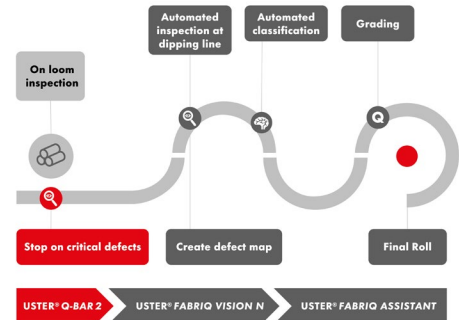


# PRACTICAL CASE

## Automated inspection of tire cord with Uster Q-Bar 2

Tire cord manufacturers seek ways to enhance cord quality and to increase profit margins at the same time. How much could you benefit if second quality is significantly reduced in the early stage of the production?



The tire cord is an essential component of vehicle tires. It is a reinforced fabric that provides strength and stability to the tire structure. The aim is to fulfill highest safety standards and contribute to a comfortable driving experience in any condition.

Meeting the strict quality requirements of the tire industry while making optimum use of high-end synthetic materials (aramid, nylon, polyester etc.) is a challenge for tire cord producers. As a rule of thumb, higher quality will lead to higher production cost and if that cannot attract a higher selling price, it will reduce the profit margin.

### Uster solution

The Uster Q-Bar 2 delivers on these goals through automated, precise defect detection. Any irregularity is already identified in the weaving process and allows customers to prevent defects proactively at the earliest stage possible. This results in savings of raw material by reducing the production of second-quality cords.

One of the global producers of tire cords approached Uster and installed the Q-Bar 2 systems on its weaving looms for early detection. As well as preventing common weaving defects (Fig. 2), the customer had the special requirement of detecting transparent stains on tire cord.



Fig. 1: Q-Bar 2 mounted under tire cord loom.

Q-Bar 2 excels in pinpointing defects beyond weaving issues, reliably detecting even subtle imperfections. Each identified irregularity is documented and recorded for subsequent classification and grading purposes.

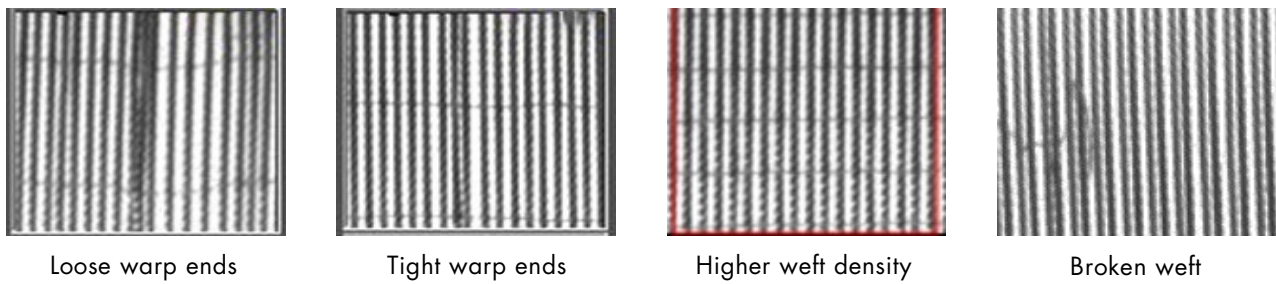


Fig. 2: A selection of weaving defects as detected by Uster Q-Bar 2

Moreover, the system also meets the customer challenge of detecting oil stains. These transparent lubricants are almost invisible to human eye on the tire cord (Fig. 3). Such defects cause quality issues as the solution uptake is disrupted during the dipping process.

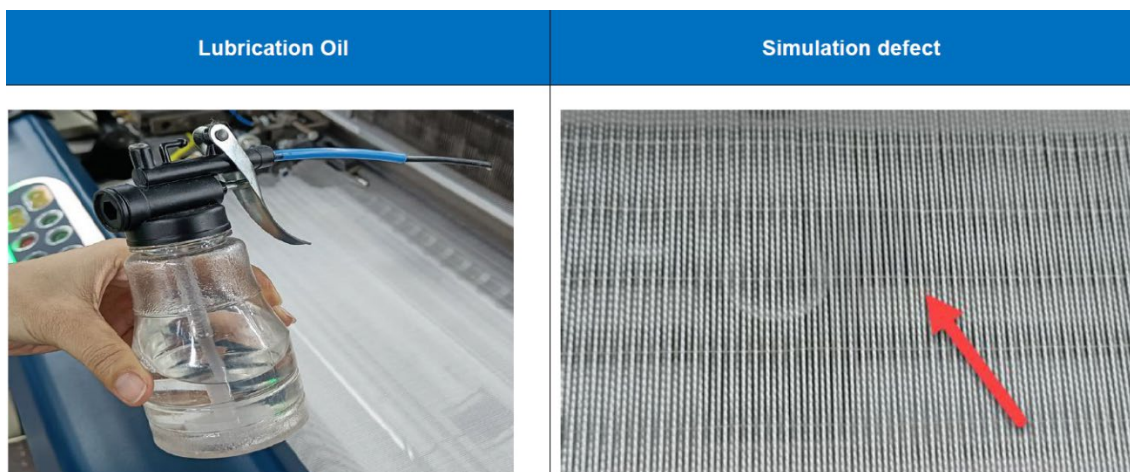


Fig. 3: Transparent lubricant and oil stain on tire cord

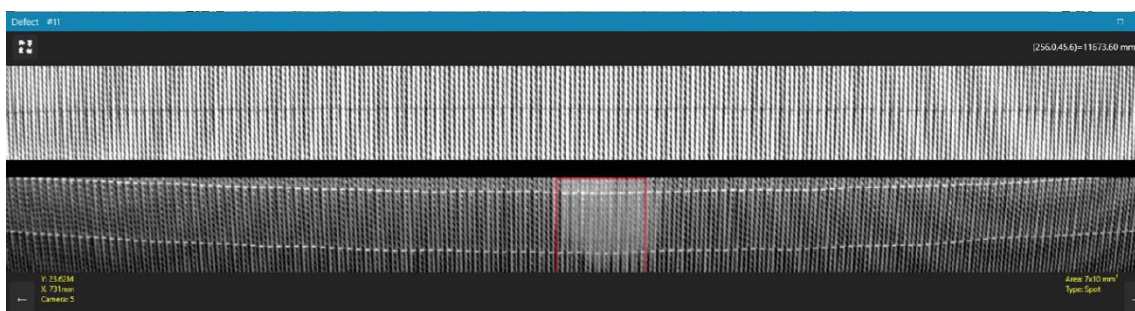


Fig. 4: Image of oil stain detected by Uster Q-Bar 2 camera

At the final inspection of the tire cord, the well-known Uster EVS Fabriq Vision N consistently detects and records every visible defect at any line speed, providing a personalized report for each roll. It offers valuable data for informed decision-making and enables customers to grade the finished rolls.

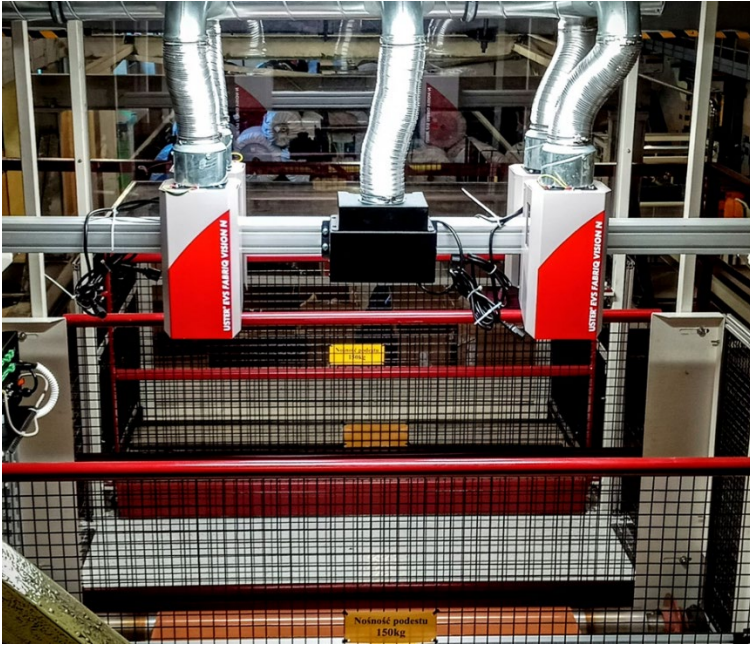


Fig. 5: Visual in-line inspection with EVS Fabriq Vision N

## Conclusion and Summary

- Q-Bar 2 revolutionizes the traditional inspection approach for tire cord defects by enabling early detection at the start of production.
- Advanced detection capabilities ensure reliable identification, even of transparent oil stains, as well as common weaving defects.
- With the prevention of prolonged and repetitive defects, this customer reached the anticipated quality improvement and reduced second quality by about 30%.
- The complete solution of Uster Q-Bar 2 and Uster EVS Fabriq Vision N effectively automates tire cord inspection at both ends of the production.

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