

Hydrostatic Load Cells Bear The Weight Of Washdown

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“We just lost another load cell on mixer scale number three” is not what any operations or maintenance manager wants to hear in a busy food processing facility. When a scale goes down, and accurate weight data is no longer available, it creates a real problem for production. When Plumrose USA, premium meat product provider, in Council Bluffs, Iowa, decided to do something about it, they turned to Emery Winslow Scale Company for help.



The model 709 floor scale uses air-cylinders to raise the deck panels, for total cleaning access to the pit.

Emery Winslow installed Hydrostatic™ load cells under Plumrose's mixers, vacuum hoppers, and massagers. Dave Inman, V. P. Mechanics at Plumrose USA says that they started replacing their electronic load cells with Hydrostatic™ almost 10 years ago, and they have lived up to their reputation.

Plumrose USA has national distribution, and three production facilities; Council Bluffs, Iowa, Elkhart, Indiana, and Booneville, Mississippi. Even in this poor economy, Plumrose USA is experiencing growth, and credits their flagship products, “quality deli hams, bacon, and sliced meats” for this growth. At the Council Bluffs operation, they not only produce 1.5 million pounds of ham per week, but also 400,000 pounds of turkey. Raw turkey breast and muscle is brought in, and further processing begins. This includes mixing, massaging, cooking and forming 4x6 logs. In Booneville, product is smoked, sliced, and packaged for retail sales.

Dave Inman has been with Plumrose for 28 years, and remembers when scales were a bigger problem. “We have very stringent quality and sanitation standards,

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and our third shift is intense high pressure washdown of all equipment. And everyone knows that electronics and water don't mix well."

It was not unusual for these heavy sanitation procedures to create a scale problem, typically due to water infiltrating an electronic load cell and causing it to fail. This can be a huge issue, especially if the scale fails during a batching operation, where ingredients are being added to a mixer or massager, and the ingredients are being added by weight. This can bring production to a halt, or worse, cause the wrong amounts of ingredients to be added. "Any process that involves weighing needs to know that the weight data is accurate, consistent, and reliable at all times," says Inman.

Emery Winslow's Hydrostatic load cells are totally non-electronic, and are guaranteed for life against failure from water, high pressure washdown, condensation, humidity, water submersion, power surges, static charges, surges from welding, and even lightning strikes. All sensitive electronic components are isolated and protected from the harsh environment, which makes them ideal for the harsh environment of a meat or poultry processing plant.

Plumrose has 12 sets of Hydrostatic load cells under various large mixers, vacuum hoppers, and massagers. Some of these units have a local weight display, with an instrument panel for operator control of the batch process. Dave Inman says that their in-house maintenance team frequently checks calibration of the scales. "They hold calibration remarkably well," he says. "We rarely need to make any adjustments." This reliability is due to the design principle of the load cell itself. The output of the load cell is determined by a machined surface creating what the company calls an "acting area," which never changes. If calibration adjustments are ever needed, they are made through the digital instrument, just like an electronic scale. Out on the production floor, under the mixer legs, or under the platform of a floor scale, there are no electronic components whatsoever; no strain gages, no summing boards, no cables, no circuitry.



Power surges from welding cannot damage a Hydrostatic™ load cell.

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Plumrose liked the Hydrostatic load cells under their processing equipment so much, they also installed several series 709 Hydrostatic floor scales, mounted in shallow pits. The pits are only about eight inches deep, with a drain in the pit. All pits eventually get filled with water, and that presents no problem at all for the hydrostatic load cells, which are completely immune to damage from water submersion. Another great feature of the 709 is the Power Air-Lift deck. The deck plate of the scale is split in half, and each half is hinged, with built-in air-cylinders. A simple turn of an air-valve raises both deck panels, exposing the entire understructure of the scale and the pit, for complete cleaning and wash down access. "Floor scales are notoriously difficult to clean, and those installed in a pit are the worst," says the Maintenance Manager for Plumrose. "This lift-deck feature is great, and allows us to maintain the very highest sanitation standards. The easier it is to clean a piece of equipment, the more often it will get cleaned, and this scale is easy to clean," he says. The 709 floor scale does not need to be recalibrated after cleaning, and never needs to be lifted out of the pit, even for servicing.

Plumrose has several different models of Hydrostatic load cell, under various pieces of process equipment. The series 102 and 120 load cells use a fabric diaphragm, which can be replaced by any shop mechanic. This would typically only happen if the load cell is hit or gets a serious side load. The larger vessels at Plumrose get the series 136 load cells, which have a stainless steel diaphragm which is welded in place.

Having used the Hydrostatic load cells for almost 10 years now, their experience has been excellent. As Plumrose USA continues to grow and expand, there may be many more requirements for scales and weighing equipment. Dave Inman states it quite clearly: "When we need more scales, Hydrostatics will certainly be my first choice."

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