

Comparison between weigh scales vs flow meter measuring equipment to dispense Chemical Admixtures

Weigh Batching	Volumetric batching
100% traceability and compliance with ISO 9000 quality requirements.	Batch records may not tie up with actual dosage as flow meter inaccuracy cannot be recorded.
Scales are properly calibrated and traceable to national and international standards and tolerances.	Flow meters are <u>not calibrated in the strict compliance sense</u> supply companies simply do a check and issue a <u>dosage check document</u> .
Calibration is simple, accurate and very stable. Optional scale check allows ongoing calibration after every load.	Calibration is more difficult as each line needs to be checked using a manual assessment of volume. Accuracy can be easily influenced after the dosage checks for example any adjustment to the valves will change the outcome.
Actual batch quantities are accurate, batch computers only record the actual quantity once the admixture has been batched into the hoppers and the scales have settled. Only then is the admixture batched into the concrete.	There is doubt regarding the accuracy of the actual batch quantities as centrifugal pumps have momentum and do not stop dead when power is cut.
Admixtures are pre-weighed then held in the hoppers ensuring rapid discharge with no impact on batch cycle.	Admixtures are batched directly into concrete mix, which could slow batching cycle.
Admixtures can be dosed at any stage of batching and in multiple dumps - thereby achieving optimal performance.	Admixtures are difficult to batch at certain stages of the batching sequence
Calibration is "hands off" and automated and can be executed after every batch if required.	Calibration is cumbersome and messy; the frequency is reduced due to the inconvenience.
New Admixtures can be added to the scale simply.	New Admixtures require a full admixture line, and possibly an extra controller.
Large quantities of admixture (up to 225l) can be dispensed rapidly and accurately into the batch, ensuring optimal dosing and no delays in the batch cycle.	Dispensing large volumes can cause increased inaccuracy, an inability to dispense at optimal time in the batch cycle and delay the batch cycle time
The batching hoppers are continually emptied and cleaned after each batch.	Reliability can be hindered by the efficiency and cleanliness of the pulse meter.
The weighing of the liquid ensures an accurate dosage, continuous self-calibration maintains accuracy.	To ensure accuracy a second pulse meter or sight glasses is often needed or requested.

Target weighs tolerance of 0.01% to 0.05% of volume.	AS1397 allows a tolerance of $\pm 5\%$ or less, volumetric batching makes it difficult to detect what has actually gone into the load.
Each batch is weighed to easily detect overruns or incorrect dosages.	Difficult to detect overruns or incorrect dosages.
Not effected by temperature or viscosity of admixtures	Influenced by temperature, viscosity and turbulence of admixtures.
Flushing after each batch ensures valves operate effectively and minimises any chance of corrosion.	Corrosion and build up in flow meters can affect accuracy.
No additional equipment required to ensure accuracy.	Sight glasses are often installed as a check on flow meters
Scale connects directly to scale indicator and batch computer.	More complex due to the requirement to calibrate the control unit and then interface through batch computer.
Very reliable robust equipment with few moving parts, proven low ongoing maintenance requirements.	Less reliable and higher ongoing maintenance required. Flow-meters require biannual maintenance and refurbishment. As the flow meters can only be refurbished once and then need to be replaced with new equipment ongoing costs are high.

HMT Admixture scale
(Cladding removed)

