# BKT, at the forefront of sustainable tire production

Balkrishna Industries Limited (BKT), one of the leading off-road tire manufacturers in the market, based in India, signs a joint research agreement with Kultevat, Inc., the leading US biotechnology company. sector, specializing in the cultivation and processing of Russian dandelions (TKS) as a renewable and sustainable alternative to natural rubber. The purpose of this agreement is to develop new methods for preparing compounds from TKS rubber for their integration into the process of manufacture of tires.

All the studies, analyzes, experiments and tests will be developed in the modern research and development center that BKT inaugurated recently known as "Suresh Poddar Innovation Hub" which occupies an area of ??more than 100 000 m2 in the newest production plant and Largest company size, located in Bhuj, India. The R & D center was officially opened last year, with the announcement of a series of ambitious projects related to sustainable materials, including research on alternatives to natural and synthetic rubber and the development of high performance compounds with nanomaterials and nanocomposites. *This large R & D project is part of the company's commitment to sustainability and innovation, in addition to meeting the latest requirements of the sector and the recommendations of the European Commission on critical raw materials.*

Recently, BKT has entered into a Research and Development contract with Kultevat, Inc., a US company based in St. Louis, Missouri. Kultevat, Inc. specializes in green technology, and in particular, in the extraction of high quality rubber from Taraxacum kok-saghyz (Russian dandelion, abbreviated TKS), through an environmentally friendly process. The company has also developed methods to stabilize TKS rubber.

The agreement has the character of a joint research agreement in accordance with the provisions of Title 35 of the United States Code on patent legislation. BKT, which has some experience in the development of compounding methods for the production of rubber, intends to develop this type of methods with TKS rubber to integrate it into the process of manufacturing off-road tires, as a new raw material renewable and sustainable.

> The agreement includes a first project phase with several sample presentations in 2018, while phase 2 provides for the supply of one metric tonne of TKS rubber stabilized to BKT by October 2019.

The TKS rubber will be delivered to BKT's advanced research and development center in Bhuj. After the agreement with Kultevat, BKT will start a series of studies and experiments with the new raw material, based on both the scientific method and the technology of materials. TKS rubber will gradually replace or reduce the use of natural rubber. After acquiring some knowledge about the physical and chemical behavior of the new raw material and developing the first methods of preparation of compounds, more specific analyzes, tests and experiments will be carried out to find out more information about concrete performance criteria, such as the behavior in exposure to mechanical stress, fatigue resistance, breaking stress, durability and resilience, resistance to cutting, breaking and heat, etc. Different formulas for the development of semi-finished compounds will be tested, with the aim of obtaining tires with the best performance for the specific requirements of the most diverse applications in the fields of agriculture, earthworks, ports, mining, off-road vehicles and industrial applications. Depending on the results, it may be necessary to modify existing production processes and equipment. It will be a long and complex path in which we will have to analyze, design and carry out appropriate experiments, as well as establish performance criteria based on conventional knowledge, before we can build the first prototype of a specific tire in a specific application.

The agreement between Kultevat and BKT assumes great importance if we consider the forecast that global consumption of natural rubber will reach 17 million tons by 2025. The growing global demand, especially in the tire industry, will soon lead to a shortage of this raw material. The Hevea brasiliensis is a tree native to South America, and is currently the only commercial source of natural rubber; It is produced mainly in Asia. The problem of the Hevea is its long period of growth, which means that crops need at least 6 to 8 years before they can be harvested for the first time. In addition, there is a shortage of land for cultivation in the equatorial zones. To meet the demand mentioned above, an additional 8.5 million hectares of plantations would be needed. This will inevitably lead to a dead end in a very short time.

Like other tire manufacturers, BKT has been working on substitute raw materials, mainly guayule and dandelion. BKT has opted for dandelion due to its higher latex content; this plant grows annually, even in moderate climates, and its roots contain about 15% latex, which can be used as raw material in rubber processing. The Russian dandelion was already used during another period of shortage of rubber in Europe, after the Second World War. After the invention of synthetic rubber, its was practically forgotten. Thanks to advanced biotechnology and processes that respect the environment, Kultevat is able to supply TKS rubber in bulk.

*"Kultevat's marketing strategy requires that the company initially sell to specialized rubber markets, while continuing to work with BKT to develop products that meet their needs,"* said Daniel R.

Swiger, CEO of Kultevat. "We have established contact with a number of clients and are currently cultivating TKS for processing, and manufacturing rubber for prototypes and tests. We hope that the commercial sale of rubber begins in 2019. "

*"BKT has always been committed to innovation, allocating a regular amount to research and development, since we believe that these investments are the key to success competing in a complex global market, with rapidly evolving needs," says Dilip Vaidya, President and Technology Director of BKT. "The agreement with Kultevat to obtain TKS rubber is a great step forward in our R & D activities, both in terms of sustainability and innovation. This project fits perfectly with the objectives expressed in our R & D mission: to research and develop state-of-the-art material technology to contribute to the commercial challenges of BKT in the future with innovative product technology ".*

> "BKT is an ideal partner for Kultevat, because they are the leaders in research and sales of off-road tires. This will improve our ability to scale and market the product quickly. " Daniel R. Swiger, CEO of Kultevat Inc.

In 2017, the European Commission for the first time included natural rubber in its list of critical issues for the EU, which highlights the importance of finding alternatives to natural rubber, and therefore of the TKS rubber research project. Given that raw materials are crucial for the economy and that unhindered access to certain raw materials is a growing concern throughout the world, the European Commission regularly issues and updates a list of critical raw materials. The objective of the list is to create awareness in terms of material sustainability and potential risks of the supply of materials, as well as to develop innovation and development activities through the implementation of the 2030 Agenda for Sustainable Development and its sustainable development objectives.

Thanks to the joint research contract with Kultevat for the development of compound preparation methods with TKS rubber, BKT is at the forefront of sustainable tire production. This project is perfectly aligned with the attitude of BKT to find tire solutions that offer better performance, greater efficiency, less environmental impact, less pollution and better fuel economy.

**Source: BKT**

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