

Industry: Leisure /// Animatronics

Products Used: FX PLCs

# PLCs animate lifelike megabugs

Animation has long been used to convey information. First cartoons, then animated graphics and later robots have all played their parts. The latest trend is to animate lifelike replicas of humans, animals and even normally inanimate objects, using today's technology to give them realistic movement.



A Megabug exhibition held at the Yorkshire Museum in York, United Kingdom, used this latest technique when it mounted an exhibition of robotic models of garden insects. At the exhibition the Megabugs displayed were from 30 to 120 times life size, and used Mitsubishi Electric FX PLCs to automate the complex movement and positioning requirement.

To control the animation of the robotic insects Kokoro (a Japanese specialist engineering company) decided to incorporate pneumatic cylinders and valves to give the models lifelike animation. The FX cleverly controls the opening and closing of the valves, giving each model movements that closely resemble those of the live insects.

In total it required seven Mitsubishi FX PLCs to control the pneumatic network that runs throughout the models. Each of the insect models is controlled by their own dedicated PLC, while a dedicated software program for each model controls the air path to the robots' operating mechanisms. In addition to controlling all movements the PLCs also provide trigger signals for sound tracks stored on compact discs, which are played alongside the animated insect to create an impressive audio/visual effect.

The FX's fast reacting processor combined with its unique sequential programming enables the robot insects' movements to appear random. Position sensors are placed on the elements that have a more complex series of movements. Feedback from these sensors interacting with the PLC's complex program ensures that each moving part is in its correct place before the next movement is activated, so preventing any risk of mechanical damage.

Measuring only 150 mm x 140 mm x 95 mm the FX PLCs are small enough to fit alongside the robots they control without being obtrusive. Their compact size, industrialised construction and dedicated positioning programming instructions open up many opportunities for the FX PLCs not only in robotic control, but a host of other precision control applications.

*Application story first released December 1994 by Mitsubishi Electric UK*