

# Dimensional consistency of modern oral pouches measured using the Cerulean Orion System

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## Introduction

The testing of modern oral pouch quality is becoming of increasing interest to the industry. Being able to accurately assess dimensional parameters close to the production line gives manufacturing professionals the tools to optimise their processes. The Cerulean **Orion** test station delivers this ability.

The **Orion** test station is an integrated test station specifically made for the testing of modern oral pouches. The multi-axis robotic system moves pouches to various test points such as the high precision balance, and the tensile test station. Physical dimensions are determined through use of high resolution imaging cameras.

Pouches are loaded on a specialist tray and calibration is provided through a series of dedicated calibration pieces that delivers high precision measurements of physical dimensions.



Figure 1: The Cerulean Orion modern oral pouch Test station

## Experimental

Commercially available white snus were sourced for a dimensional consistency test. Ostensibly the same brand, these were sourced at different times and were from different production lots. The pouches were loaded onto the **Orion** carrier trays immediately after being removed from their tins and a full battery of tests performed. This takes approximately 6 minutes for a batch of 10 pouches.

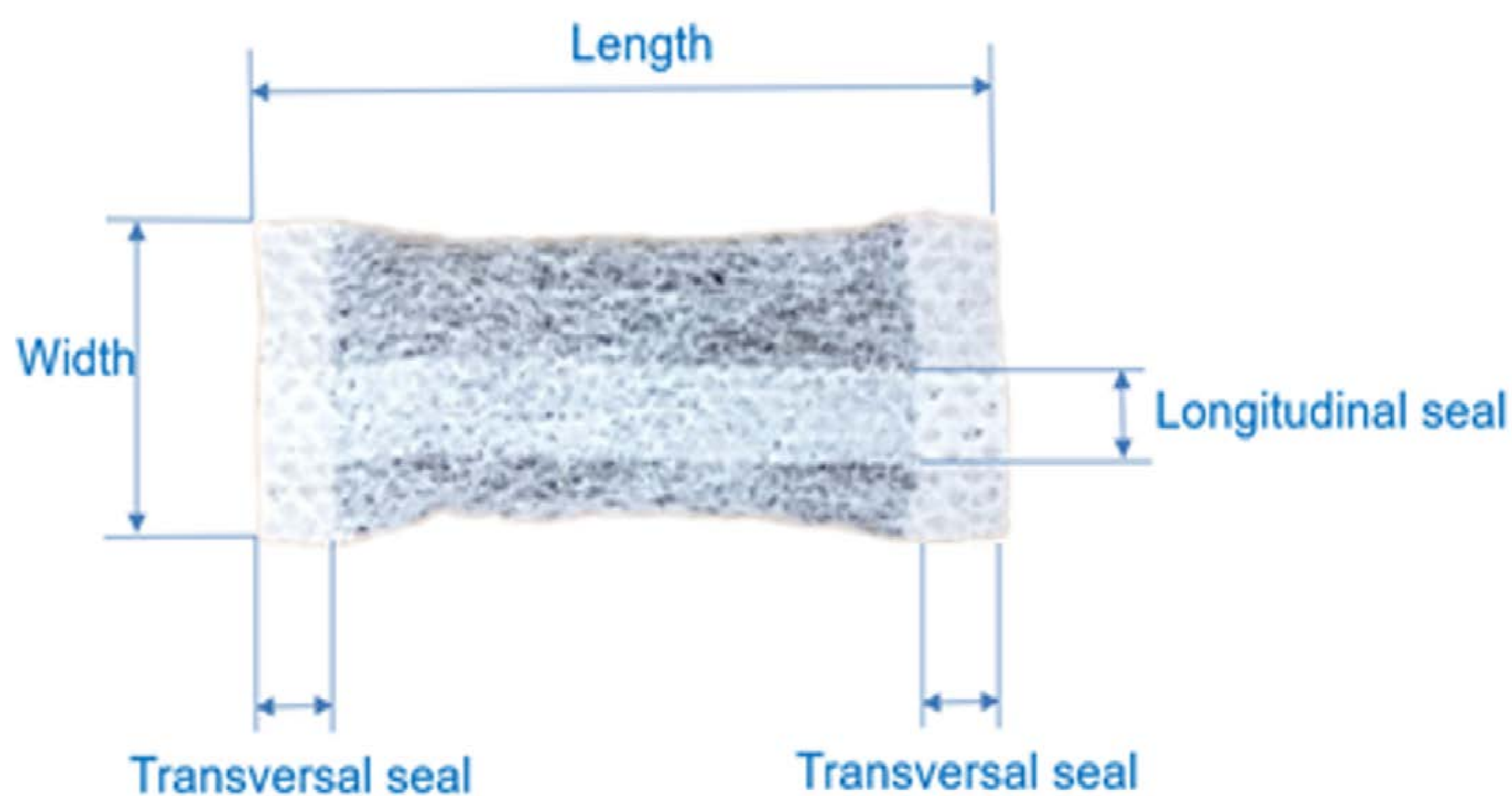


Figure 2: Typical modern oral pouch

The variation in measurements within batch and between batches is shown below for both the pouch width and pouch length.

It is quite notable that the mean variation for the Batch 1 pouches for both length and width is much larger than for the Batch 2 that has not only a tight spread of mean dimensions but also a lower spread within batches.

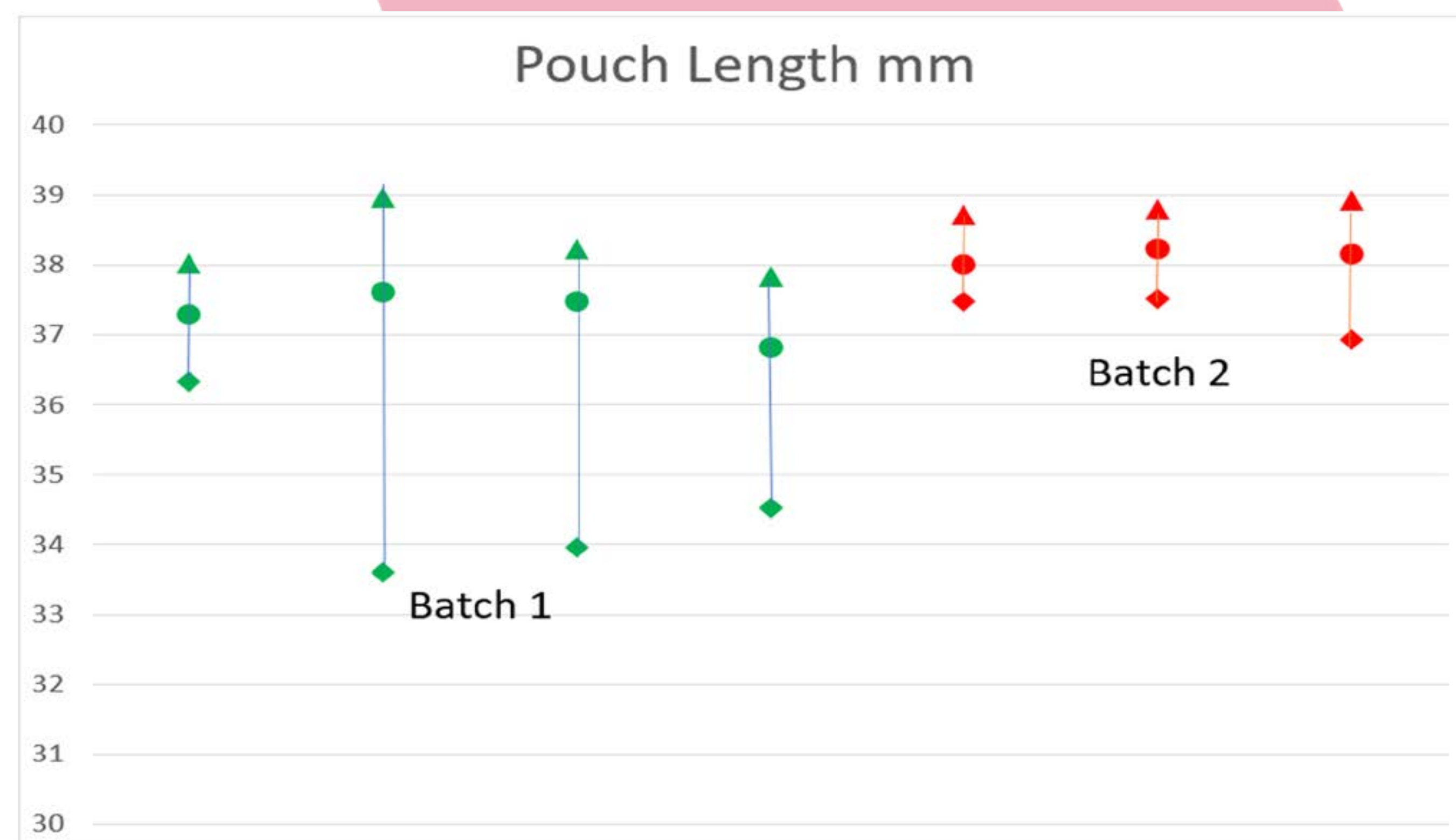


Figure 3: Variation in pouch length for two batches of nominally the same product



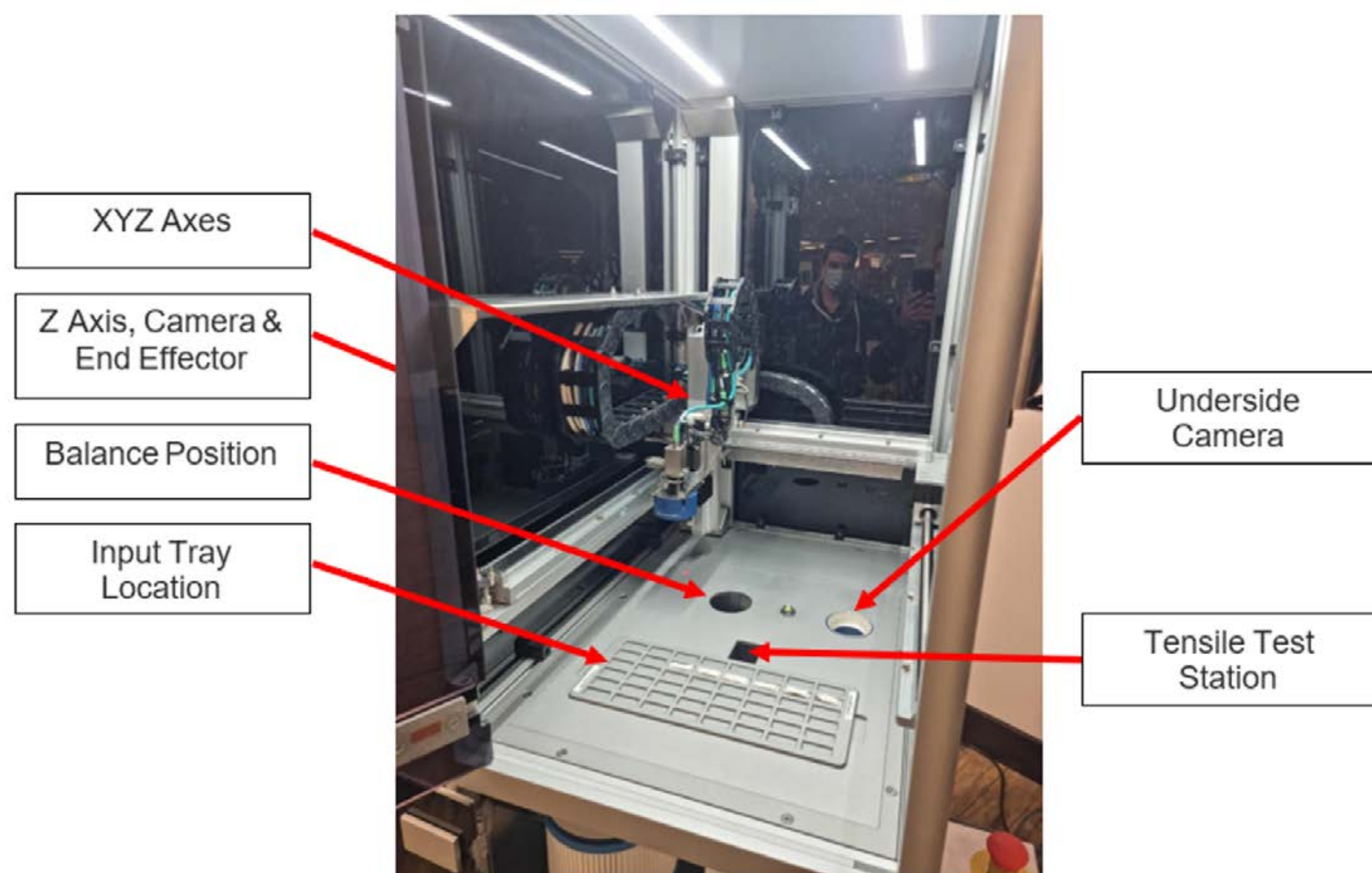
Figure 4: Variation in pouch width for two batches of nominally the same product

The amount of variation in length is remarkable in Batch 1 where pouches can vary by as much as 5.35mm in length. The control of pouch width is much tighter, variation is at a maximum of 0.53mm.

## Conclusion

The **Orion** uses a high precision camera system to determine physical dimensions of pouches under test. It is clear that there is considerable variation in these physical parameters from batch to batch and in some cases within batches.

The vision system is also capable of measuring seam overlap and the centre of the seam, all of these parameters can be critical to pouch quality. The impact upon machine maker efficiency, cost and consumer satisfaction has not been established.



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