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The 1.4 m³ capacity Rotary Glass Batcher (main body behind the drive chain), receives ingredients from the hopper chute above

CASE HISTORY

ANCHOR GLASS

Case history

same mixer for one million glass containers/day since 1980

In this article, Michael Gesek, Engineering Services Manager at Anchor Glass' Elmira, New York plant, speaks about a part of the machinery used to manufacture its glass containers – the Rotary Glass Batcher – which, after 38 years, is still going strong.

At Anchor Glass Container Corporation, a Rotary Glass Batcher brought on line in 1980 still mixes the ingredients that produce over a million glass containers per day. Over 38 years, that's about 14 trillion containers and 3.6 million tonnes of material.

One of the largest US manufacturers of glass bottles and jars for the food and beverage industry, Anchor Glass is headquartered in Tampa, Florida and operates production facilities in New York, Florida, Georgia, Indiana, Minnesota and Oklahoma, as well as a mould manufacturing plant in Ohio.

"Glass containers have been manufactured at the Elmira, New York location since 1912 when Thatcher Glass Manufacturing operated the factory," says Michael Gesek, Engineering Services Manager, who has been with the company for 24 years.

"The location has two furnaces, one for amber glass and one for flint glass — the industry term for clear glass," he explains. The 1.4 m³ capacity GB-50 Rotary Glass Batcher supports the flint glass line that produces bottles and jars made of clear sodium silicate glass.

PURPOSE-BUILT FOR ABRASIVES

Manufactured by Munson Machinery Company, the Rotary Glass Batcher was installed in 1980 on a new glass production line, and was rebuilt in 2011.

It consists of a horizontal vessel that rotates on external trunnion rings at both ends, eliminating internal shafts or bearings that would be unable to withstand constant contact with highly abrasive materials. Internal vanes, or 'flights', create a four-way tumble-turn-cut-fold mixing action as the drum rotates. "The

CASE HISTORY



The drive chain rotates the Glass Batcher on external trunnion rings located at both ends



Blended ingredients discharged from the Glass Batcher are conveyed to the furnace



action of the internal mixing flights is critical for mixing efficiency and blending of ingredients rapidly and thoroughly," Gesek says.

Ingredients are loaded through a stationary inlet at one end of the machine, and discharged through a stationary outlet at the opposite end. When the discharge plug gate valve is opened, the flights also serve to lift the material toward and through the discharge port. The drum rotates until discharge is complete, preventing separation or stratification of ingredients having disparate sizes, shapes and bulk densities.

"One hundred per cent discharge means no carry-over from one batch to the next," Gesek says, "and we've been very happy with that."

The mixer keeps rotating while the ingredients are loaded and discharged, which Gesek says is an advantage. "We like that it doesn't stop between batches. We run five or six batches – 45 minutes to an hour – then shut off for half an hour, depending on production requirements. If we had to stop the mixer between batches, much more power would be required."

MIXING THE INGREDIENTS FOR MAKING GLASS

For the glass industry, the Glass Batcher is fortified with abrasion-resistant materials.

"Glass is made out of sand," Gesek says, along with other ingredients. "All the raw materials are brought by truck or rail and stored in silos. Scales on the bottom of the silos measure the specific formula for the batch. The components are sent one at a time into the mixer."

The mixer processes the same combination of materials — seven different components, plus recycled glass.

From the furnace, sodium silicate glass is filled into moulds to make clear bottles and jars



Anchor runs between 10 and 50 per cent recycled glass, Gesek says, with the flint glass line usually running 15 to 20 per cent recycled glass.

All the components are dry, and are gravity fed from the silos, assisted by vibratory feeders. A scale measuring each component signals the PLC to discharge the material onto a belt conveyor, which empties into a chute feeding the mixer inlet.

After the ingredients are loaded, mixing takes only 90 seconds. The discharge gate opens and the batch empties into a bucket elevator, transferring it onto a belt conveyor which, in turn, loads holding bins, ready for the furnace. The bins hold more than 36 tonnes of blended batches.

“A batch weighs about 1.8 tonnes,” says Gesek. Historically, the Glass Batcher’s daily throughput ranges from 245 to 336 tonnes depending on demand.

ATTENTION TO MAINTENANCE KEEPS THE GLASS BATCHER ONLINE

The Glass Batcher always runs

the same mixture, Gesek says, and the components are dry, so cleaning is unnecessary.

Anchor Glass has developed a preventive maintenance program to minimise unexpected downtime, helping keep the mixer on the job all these years. “We change the inlet and outlet seals annually, and every couple of years we change the trunnion rings and rollers,” Gesek says. Anchor replaces the drive chain (which stretches) and the small sprocket semi-annually.

Some components last longer. “We change the big sprocket every 10 years,” Gesek says. He changes out the discharge gate assembly every three to five years. The mixing flights, he says, lasted for 20 years despite the abrasiveness of the glass batches.

The Glass Batcher performed its job for 30 years before it was time for a replacement drum, accomplished quickly onsite in 2011. The Anchor Glass maintenance team worked with Munson on the rebuild, Gesek says. “It took two days, and we ran it at the end of the second day.”



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One modification that Anchor Glass made was to install an inverter drive so the drum rotation could start up slowly and reduce stress on the mixer drive system.

Over its long history at Anchor Glass in Elmira, the Rotary Glass Batcher has been a dependable part of the flint glass line. “There has never been a production outage because of it in more than 38 years,” Gesek says. ■