

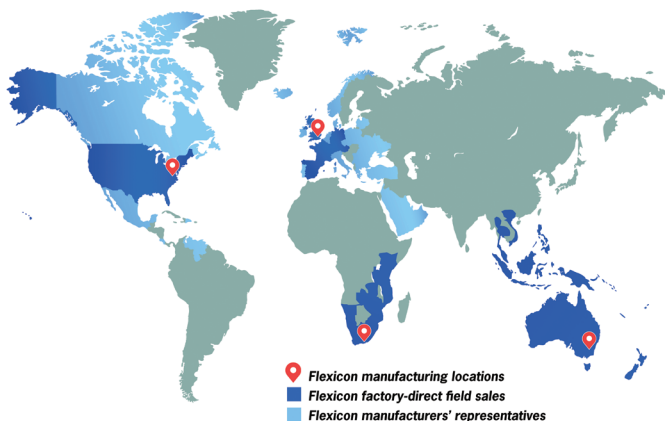
FLEXICON CASE STUDY



At the drum filling station, dry powder passes through a gate valve that closes automatically once each drum gains 440 lbs (200 kg) of weight.

Drum Filling and Discharge Stations Improve Blending Efficiency, Safety

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Drum Filling and Discharge Stations Improve Blending Efficiency, Safety

CHERTSEY, UK — An automated drum transfer system enabled Metrode Products Ltd to blend separate batches of dry and wet batches simultaneously, improving worker hygiene and boosting production of welding-electrodes by 60%.

Previously, operators manually emptied 55 lb (25 kg) bags of various dry powders into a 440-lb (200-kg) capacity blender that cycled for 30-minutes, after which an operator added water and silicates for wet blending. Two and one-half hours of production were lost daily waiting for dry blending cycles to end before wet ingredients could be added. In addition, operators were exposed to dust and potential injury from lifting heavy bags.

The company boosted productivity by dedicating a new 2200 lb (1000 kg) blender to dry mixing of the powders, a new drum filling station for automated weigh-filling of the dry blends, and a new lift-and-seal drum dumper for discharging of drums into the original 440 lb (200 kg) blender now dedicated to wet blending.

The 550 lb (250 kg) capacity drums are utilized as intermediate bulk containers (IBCs) to transfer dry blends by forklift, since the wet blender located in a remote area of the plant was impractical to service with a conveyor.

The operator now manually dumps dry powders into a hopper from which they are conveyed vertically to the 2200 lb (1000 kg) dry blender. Blended powders are gravity discharged from the blender outlet into 550 lb (250 kg) capacity drums equipped with casters and forklift sleeves.

Drums Filled under Gain-in-Weight Control

The drum filling station, under gain-in-weight control, fills each drum with dry-blended material. The frame is fabricated of mild steel with stainless steel contact surfaces, and rests on four load cells that transfer weight gain information to a controller. The drum filler raises each drum hydraulically to the blender outlet equipped with a gate valve that automatically opens, allowing material to enter the drum, and closes once 440 lb (200 kg) of weight have been gained. A forklift truck transfers drums to the drum discharge station for dumping of dry blends into the second blender where water and silicates are added for wet blending.

Drum Discharge Station Prevents Dust

Once the drum is positioned on the discharge frame, the drum dumper raises the drum hydraulically, seating it against the sealing cone to prevent dusting during the dumping process. A pressure detection switch disables the unit if the drum is sealed improperly. The drum dumper continues lifting and tipping through 150 degrees, seating the cone against the receiving hopper inlet.



At the drum discharge station, a cone seats against the drum rim and the receiving hopper inlet, preventing dust as dry material is transferred to the wet blender.

The operator opens the butterfly valve, which is sealed against the top of the receiving hopper, to discharge dry material into the wet blender. Should the butterfly valve open prior to lifting of the drum, a valve-open detection switch disables the system, preventing spillage and dusting. The controller orchestrates lift, tip and emergency stop functions.

Metrode Products has been manufacturing welding consumables including welding rods, wires, flux-cored wire and TIG wire since 1963. The transfer system was designed by Flexicon (Europe) Ltd.



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