This Modern Molding customer asked us to work with them to create many parts for this control panel. Used in an agricultural environment, it must be durable, functional with good cosmetics.

Flexible plastic mechanism was designed to provide positive location for light pipe knob.

Light pipe over-molded with soft Thermo Plastic Rubber knob.

Texturing creates an anti-reflective view-thru window in the display panel.

Magnets inserted into flex action mechanism signal the electronics about knob location.

Inner housing is (above) mounted to an electronic PC board.

A chemical resistant ABS Plastic with a textured surface is used for the display front.
The challenge in producing this part for our customer is to be sure that the small holes, indicated by the red arrow to the left, are positioned exactly as required. The center point of one hole to the center of the next hole must be extremely precise. The holes all have to be .016” plus/minus .001” and have a positional tolerance of plus/minus .003”.

The tool includes two side pulls, as well as two additional pulls as a result of the mold opening to create this complex design.

The print head mounts on a shaft over which it slides from side to side. The small nine holes line up with pins that fire to create the desired image on this impact printer.
Our customer approached us to help them with a fairly complex design that would involve many parts.

The handle and the plunger rod are both threaded; the handle is automatically unscrewed in the tool, while the threads in the plunger are created with the pulling action of the tool.

The housing has two cores, one for the rod, one for the main housing, and a tool pull with cam action to develop the water in-take channel at the bottom of the housing.

The filter end cap is threaded as well as requires a central core. This also called for a cam pulling action in the tool.

The end cap must match up well with the threads of the housing to create a water seal. Tight tolerances for the threads were required.

Overall, this is a highly successful project and the customer was very pleased with our tooling solutions for their complex design.
The challenge in this project was to create tooling that would meet the customer’s needs for both a highly cosmetic finish on the display service and close tolerance alignment pegs for fitting the front and back pieces snugly together, as well as the electronics inside.

The finished assembly includes a glass viewing window and electronic pc boards assembled within the housing. The inside rim must meet a flatness specification that will allow the glass to sit flat within the frame. A gasket creates a tight seal.

For displays, many of Modern Molding’s customers require cosmetic surfaces that help to improve the visual appearance of the part.

We can provide numerous types of finishes that are achieved through chemical etching and other processes. Finishes can range from high gloss to moderate grains to very dramatic highly etched surfaces. When your product requires that “certain” cosmetic look, we can create your solution.

The front panel must be extremely flat. We worked closely with this customer to alter the geometry in “design for manufacturability” meetings. A combination of tool design and precise injection molding machine parameters assure the customer of a quality part.

Close tolerances were needed for the many alignment pegs for a snug fit. Pegs and holes on the back housing must align perfectly with mating pegs and holes on the front frame.
Modern Molding was asked by this customer to help design tooling that would fit both cosmetic requirements with a complex functional design.

The cover of this water purifier includes a threaded cover with two channels to allow water to flow in and out, a threaded filter clamp, and a snap fit clamp.

The snap fit clamp attaches to the cover by snapping on and uses friction to hold the part in place.

Inside of the top of the filter cap is a thread that is created by an unscrewing mechanism in the tool.

Details in the underside and topside of the filter cap are created by the opening of the tool.

(Above) Details in the cover include slide action that creates the two channels, with an unscrewing mechanism in the tool to create the inner threads.

(Below) The filter cap underside includes outside threads that are created by cam action in the tool.
Modern Molding was asked by this customer to help with functionality and manufacturability design assistance for their new door opener. From material selection, to helping with selecting appropriate brass inserts, to tweaking the final design to mold from plastic, MMI’s expertise helped to create just the function the customer was looking for.

Modern Molding helped the customer to brainstorm the design of a tight tolerance hinge.

When the customer wanted to create a water channel behind the wall mount, MMI suggested these standoffs.

During secondary operations inserts are sonic welded into place.

The final product – and a customer who was happy getting assistance in designing a part for manufacturability and functionality.
Modern Molding was asked by our customer to help reduce costs and eliminate labor and expense at their production facility. The idea was to develop an over-molding process to eliminate potting at their facility.

The PCB board original assembly was much bigger - a two-part plastic housing that snapped together. After inserting the board, it was then potted at their facility.

The PCB Board is now inserted into the mold and over-molded with a plastic that will stand up to the elements.

MMI’s new electric press’s give us the process controls necessary to develop a process that will not damage electronics. This is a second, larger PCB Board (2”x2”) that Modern Molding over-molds for the same customer.

The part is tested electronically to ascertain that a functional part has been made.

Modern Molding was asked by our customer to help reduce costs and eliminate labor and expense at their production facility. The idea was to develop an over-molding process to eliminate potting at their facility.
When Modern Molding was asked by our customer to suggest two different plastics, an inner one that would be conductive, and an outer that would insulate, we found the engineering grade resins to meet their needs.

First plastic shot (left) is over-molded with a second resin (right) to create a dual function housing.

The completed plastic part, made of 2 different resins then has two brass inserts sonic welded to it in order to attach a PC Board.

The customer assembles an electronic board to the over-molded part. This assembly becomes part of a larger sensing device. The two plastics address the functional needs of the application through the use of two different resins.

Inner most plastic is conductive, while outer plastic (below) acts as an insulator.

Circuit board being installed by customer.
When parts have to fit together “just right” the design of the tool is extremely important. Our in-house tool room designed and manufactured this family tool. The left and right cavities must align perfectly for this cosmetic trim piece.

Color matching is also important for this cosmetic part. Modern Molding works closely with our colorant suppliers to assure that we have the right color match. In order to color match, we work with our suppliers to get a specific colorant best suited for the plastic resin we have selected. Our material handlers carefully mix colorant and resin, to get the perfect color every time.
Modern Molding’s customer required a resin that would create a part that was rigid with a high flex modulus. The part also had to meet fairly tight tolerances (+/- .001 inches) in order for two of the parts we manufacture for them to work together.

Modern Molding sources many engineered resins. In this application we chose a filled resin known for low creep and shrinkage.

The molded battery tray (left) must meet a very tight tolerance in order to fit snugly into the smart card (right).

The smart card also must meet a very tight tolerance for flatness.

Because of thin wall sections, tight tolerances, and filling issues, we worked closely with our customer to develop an appropriate tool design.

This part is only .050 inches thick and in application is inserted into electronic devices as memory or “smart” cards.

The selection of the right resin for any application is one of the many solutions that Modern Molding provides. We consult with our many resin suppliers to assure that we select a resin that is appropriate for the technical requirements of each part we make.
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Machined Metal Insert

Our customers often ask us to develop parts that give the versatility of plastic with the function of a metal part. A specialty of Modern Molding is insert molding of machined parts, custom metal inserts and stampings.

At Modern Molding we do a tremendous amount of insert molding. We consider even short run jobs to meet the needs of our customers.

Knurling on the insert helps to anchor the metal insert in the plastic.

Custom Brass Insert

Cut-outs on the stamped insert helps to anchor the metal insert in the plastic.

Stamped Metal Insert
Our customer, a manufacturer of electronic components for another OEM, created a part for a control display panel.

The part requires touch sensitive pads as well as a light pipe to transmit light to various indicators on the panel.

Modern Molding manufactures a number of different light pipes and light diffusers that are used in display and control panels, dashboards and other mechanisms where light transmission is required.

When creating a light pipe there are a few technical criteria that must be met.

First, the pipes must be well positioned so that they match up exactly with the surface indicator areas.

Second, the pipes must have no contamination so the light may pass through unobstructed.

Finally, the ends of light pipe parts must be highly polished in order to create a surface area through which the light can be seen. The part also features spring loaded tabs to lock it into place.
Modern Molding has been successful at saving our customers money by replacing parts that were originally machined from metal or plastic.

Customers are surprised to find out that tooling may be surprisingly inexpensive. Tooling can often "payback" in a relatively short period of time. With an in-house tooling, Modern Molding can provide a quality tool at a low price.

In this application, our customer replaced a part that actually consisted of many metal parts and created one complex plastic part. It is used for a printer head.

In another application, our customer had relatively low volume machined plastic parts that became three injection molded parts. These parts are used in a food dispenser.
Thermoplastic Rubbers are a great solution for creating grips, buttons, and low-pressure gaskets to name a few. In this application, Modern Molding’s customer required a cosmetic finish on the hard outer service housing and a pressure sensitive button protruding through the cover with a sealing gasket on the inner surface.

Thermoplastic Rubbers are available in a variety of durometers. They range from soft-to-the-touch to fairly rigid depending on the need in application.

This plastic can be used for stand-alone products, or can be molded over metals or other plastics depending on the application needs.