

# AMAZING ANIMATRONICS

Let's visit **Garner Holt Productions, Inc.** to see **hydraulics** in action!

psst!  
GHP is the world's largest designer and manufacturer of animatronics!

Animatronics are moving mechanical figures used in theme parks and shows. The amazing makers at GHP showed me some of the secrets behind how they're made. Check this out!



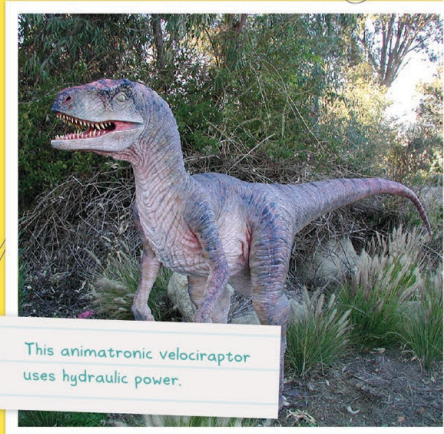
This animatronic miner greets visitors to Knott's Berry Farm's Calico Mine Ride.

To make a figure, you start with an idea. Do you want a giant dinosaur that moves its head and roars? Or a bird that flaps its wings and tells jokes? Or maybe a person with a face expressive enough to tell a story, laugh, and cry? Whatever you want to make, the first step is to imagine it.



The motion in most animatronic figures is created with pneumatics, or compressed air. Hydraulic systems are used for figures that need to be very precise and very sturdy. Hydraulics are less sensitive to heat and cold, and can operate reliably for long periods of time. The movement created by hydraulic systems is also very fast and strong, which creates a more lifelike performance.

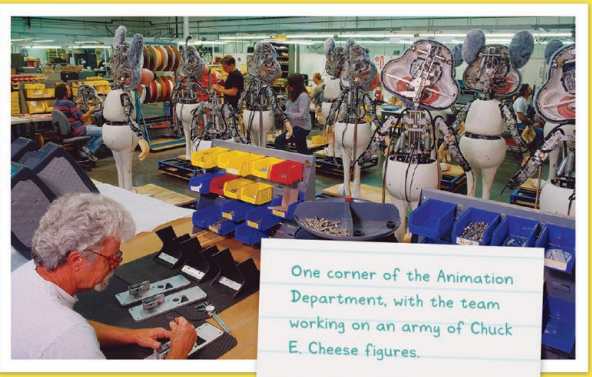
After the skeleton and mechanisms are covered with silicone skin or fiberglass, it's over to the Paint Department. The covering material is painted to be as realistic as possible, then details such as hair, eyes, and teeth are added. Then comes costumes, scenery, props, plumbing, special effects — whatever is needed to make the figure come to life!



This animatronic velociraptor uses hydraulic power.

From the idea, the creative team starts to turn it into a reality. Artists create sketches and build small-scale models to help the team make sure the figure can do everything it needs to do, without going over budget.

Once the team has settled on a final design, the project goes to the Sculpting Studio to make the full-scale figure out of foam. Foam allows the sculptors to create a lot of detail quickly and easily. From there, the foam sculpture is used to cast the final figure. The material chosen is based on what kind of movement is needed. The face and hand pieces need to move a lot, so they're usually cast in flexible silicone. Non-moving body pieces are often cast in fiberglass, to make the figure sturdy and strong.



One corner of the Animation Department, with the team working on an army of Chuck E. Cheese figures.

The figure's voice and other sound effects are recorded and edited in the Recording Studio. Then every motion and every sound the figure can make is programmed into a computer. Finally, all the elements come together to create an amazing animatronic show! COOL!



This unbelievably detailed geti is 9 feet tall, has 56 facial functions and 164 movements. He's equipped with visual sensors that allow him to "see" visitors and respond via American Sign Language!

Photos courtesy of Garner Holt Productions, Inc.