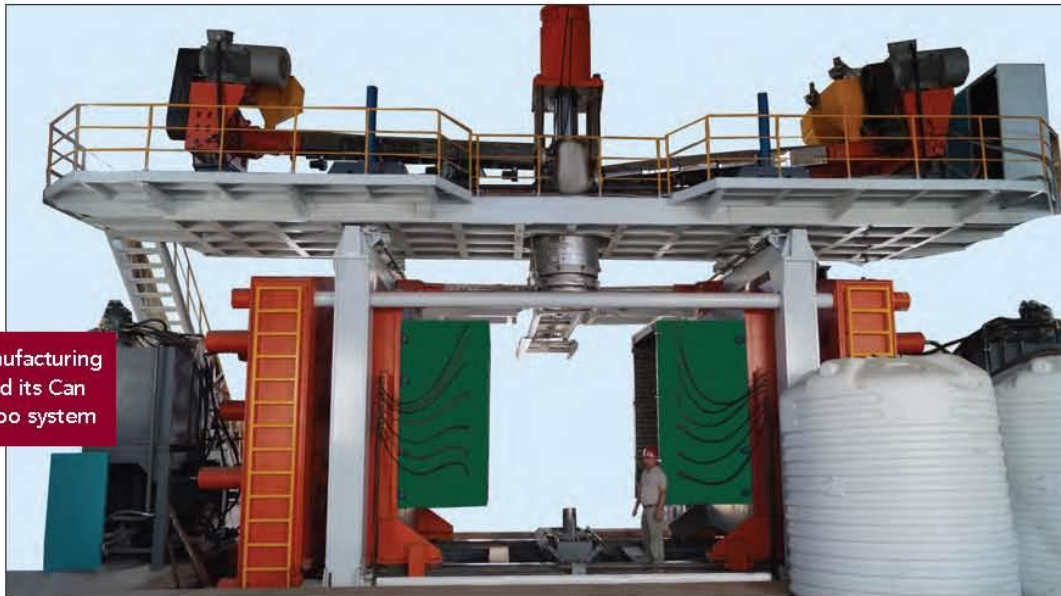


## Blow Molding Gets Supersized

Accumulator-head technology takes on rotomolding



Pet All Manufacturing Inc. photos

Pet All Manufacturing introduced its Can Mold Jumbo system

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Thanks to new technology from Pet All Manufacturing, accumulator-head blow molding is now a serious challenger to rotational molding for making extra-large hollow parts. This development considerably expands the possibilities for part designs, including multilayer options not possible via rotomolding.

Pet All Manufacturing introduced its Can Mold Jumbo series of machines during NPE2018. They offer shot sizes of up to 700 kilograms (kg) (1,543 pounds) and head tooling with a diameter up to 2,000mm (78.7 inches). The platens can be configured for wide and/or long parts. Until now, there have been very few machines this large, and those have been mostly one-off specialty machines. Typically, rotational molding has been the main method for making very large hollow parts because rotomolding machines are easier to scale up in size than blow molding machines.

One U.S. customer, for example, purchased three Jumbo machines equipped with 14-foot platens to blow mold large outdoor products. This is a significant development, and we can envision blow molded panels for homes and temporary housing for use after natural disasters. Access to clean water is a huge issue around the world and tanks for storing clean water are in great demand. There also is an ever-increasing need for chemical storage for farming and industrial applications.

The point is that there are myriad opportunities for blow molding for such applications.

### What We've Achieved

In accumulator-head blow molding, a large part is generally defined as having been made from a shot larger than 50 kg (110 pounds) and being able to hold more than 1,000 liters (264 gallons). Pet All has surpassed that by introducing the largest accumulator-head system in the world, capable of producing parts with a volume of up to 25,000 liters (6,604 gallons). Depending on the head size, the machine can produce as many as six layers.



1,000-liter horizontal tanks

The biggest of these machines comes in at over 40 feet tall, making space availability a serious consideration for any potential buyer. Secondary operations and the warehousing of parts — which must be moved with an overhead crane — also require significant space.

Building these machines requires larger machining equipment. For this, we've partnered with Asian OEMs. Because these partners are used to dealing with such large machines and machining equipment, we did not encounter any unique problems during production. The machines ship in high cube containers.

### **Rotational Molding vs. Blow Molding**

Whether to choose blow molding or rotational molding has been a question traditionally answered by taking into account the size of the part and annual production quantities. Let's consider the differences between the two processes.

Rotational molding uses resin that is directly placed into the mold cavities. The mold is closed using a hoist and is mounted on the machine's arms, which

typically can accommodate different sizes of molds and sometimes multiple molds, depending on the machine and part size. The molds are then shifted into an oven where they spin on the machine arms to heat and distribute the resin in the mold cavities. The molds then move to a cooling station that employs either water spray or large fans. There, they continue to spin until they are stable enough to demold. From there, operators typically use a hoist to partially disassemble the mold to extract the parts.

Typical cycles times can be 45 to 60 minutes for large parts. A huge advantage of rotational molding is that you can mold square corners as well as very complex geometries. This cannot be done in blow molding. The process is, however, labor-intensive. To increase production, multiple molds are needed. Also, material choices are somewhat limited.

At its most basic level, accumulator-head blow molding uses plastic pellets that are loaded into an extruder (or extruders on multilayer models) via hoppers. The resin is then plasticized and fed into accumulators to build up for the next shot. The accumulators feed resin into the head (the market offers numerous head designs)