

Flexibility is Key Element in Seat Pallet Design

As an engineering and manufacturing leader in custom injection and structural foam molded returnable packaging, Creative Techniques, Inc. has designed and produced several successful seat pallet programs for the top automotive companies and their key tier one suppliers.

Eight Different Ways

This past experience gave Creative Techniques the expertise necessary to successfully meet the challenge posed by a major automotive customer to

simultaneously engineer a seat pallet program with two of their key suppliers. In the past, most of the seat pallet programs had designs that incorporated two to four different seat combinations into a single pallet. However, this program needed to incorporate *eight* different combinations, supporting *three* different vehicles models. In addition, it had to work with two separate seat suppliers, each of whom had two different assembly plants, for a total of four different facilities that the pallets needed to ship into.

In order to accommodate all of these requirements and maintain the ergonomic, quality and durability specifications, Creative Techniques utilized previous design experiences, in conjunction with 3D modeling, to incorporate many of the features and benefits that were part of this pallet.

Custom dunnage, by its nature, is designed to accommodate specific parts with unique shapes and specifications – and seat pallets are no different. In this situation, each set of seats had different areas that needed to be secured for nesting, as well as surfaces that could not be touched due to quality concerns. Beyond the seat combinations, the pallet had to integrate with different handling systems in each of the four plants.



Gathering from past experience designing, engineering and producing complex returnable packaging systems for leading automotive companies and their suppliers, Creative Techniques, Inc. developed this seat pallet system, which allows for eight different seat combinations and integration into four different manufacturing/assembly facilities.

Designing for Today *and* Tomorrow

Understanding that vehicle models typically change every 3-5 years within the automotive industry, Creative Techniques designed the base pallet with future changes in mind. They also engineered the pallet to accommodate the requirements of the four plants (two seat manufacturers, and two assembly facilities), including the ability to integrate with stacking and destacking equipment. A molded-in mount for a radio frequency identification tag was incorporated into the design, providing personnel a quick ID of the product, and facilitating tracking procedures. To meet the flatness specifications of the conveyor systems and add rigidity, Creative Techniques built a steel frame into each pallet unit.

One of the most beneficial features of this pallet offered the versatility for new programs. The nesting pods can be easily replaced to create new configurations for new product launches, saving time and expense.

Part-Restraint – Overcoming a Daunting Challenge

As with any custom dunnage application – whether packaging a crankshaft in a structural foam tray or a complete transmission in a steel rack – holding or nesting the part in the dunnage is one of the most critical elements. Because eight different combinations of seats are shipped to the assembly plants for installation, secure nesting and hold-downs were required. With the help of the seat suppliers, Creative Techniques was able to engineer a single set of pods with ergonomically friendly latching mechanisms and a hold-down bar system that secured each combination of seats.

Spring-loaded latching mechanisms captured the front feet in the nesting pods. The locations of these latches were critical because operators needed to release both latches simultaneously in order to meet line speed requirements.



To meet the challenge of providing a restraint system that allowed rear seats to be nested into front seats during transport without causing “lay” marks or other damage, Creative Techniques, Inc. designed this unique hold-down bar assembly, which provided a superior solution to previous restraint systems.

The hold-down bar incorporated two gas shocks and was used to secure the rear seats stacked on the front seats during shipping. Holding the rear seats in place so they didn't arrive at the assembly plant with any damage – including

“lay” marks – had always proved to be one of the most scrutinized features on a seat pallet. Hold-downs used in the past included such items as bungee cords, Velcro straps, metal T-bars and various other materials – all of which, over time, created double handling, quality concerns and ergonomic issues. After extensive dynamic performance and field-testing, this new hold-down bar system has proven to be one of the most efficient and capable rear seat-securing devices engineered. In addition, with the pallet empty and the hold-down bar stowed, a very efficient 6:1 return ratio is achieved.

This seat pallet program, with all its specifications, has proven to be one of the most challenging seen by Creative Techniques. However, Creative Techniques has taken on challenging projects before and is committed to providing its customers with superior solutions for complex returnable and reusable packaging applications.

About Creative Techniques, Inc.

Headquartered in Auburn Hills, Michigan, Creative Techniques, Inc. is an industry leader in the design and manufacture of custom returnable packaging and material handling products. Their 18 yr. history of experience and innovation includes the development of custom injection molded and structural foam containers, pallets and trays. Creative Techniques, Inc. serves a growing number of diverse industries where custom returnable packaging is required, including automotive, rubber and tire, food, pharmaceutical, appliance, consumer electronic manufacturing and processing industries. For more information, contact Creative Techniques at (248) 373-3050, or visit their website at www.creativetechniques.com.