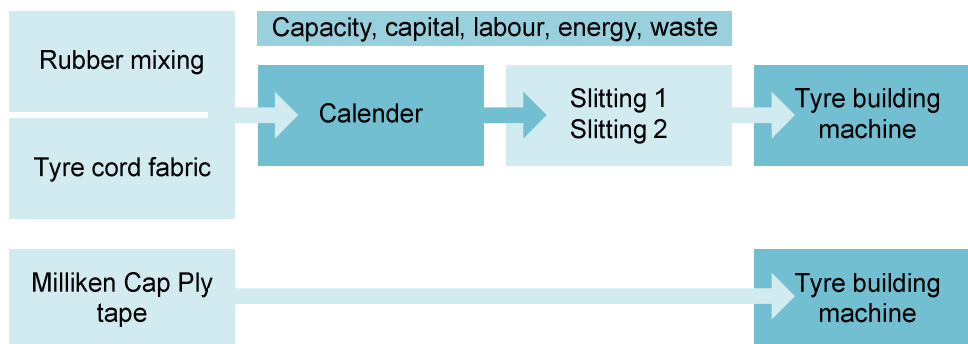
An innovative product with impressive advantages to the tyre industry has been developed by Milliken Europe NV. The Cap Ply tape technique fulfils Milliken Europe's commitment to providing ready-to-apply materials that reduce processing steps, release machine capacity and eliminate waste. The company is the European arm of the Industrials Specialities Division of Milliken & Company USA. The division is a major supplier of technical reinforcement textiles to the tyre and rubber industry around the world and the company owes much of its success to its close collaboration with the tyre industry.

Milliken accepted the challenge to produce a material that would eliminate the conventional processes and enable the tyre builder to apply a ready to use, endless, cap ply directly at the tyre building machine without major modifications to the existing machines.

The Cap Ply tape is a spool of perfectly slit tape that is chemically treated for rubber adhesion and tackified so that it physically sticks to the steel belt ply when it is applied on the building drum. A considerable part of the development involved the design of machinery which would consistently slit precisely between designated fabric threads to produce millions of meters of tape without a single loose thread in sight.



Milliken Cap Ply tape is applied directly onto the tyre



In the tyre factory, the spool is mounted in the standard let off unit and the tape passes through the accumulator to the winding head just like rubberised and slit tyre cord. It is applied directly onto the steel belt ply where the combination of machine tension and the tacky finish coat keeps the Cap Ply tape in place before the application of the next ply.

At curing, the physical design characteristics of the tape, especially shrinkage and modulus, ensure that it will prevent the growth of the steel ply at the operational speeds of the tyre. Simultaneously the chemical treatment ensures an optimum bond between the tape and the rubber compounds used in the steel belt and tread plies.

Process benefits and savings apart, there is more. On average a typical passenger tyre can save up to 300 grams of rubber using the Cap Ply tape concept. Less material means less weight. There is evidence of less heat build up in the critical shoulder area of the tyre and the "endless" Cap Ply ensures improved uniformity. One important implication means that the sizing calculations of the tyre will have to be amended in order to allow for the lower gauge and material mass below the tread ply.

Milliken offers the Cap Ply tape in a variety of yarn strengths and constructions. Furthermore Milliken is able to offer the fabric using a woven or weft insertion format. This provides for a flexible range of Cap Ply characteristics and costs covering the requirements of tyres over the entire speed range.

For more information on Milliken products please visit: [www.millikeneurope.com](http://www.millikeneurope.com)