

## Application Note: High Speed Cartridge Check-Weighing

**Summary:** To upgrade from cartridge check-weighing by hand to a completely automatic High-speed cartridge check-weighing machine in a Zone 1 Hazardous area



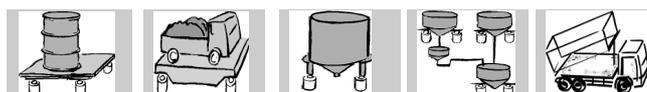
*25mm shells check weigher.*

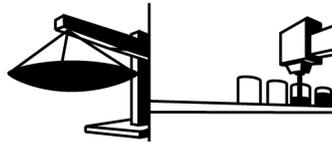
ADI had been check-weighing the amount of gunpowder in their 25mm cartridges by hand, a slow, dangerous and tedious process. KIW successfully tendered for a project to upgrade this process to an automatic check-weighing machine that could accept cartridges directly out of the cartridge assembly machine, and feed accepted cartridges into the inspection machine.

The custom made KIW machine has dramatically increased the production rate to 30-40 Cartridges per minute, and has automated parts of their production record keeping.

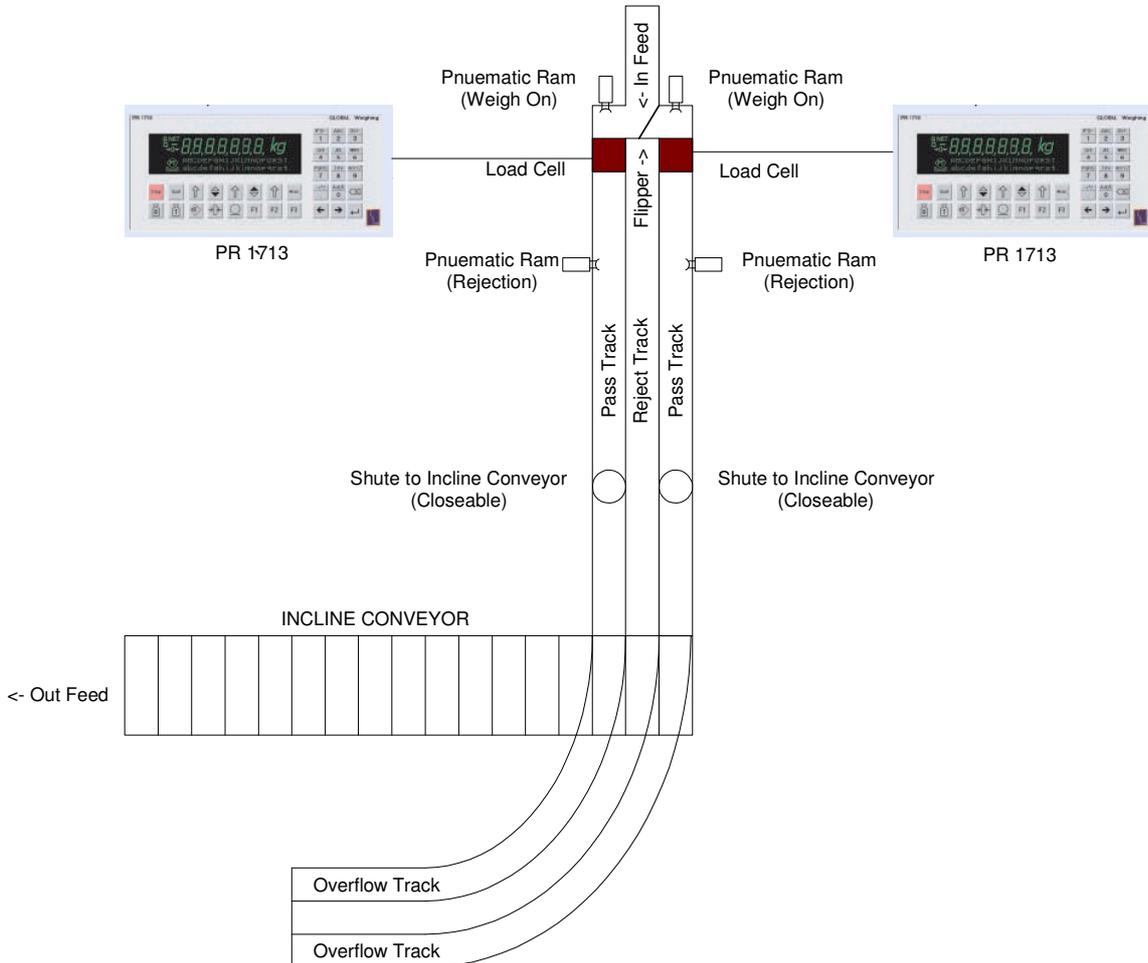
To achieve the most accurate results the KIW machine split the in-feed track into 2 separate tracks. These 2 separate tracks had weighing platforms to check-weigh the cartridges. The 2 tracks also had a rejection point where underweight cartridges would be pushed onto the rejection track. Cartridges that passed would move down the tracks until reaching an incline conveyor, which fed the cartridges into the existing inspection machine.

To control this system KIW uses 2 PR1713 System Controllers that have an in-built PLC. Using sensors at specific locations in the check-weigher machine the KIW designed program could precisely time the solenoids and





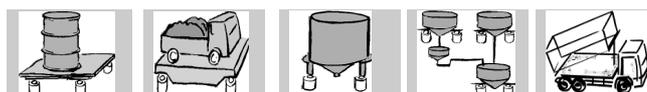
detect if there were any jams in the system. This resulted in a safe and reliable process control.

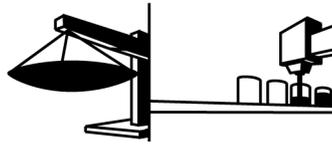


*Schematic of machine.*

The KIW system has the following features:

- Fast precise check-weighing at up to 40 cartridges per minute in a Zone 1 Hazardous area
- PR1713 Software keeps a user defined database of cartridges that can be selected for check-weighing using the system
- Installed safety covers which halt the machine if removed





- Fault Detection and interlocking with the assembly machine to stop assembly if fault is detected.
- Combination of Pneumatic and Electronic Control

ADI can now safely rely on the un-matched reliability of the PR1713 System controller to keep their production line running smoothly for years to come. The flexibility of the PR1713 assures it can be adapted to meet any future requirements.

The PR1713 System Controller used in this Application is ideal for almost any weighing system including:

- Check-weighing
- Batch control
- Flow control
- Filling Systems
- Blending Systems
- Truck weighing.

Please feel free to contact us for further information:

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