

Newsletter



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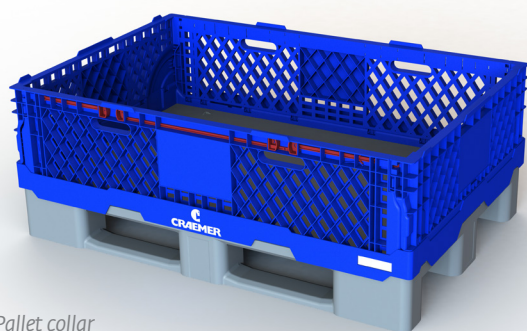
Craemer Collar: the most convenient collar

BPO has developed a brand new pallet collar for Craemer GmbH that revolutionises the handling of this type of products. A pallet collar is basically an outside wall of approximately 30 cm high, that can be placed on top of a pallet. Multiple collars can be placed on top of each other. This way, a pallet can be made into a box-shape, so different items can be placed inside, while still being transported safely. Pallet collars are widely used in transport from distribution centres to supermarkets.

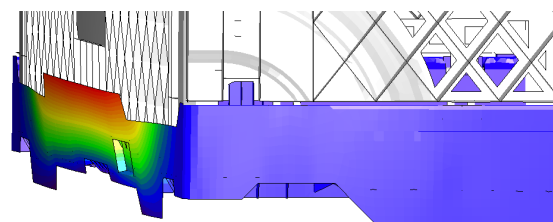
Pallet collars can be collapsed and stored in less space when not in use, so return transport is more efficient. While most pallet collars are bulky and difficult to fold in and out, the new Craemer Collar is very easy to place, fold and use. The user pulls the two long side

The development continued with conceptual 3D designing, making sure that all relevant features were incorporated into the product and that all dimensions were suitable for the compatibility with pallets and lids.

A large part of the development, as with most BPO projects, is the engineering of the product to be strong and reliable, but not overdimensioned. This was made sure by performing FEM-analyses on the strength and stiffness of the design, in all stages of development. From concept design to final production ready files, the performance was continuously checked and optimised



Pallet collar



FEM-analysis pallet collar

walls upwards, thereby also moving the short side walls because of its automatic folding system. Folding down is even simpler: unlocking the walls lets the long walls come down, with the short walls automatically following under gravity. The locks are arranged so they can be reached from either short end of the pallet, so there is no need to walk around to reach the locks.

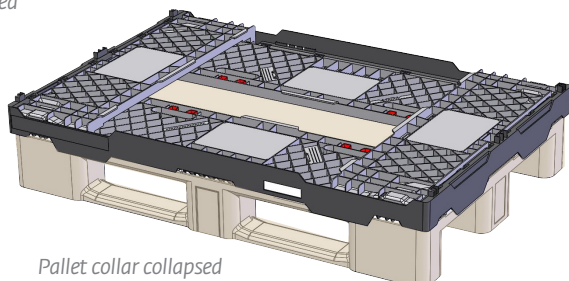
Because the long and short walls are mounted on a frame, the pallet collar can be easily moved, placed on top of other pallets or pallet collars, before it is being folded out. The pallet collar fits on a range of different Craemer pallets and is available to be used with or without a pallet lid.

BPO has handled development of this very innovative logistics product, from start to finish. This started with developing different concepts for the folding mechanism, locking action and stacking options.

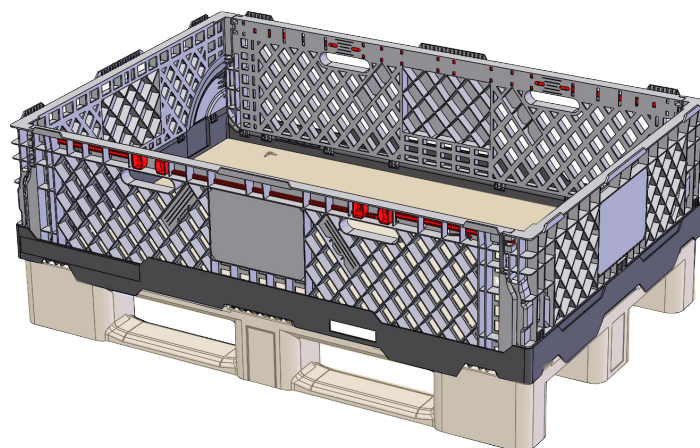
Finally, the performance for injection moulding was looked at in detail, providing proposals for the mould set-up, injection locations, and optimising wall thicknesses to prevent warpage as much as possible. As a result, the Craemer Collar is an innovative addition to the logistics market, providing an easy to use, reliable and cost efficient product to make supermarket logistics even faster and easier. A large French supermarket chain is already using the Craemer Collar to wide acclaim, more parties will undoubtedly follow. For more information, go to www.craemer.com.



Pallet collar stacked



Pallet collar collapsed



Pallet collar



3D printed door hinge for Air Force helicopters - CLSK

BPO has carried out a design study for the Commando Luchtstrijdkrachten (Dutch Air Force Command, abbreviated CLSK) into an alternative hinge for the sliding doors of the NH90 helicopter. With the help of 3D printing (Additive Manufacturing), CLSK wants to have parts manufactured faster and ultimately improve the deployability of its weapon systems. In an earlier project, BPO designed a mounting bracket for the same helicopter. In this first project, the options for weight reduction were mainly looked at. The hinge presents another challenge, as it is a composite product with moving parts and various functions.

In collaboration with Fokker Aerostructures, NLR and the Defensie Materieel Organisatie (Defence Materiel Organisation, abbreviated DMO), BPO has made a redesign that may be used in the future to replace the original hinge in the event of a defect. This temporary hinge is printed immediately when needed and the helicopter can be flown fully operational with a functioning door until it is replaced by an original hinge. The hinge consists of a fixed part that is attached to the sliding door and an axle that runs with a wheel through a rail on the fuselage of the helicopter.

In the redesign, BPO has managed to realize the main functions of the hinge in a simpler way. Far fewer parts are required than in the original and the parts can be produced by means of additive manufacturing. The shape, construction and orientation in 3D printing are designed in such a way that the parts can be used with

situations. This has been solved by constructing a connection that can be heavily loaded in the load directions, but has freedom in the ejection direction, so that the hinge will come loose when the Jettison is activated in one of the other hinges. Topology and FEM simulations have been used to give the base part an optimal structure for the loads that occur when opening and closing the door. A smart addition is that the hood that covers the hinge is integrated into the new design, so that the original hood does not need to be replaced after replacement.

Designing for additive manufacturing requires a different approach than designing for traditional production technologies such as injection molding.



New design for 3D printed hinge

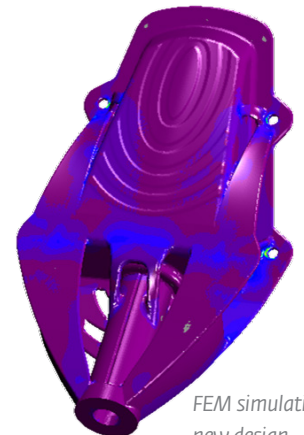
Sliding door of the NH90 helicopter



minimal post-processing, which is a major advantage in practical situations on a mission.

The design was realized according to a structured process in which the first ideas were further developed step by step into a complete design in which all sub-problems have been solved. One of the biggest challenges was finding a simple solution to be able to eject the door as a whole (Jettison) in emergency

Do you have questions about the possibilities for using additive manufacturing for your products? Do not hesitate to contact us.



FEM simulation new design

BPO goes digital!

In the past year, the relocation of our communication to online platforms has gained momentum. As we could no longer participate in business fairs and other offline network events due to government measures, there was a need for an alternative to keep our relations informed of the latest BPO news.

That is why we now post unique updates about our products and services every week on both LinkedIn and Instagram.

From now on we also send our newsletters exclusively by e-mail and we recently had a virtual stand at an online fair for the first time: The digital version of the IDE Business Fair!

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