Silo Mixer

The Problem

- Workers mixing mortar or grout are required to lift heavy cement bags and buckets of water. Full cement bags weigh around 37 kg, and workers may handle more than 100 bags per day. They also have to shovel sand repeatedly into the mixer.
- Mixing mortar is associated with an increased risk of back pain, shoulder pain, and even disabling muscle or joint injuries. The risk of injury from lifting and shoveling depends on the weight of the load, the number of loads a worker lifts, how long this work is done, where the bags are placed, and the height of the mixer.

Traditional method of loading mixer

One Solution

- Use pre-blended mortar and grout mix for the job, which can be delivered to the site in bulk and does not require lifting bags or buckets or shoveling sand.
- Bulk pre-blended mortar and grout can be dumped directly into conventional mixers or pumped out as a finished product. All dry ingredients are handled mechanically, with either a delivery truck, forklift or boom truck, eliminating the risk of injury due to manual handling.

Silo mixer

How It Works

- Pre-blended dry ingredients (including sand, pigments, and mixtures) are delivered to the site in 2,000 – 3,000 pound bulk bags or pumped directly into the silo itself. If delivered in bulk bags, they are moved by forklift or boom truck over a funnel-shaped silo that straddles a conventional mortar mixer and emptied into the silo. The worker is required to manually pull a hitch pin on the bag while on a ladder or other elevated work surface.
- Once in the silo, the product is dumped directly into the worker's own mixer where water is added. Alternatively an auger attached to the silo may mix the product which than pumps product directly into the tub or wheelbarrow.
- If the dry product is dumped into a mixer positioned directly underneath the silo, a pull handle or button opens the silo's discharge slide gate. The pre-blended material is gravity-fed from the silo directly into the mixer below and does not require an electrical or other power supply. This process still requires a forceful and awkward pull of the mixer handle to dump the finished product into the tub or wheelbarrow.

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Benefits

- Decreased risk of injuries due to constant manual lifting required in traditional mixing operation.
- Increased productivity due to the elimination of various time-consuming manual handling tasks.
- Auger-equipped silos have the ability to be pre-set, allowing workers to continue with other required tasks while an exact amount of product is pumped into a receptacle.
- Higher level of consistency between batches due to pre-mixing of product.
- Sand and mortar mix are not damaged by rain, snow and other environmental conditions.
- Silo dispensers can save space on congested jobsites and reduce material theft.
- Disposal of bulk bags is not a problem since all bulk bags are removed by the supplier.
- These systems do not eliminate the risk of silica dust exposure, but dust curtains are available to reduce the release of silica-containing dust.

For More Information

- Products may also be found on the internet using the following search terms: (silo or bulk) “delivery systems.”
- Local contractor tool and equipment suppliers or rental companies may be another source of information on products.
- Visit www.cpwr.com or www.cpwrConstructionSolutions.org.
- Visit the IHSA website at: https://www.ihsa.ca/topics_hazards/msds.aspx

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