

ENSURING ACCURACY IN TIRE CASSETTE DESIGN

Millimeters matter when specifying cassettes for use in PCR, TBR and other tire production systems, ensuring final product quality and minimizing levels of waste

Precision is crucial in all aspects of tire manufacturing, particularly in designing cassettes for transporting tire components to the tire building section of the factory. Companies such as Black Donuts Engineering (BDE) specialize in designing advanced material handling equipment, including cassettes, which enhance production reliability. According to BDE, precise cassette design is essential to prevent potential material damage during transportation, thus maintaining the quality of tire components.

Accurate dimensions in cassette design ensure that each component reaches the tire building machine (TBM) in perfect condition and ready for assembly. Misalignment or poor fit can lead to defects such as tears, wrinkles and stretching, compromising the tire's quality and performance. PCR and TBR tires consist of multiple components – typically 15 for PCR and 25 for TBR – that require precise transportation to the TBM. Cassettes tailored to carry the sidewall, tread,

innerliner, body ply and other essential components streamline this process.

For instance, cassettes for sidewalls and treads are used in extrusion lines and TBMs. The cassettes for innerliners and body plies are employed in extrusion lines, ply cutter machines and TBMs. The cassettes for steel belts are used in steel cutter machines and TBMs. The main task of all cassettes is to ensure efficient, high-quality production.

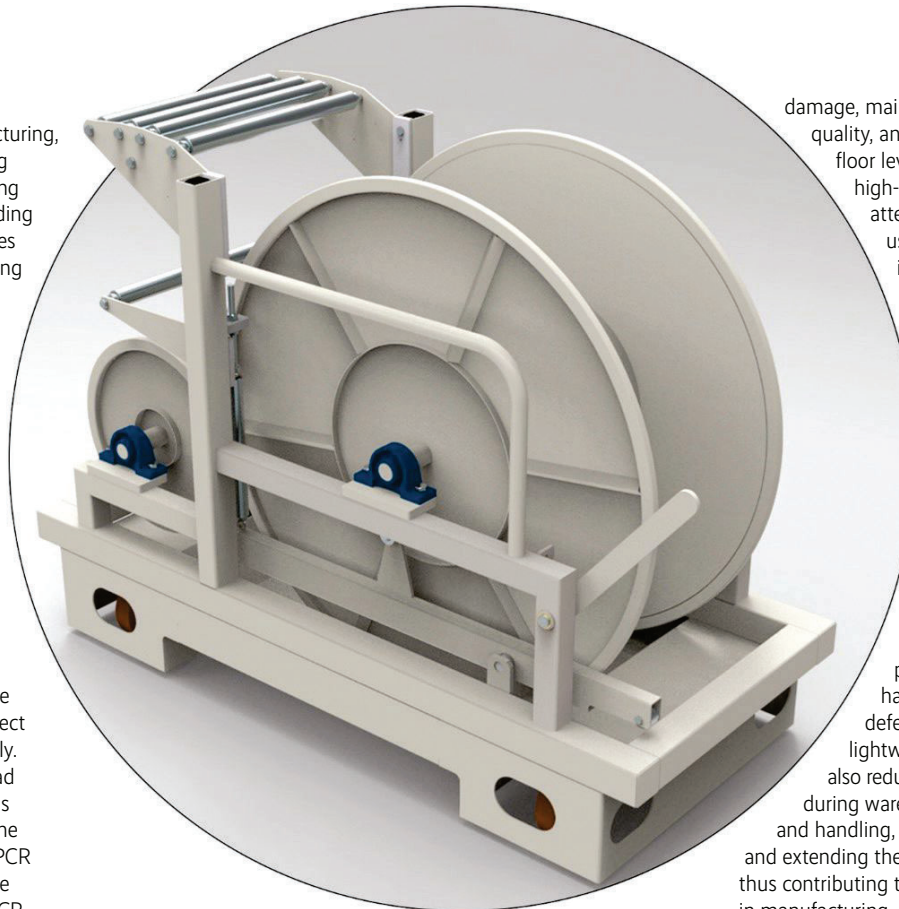
With over a decade of expertise, BDE has designed cassettes based on the specifications of the process machines by optimizing the weight and dimensions of the cassettes. Its designs ensure that components are transported without

damage, maintaining their form and quality, and are easily stored at floor level or in an automated high-bay warehouse. This attention to detail, and the use of high-quality parts in the production of cassettes, means clients can rely on the quality and durability of the cassettes, minimizing maintenance needs. Using BDE cassettes in tire manufacturing can also offer significant environmental benefits. These cassettes reduce waste by ensuring precise material handling, thus minimizing defects and scrap. The lightweight cassette design also reduces energy consumption during warehousing, transportation and handling, conserving resources and extending the cassette's lifespan, thus contributing to overall sustainability in manufacturing.

Once the customer defines the tire requirements, the cassettes are tailor-designed to meet the specific needs. Whether for MC (motorcycle tires), PCR (passenger car radial), LTR (light truck radial), TBR (truck and bus radial) or any other sector within the industry, each cassette is custom designed for each component. This ensures that every cassette fits perfectly within the production lines, enhancing the overall efficiency and quality of tire manufacturing.

Black Donuts Engineering offers comprehensive support to companies adopting newly designed cassettes. ●

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Above: A PCR tread cassette for semi-finished components (used between TBM and extrusion machine)

Left: Innerliner cassette for PCR

