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PRESS RELEASE

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For Immediate Release

TITLE: Bigger Scales Do Not Mean Smaller Accuracies

Tyre makers are continually striving to improve the quality of their products to achieve, higher performance, extra safety, and better fuel economy. As quality begins where the process starts, manufacturers are placing more and more stringent requirements upon their suppliers of weighing and dosing equipment.

In tyre production, rubber slabs weighing up to 33kg each are loaded on to a weigh-belt and checked for accuracy prior to being transferred to a mixer. The design of such a scale presents a variety of challenges. First of all, it needs to be robust enough to withstand the shock loading of heavy rubber bales, yet also weigh accurately and consistently, without the need for constant recalibration. In addition, the same weigh-belt is often used to weigh pre-blended bags of small chemicals requiring a tolerance of only a few grams.

A major European tyre manufacturer, with stringent requirements and established acceptance procedures has sourced such scales from Zeppelin in Nottingham for many years. Recently however, the customer presented them with an additional challenge. They wanted to incorporate the use of three sheet feeders mounted along one side of the belt to automatically feed pre-mixed rubber sheets onto the scale. This process required the use of an 8 metre long belt, capable of weighing up to a quarter of a tonne of rubber, yet providing the same accuracy as smaller scales of only 4 or 5 metres in length.

Based on this brief, Zeppelin engineers were able to design an 8 metre long scale that incorporated their centre mounted drive system which ensures a balanced load is presented to all of the scale's high precision load-cells. In addition, mounting the four load-cells at the corners of the belt means that because there is virtually no overhang, wherever a load is placed on the belt, it falls inside the weighing area of all of the cells, therefore accuracy and consistency are maintained.

Acceptance trials were carried out with the customer using a set of test weights to give a range of 20kg to 240kg, in 20kg increments. Results showed a weighing accuracy that was within 2 grams in the lower weight range, whilst still achieving an accuracy within 60 grams at the higher end. In addition, during the 100kg test, extra weights of 20 grams and 40 grams were placed at various positions on the scale to test its ability to weigh small amounts. Each time the scale was able to detect the additional weight precisely, independent of position.

To maintain the weighing accuracy, pneumatically operated calibration weights were fitted to the scale to simulate 20% and 80% of the maximum scale capacity. These allow the scale to be checked for accuracy across its weighing range and to calibrate the control system. A process which takes only a few seconds.

Further enhancements included hinged side plates that can be raised to keep the rubber sheet in place, control footswitches and a photocell at the discharge end to confirm the belt has completely discharged.

Following the successful installation and commissioning of the scale recently at the customers site on the USA, Zeppelin Systems UK have received orders for a further six scales for the customers other factories worldwide.



8m polymer scale (right) and 9m mixer charge conveyor outside Zeppelin's Nottingham site.

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