Dapol Crane Animation

Figure 1

The Dapol crane is an ideal model for animation due to its robust construction and ease of access. Animation of the cab and jib can be achieved using 2x EzyPoints, Event sequencer, and Timer PMP kits.

The most challenging aspect of this project is the model engineering as trial and error will be needed to optimise the mechanics of the cab rotation and jib movement. The crane is mounted on a 4mm plywood base to aid construction and insertion on to the layout.

Figure 2

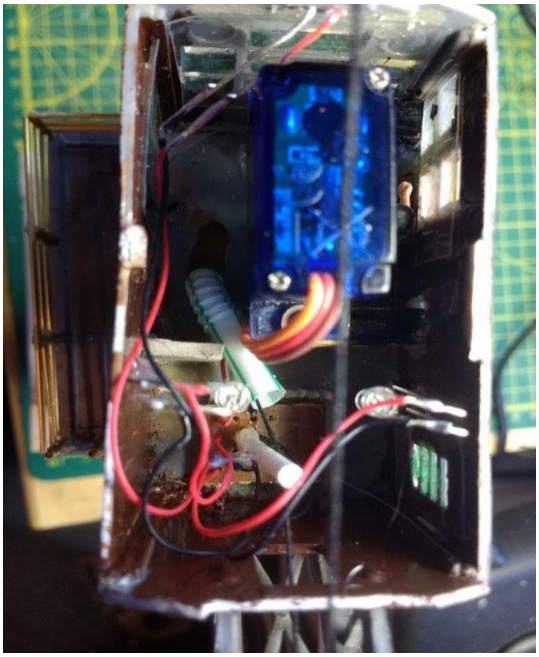

Figure 3

The base of the crane, figure 2, is drilled to accept a 4mm brass tube and care must be taken to ensure it is fixed at 90˚ to the horizontal to enable the cab to rotate smoothly.

Figure 3, looking down into the cab, shows the servo (in blue) which must be attached to the cab, and the servo horn is attached to the brass tube. A curved slot cut in the floor will enable the servo cable to be passed through but ensure there is sufficient space for the cable to move without snagging as the cab turns through 90˚. Ideally the servo should be easily removed to aid any necessary adjustments. At this stage interior lights could be added if desired.

Glace finish (mercerised) cotton thread was used to control the jib as it has strength and the smooth finish produces less friction than normal thread. The thread is fed through the cab floor into a length of plastic tubing attached to the leg of the crane and so down through the plywood base. The thread must run smoothly for the jib to operate correctly and trial and error may be needed in determining the best route for the thread.

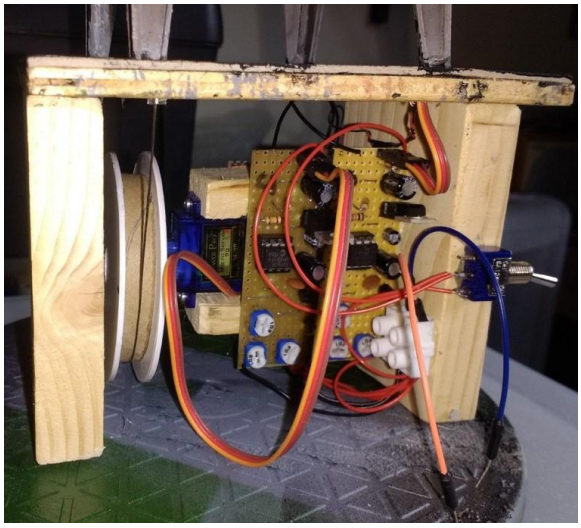

Figure 4

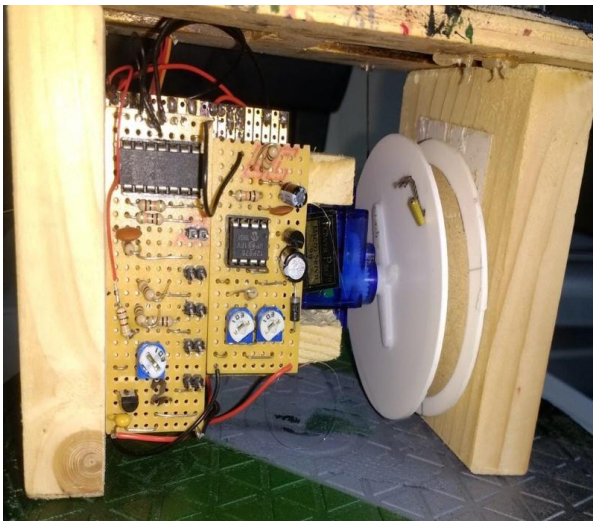

Figure 5

Figure 4 shows the drum, directly attached to the servo horn, responsible for operating the jib. Two EzyPoints kits control the cab servo and jib servo. Both units are set for 180˚ rotation.

Figure 5 shows the event sequencer which determines the order in which the animations occur. In this case the order is: lights on, jib raise, cab rotate, jib lower, reverse sequence. A versatile timer kit provides overall timing for the crane animation.

On power up the servo kick was found to be excessive and a switch was inserted into the EzyPoints stripboard track supplying power to the servos. Switching on the servo power a few seconds after the EzyPoints is powered up prevents the servo kick. As a sequencer is used in this project a more elegant solution would be to use one of the outputs to power the servos via relays.

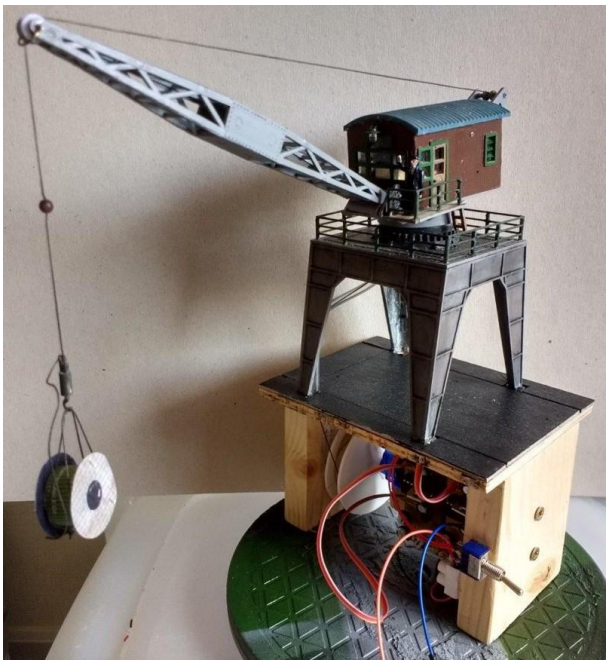

Figure 6

A suitable weight is required on the jib at all times to tension the thread. “Deluxe” liquid gravity has been added to the cable reel, figure 6, to provide enough weight to tension the thread but not overload the servo. If the thread becomes slack it will not wind on the drum and snatching will occur.

The ball that can be seen on the thread is a small bead that limits the travel of the thread and causes the jib to lift, providing more realistic operation.

Click HERE to see video

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