

# Heineken POP Display

## Provides Eye Catching Sales POP

Mass marketing companies in the consumer sector are continually seeking innovative ways to promote product sales. A strategic part of their advertising campaigns include displays to maximize visibility and floor space at the retail level. These displays must be imaginative, visually appealing and distinctive. Companies with household names like Coca Cola, Pepsi, Budweiser and Heineken are battling for floor space and dominance in stores to gain market share. This highly competitive arena has fostered a \$17 billion industry referred to as the POP or point of purchase display industry. It is comprised of thousands of companies specializing in the creation of products which display merchandise with the sole purpose of enticing consumers to buy the promotional item. POP companies range in size from small one or two person companies to very large international corporations. It should be pointed out that POP is gaining importance as a marketing tool in this era of cable TV and Internet, during which conventional advertising is losing effectiveness. POP companies typically include creative individuals with a keen understanding of the product as well as strong marketing, design and graphics skills. One such firm is Merchandising Specialists Inc. (MSI), located in Dobbs Ferry, NY (Tel 914-693-3332), which specializes in providing its clients with distinctive POP products based on their unique combination of creativity, marketing and design talents. This article will discuss the design and development of one of their more recent developments for Heineken; a rotationally molded beer keg POP.

Typically beer is distributed in kegs, bottles or cans. Most beer drinkers prefer the taste of kegged beer due to its smooth frothy taste and consistency. Until recently, kegged beer has only been available in full, half or consumer Draught keg offers beer drinkers the taste and consistency of kegged beer in a conveniently sized container. The new product looked and operated like a conventional keg while also providing customers with brand identity and convenient handling. Since the product was newly introduced and its unusual volume capacity was 15 times greater than conventional cans, it was an ideal candidate for a POP display.

MSI noticed an opportunity to enhance product sales by proposing a novel display for this new product. Their concept was based on boldly displaying the new draught keg cans package within a large floor standing refrigerated replica of the very same Heineken can. This simple yet brilliant design satisfied all the requirements of an ideal POP. It was eye catching, functional and prominently reinforced product branding. In addition, MSI included a glass front refrigerator within the display to sell the 5 liter kegs which were clearly visible to the consumer. Additional storage compartments were provided on the top surface to securely place four draught kegs, further enhancing sales. A faithful representation of the world famous Heineken logo, as well as the tap, were also included as part of the POP.



fig Heint

The concept was presented to Heineken as a full scale 3D functional model, which was ultimately approved by Heineken for limited production. MSI's next challenge was now facing them, which was developing a production design. MSI turned to rotational molding as the only viable solution to solve their production requirements. That's when they were introduced to Integrated Design Systems ([www.idsys.com](http://www.idsys.com)) by Gregstrom (Woburn Mass) to develop their concept into a production design for the rotational molding process.

The most important phase of any project is the first, during which all relevant information affecting the design is gathered, prioritized and clearly understood. This deceivingly simple display required careful consideration of aesthetic, function, technical and structural parameters. These considerations and their affect on design development will be discussed throughout the remainder of this article.

### Appearance

Since appearance was a major factor, MSI wanted the design to closely comply with the model by maintaining key feature characteristics. Interpretation of the approved model based on molding requirements could not compromise appearance. This meant that all hardware had to be concealed.

Parting lines, draft and overall geometry had to comply with the proposed concept. Many hours were invested in interpreting the features of the full scale model and actual draught keg within a 3D CAD model. Overall shapes and features had to comply with the stringent aesthetic requirements as well as complex molding challenges. Subtle compromises in surface curvatures were made to comply with requirements for molding and graphic applications. Parting lines locations were planned well in advance to assure MSI that critical visual surfaces would not be interrupted with unsightly witness lines.

### Color & Graphics

Resin selection was complicated by MSI's specification of a metallic silver color

for the main body. Molding uniformly colored metallic pigmented PE has traditionally been difficult due to the swirling patterns on the surface, which are caused by the static charge build up during molding. After evaluating many resin samples, a specially formulated dry blend PE offered by Chroma was selected. Molded samples were submitted to MSI for approval well before production parts were molded. Surface finish, texture and quality were also evaluated to comply with MSI's



fig Hein2

stringent quality requirements. MSI's objective was to faithfully replicate the draught can's color and character within the POP.

The POP would not have been complete without Heineken's trademark insignia. The addition of Heineken's logo to both sides of the POP added the extra visual impact essential for this POP (fig Hein2). The challenges in selecting the most appropriate graphics option included factors pertaining to cost, size, application to a compound surface and limited adhesion characteristics of PE. A flexible vinyl appliqué was determined

to be the optimum graphic medium after carefully evaluating all the criteria. In addition to lower cost, the primary benefit of the vinyl appliqué was the ability to make corrections without scrapping the entire part as would be the case using a molded in graphic decal.

Since the graphic overall had to accurately conform to a slightly compound curved surface, Integrated Design extracted the surface from the 3D CAD file and flattened it (fig Hein3).

A flattened 2D shape of the decal was sent to the graphics facility as a DXF file and used to create the artwork. This process eliminated guesswork and provided a high degree of assurance that the application of the decal would accurately conform to the compound surface during production.



fig Hein3

### Structural Requirements

Structural integrity could not be underestimated or overlooked within any area of the POP. During the Phase 1 information gathering portion of the project, it was clearly understood that the POP was required to support a 90 lb refrigerator plus an additional 150 lbs of beer for a total of 240 lbs. Furthermore, the POP was required to rest on five casters for easy transport, which concentrated the entire load on five small surfaces.

The design was required to support these heavy loads under a variety of environmental conditions for an extended period of time.

The demanding structural requirements were satisfied with the use of kiss-offs when possible and the inclusion of stronger materials when economically appropriate. These

design techniques were always applied with careful consideration of molding requirements. For example, kiss-offs were only included on the bottom surface, which was in line of draw. Although kiss-offs would have also been beneficial on the underside of the top surface, they have been almost impossible to mold. Kiss-offs on the bottom face reinforced the surface, which supported the 90 lb refrigerator as well as the surface contacting the caster plate. Concentrated loads on each caster were distributed over the entire base by introducing a low cost, thick MDF

load over a much larger surface area reducing stress.

**Assembly**

The refrigerator, which was purchased as a commercially available unit, was intended to slip into the POP from the rear and fastened securely into place. Reliably fastening the refrigerator to the POP was critical for shipping as well as

the base, resulting in an inseparable assembly. Snaps were designed to tightly secure the green ring which was applied to the base shortly after removal from the mold. Shut offs were applied where possible to minimize undercuts which would otherwise further complicate tools. The ring was tightly retained to the base after it was snapped in place because of the tight tolerances available with machined molds (fig Hein6).

Concealed fasteners, inserted from the underside of the top surface, retained the spout assembly. Each of the three parts within this assembly was



fig Hein4



fig Hein5

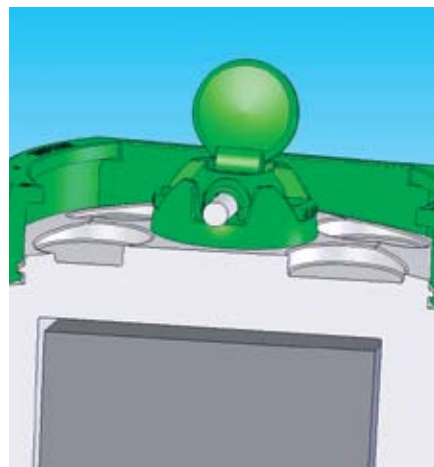


fig Hein6



fig Hein7a

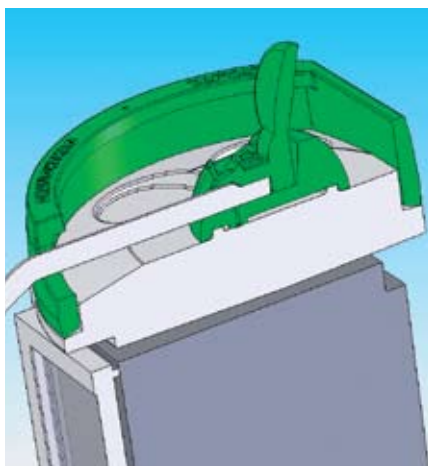


fig Hein7b



fig Hein8

board. The board was cut to fit within a recessed area on the bottom of the main body, so it would be concealed from view and protected (fig Hein4). If the main unit was mounted directly onto the five casters, it could have undergone gradual deformation over time, commonly referred to as creep. Inclusion of a low cost MDF simplified assembly and reinforced the base as well as distributed

in store use. Since the refrigerator had no mounting provisions, IDS designed a pair of easily adjusted sheet metal "L" brackets to mount to either side of the refrigerator. The assembly would then be inserted from the rear and secured to the main base section with four self tapping screws on either side (fig Hein5).

Heineken's trademark green ring was designed to snap onto the top edge of

designed to be assembled to each other with two screws in one step (fig Hein7a & Hein7b). The middle nozzle part was sandwiched between the upper and lower pieces within the assembly. The entire assembly was attached to the main body with three screws inserted from an opening within the underside of the top wall (fig Hein8).

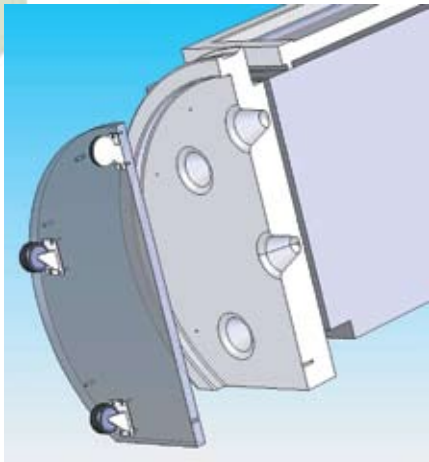


fig Hein9

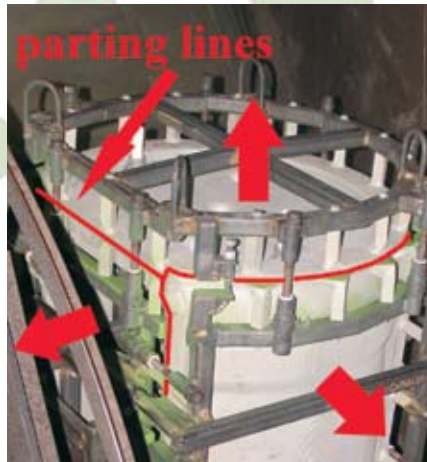


fig Hein10a



fig Hein10b

Five casters were assembled to a MDF panel which was then screwed into the base of the POP with seven self tapping screws. The bottom surface was double reinforced with this panel as well as the six kiss-offs bonding the bottom wall to the wall on the opposite side (fig Hein9). This composite like design resulted in a very rigid surface which could easily support the 240 lb load in a variety of environmental conditions.

### Molding Requirements

Each part within this assembly was specifically detailed for the rotational molding process. The main body was designed to be molded in a six piece mold (fig Hein10a & Hein10b). Since the depth of each mold section was shallow, machined aluminum was an ideal tooling alternative. Although the same part could have been molded in a less expensive four piece tool, unsightly

parting lines would have destroyed the most prominent surfaces of the POP. One degree draft was added to three sides of the large rectangular opening for the refrigerator. The bottom surface was designed with zero draft to provide a flat surface for setting the refrigerator (fig Hein11).

Care in avoiding geometric features which would have caused bridging was continually monitored. The spout handle

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fig Hein11

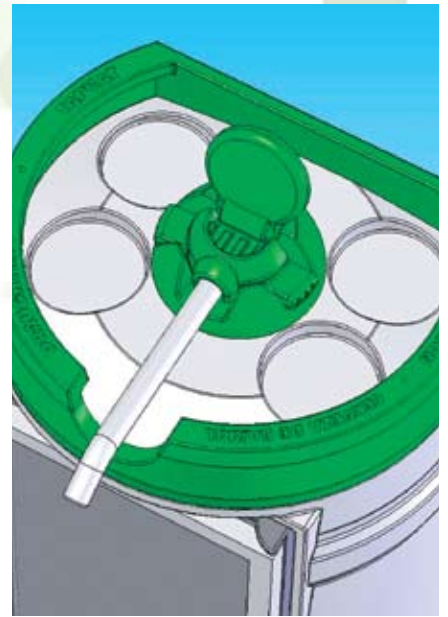


fig Hein12a



fig Hein12b

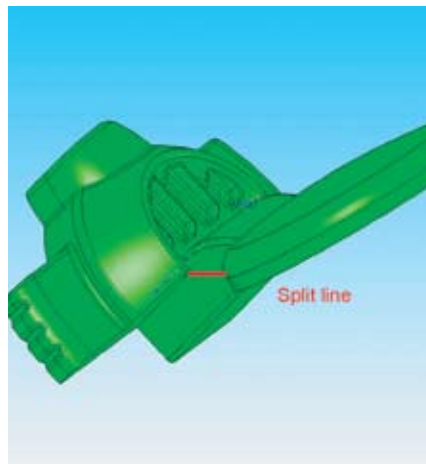


fig Hein13

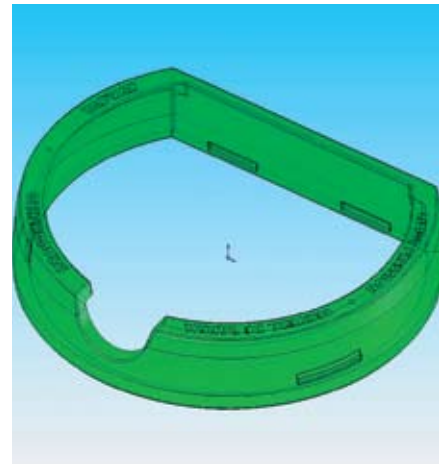


fig Hein14

assembly shown in photos (fig Hein12a & Hein12b), required careful thought to comply with molding and aesthetic requirements. Parting line and geometry were developed such that a simple two piece mold could produce the desired part. A split parting line was introduced in the part to accomplish this objective and all features were drafted accordingly (fig Hein13).

The top ring included four loose pieces to mold undercuts for the snap on feature. The design of these features was co-developed with the tool maker since tolerances and fill were critical to its success. The resulting fit was so tight that no tooling modifications were required (fig Hein14).

### Tolerances

Tolerances are always a challenging

consideration during the design of rotationally molded parts. Parts must be designed with enough clearance to assure ease of assembly without compromising appearance or function. Tolerance variation is the cumulative stack up of tolerances in the pattern, mold and part to part variation in production. The first two tolerances will permanently affect the nominal dimension with a plus or minus value and are a function of mold type, while the part to part variation is a function of production. Selection of a sheet metal mold, cast mold or machine mold will have a major affect on the base tolerance. Mold quality is another factor.

The molds in this particular product were machined by Fab Four directly from the 3D CAD files into aluminum billets. Machined aluminum molds yield the most

accurate molded parts since the steps for creating the cavities are reduced to one. Variables associated with the multiple steps of cast aluminum molds are eliminated.

The Heineken POP consisted of five rotationally molded parts which were required to assemble together in addition to a refrigerator, brackets, bottom caster panel and mini beer kegs. Our primary design objective was to design parts with maximum clearance within functional and aesthetic requirements. These tolerance ranges were reviewed with the molder and tool maker early in the design process to identify critical tolerance areas. These discussions enabled all persons associated with the project to work out mutually beneficial plans for any possible tooling revisions.

**Specific areas of concern are identified below:**

Fit between the bottom caster plate and underside of main body - The first consideration was the clearance between the plate perimeter and the wall of the main body surrounding it. In this particular case, provision of a relatively tight .06" clearance between the two parts was specified to register the plate to the base. Typical clearances recommended by ARM would have required a .25" clearance. However, the tighter clearance was specified because the molds were machined and the custom made MDF plate could have been adjusted if required. Likewise, holes in the plate which had to align to the mounting holes in the main unit were limited to .210" for a #10 screw (.194 dia) for the same reasons. According to ARM these holes would have been .40", requiring washers and a very sloppy fit. As previously stated, dimensional consistency of rotationally molded parts is very good and that part to part tolerance variation is much tighter than the standard tolerances specified in ARM's industry guidelines.

It should be pointed out that

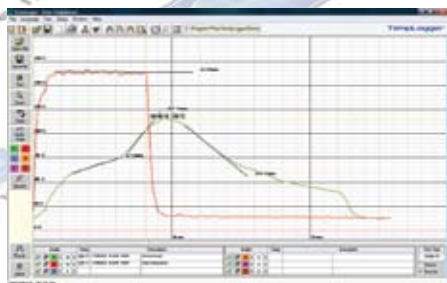
tolerances and clearances are not only dependent upon the previously mentioned parameters, but also the type of parts being assembled. These parts are grouped into three categories: rotationally molded parts, custom fabricated parts and purchased parts. In most cases, the nominal or absolute dimensions for two or more rotationally molded parts are not as critical as the relative repeatable dimensional consistency of those parts during production. Therefore, if the dimensions of two or more molded parts deviate similarly from shot to shot during production, they will fit to each other, but they may not conform to specified dimensions. Likewise, if custom fabricated machined or sheet metal parts are added to an assembly, sizes and hole locations can easily be changed to accommodate deviations from specified dimensions. This methodology in the design will minimize unrealistic requirements for molders while satisfying design objectives with minimum compromise. However, purchased items such as the refrigerator cannot be altered. In these instances, absolute dimensional specifications must

be maintained; otherwise parts may not fit to one another. In cases such as this, adequate clearances should be as generous as possible.

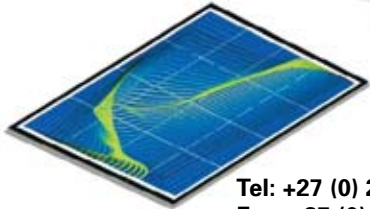
After all the design details were completed and checked, 3D CAD files were released for tooling. Like 85% of all rotationally molded parts, no prototypes were created to check form, fit or function. Tools were cut directly from the CAD files provided. Within eight weeks after the files were released, the first set of parts were assembled and fit together perfectly. Not one tooling change was required! Shortly thereafter, the graphic labels were applied and the units were shipped.

The POP market offers the rotational molding community a tremendous opportunity for growth. The advantages of rotational molding are a perfect match to the needs of the POP industry. I urge other molders to introduce themselves to POP manufacturers who are continually seeking innovative POP products which will encourage all of us to buy more beer and soda. Next time you go out to buy your healthy dose of potato chips, Coca Cola or beef jerky, remember POP.

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