



TANIQ REINFORCEMENT VERSUS CONVENTIONAL REINFORCEMENT

Advantages of TANIQ reinforcement technology

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The conventional methods to reinforce industrial rubber products are braiding, spiralling, knitting and wrapping of fabric plies. Research shows that braiding and spiralling can be applied more efficient for the reinforcement of complex shapes by using TANIQ's know how on optimal fibre paths. Furthermore, by using TANIQ's reinforcement technology instead of knitting or manually wrapping of fabric plies, both the product performance and production process can be improved.

Improvement possibilities of conventional methods using TANIQ reinforcement technology

The key of reinforcement technology is that the fibers must be placed on their optimal paths to use 100% of their strength. The required positioning of the fibers can only be achieved with accurate automated fibre placement like filament winding, spiralling and to a less extend, braiding. Currently spiralling and braiding are efficiently used for the reinforcement of straight hoses. However, the knowledge to optimally reinforce more complex shapes is not available. With TANIQ's reinforcement technology it also becomes possible to apply these processes in an efficient way to reinforce complex shaped products as well.

Reinforcement method	Shape	Efficiency with conventional state-of-the-art	Application of TANIQ reinforcement technology
Braiding	straight	good	Good
	complex	medium →	Good
Spiralling	straight	optimal	optimal
	complex	Difficult →	optimal

The knitting process and the use of fabric plies do not allow to place the fibers on their optimal paths. These processes are mostly used for the production of hoses and more complex shapes, like expansion joints, air springs, shaped hoses etc. TANIQ's technology can not be applied in combination with these processes because they do not allow accurate fibre placement. However, applying TANIQ's reinforcement

technology instead of knitting or wrapping fabric ply leads to a higher product quality and a more efficient production process.

Reinforcement method	Shape	Efficiency with conventional state-of-the-art	Replacement with TANIQ reinforcement technology
Knitting	straight	Medium	→ Optimal
	complex	Low	→ Optimal
Fabric ply reinforcement	straight	Medium/good	→ Optimal
	complex	Low	→ Optimal

In general, the best improvements with TANIQ's technology can be achieved on products with a complex (non-cylindrical) shape, which are difficult or even impossible (knitting, wrapping fabric ply) to optimally reinforce with the conventional methods.