

CASE STUDY 8

Weight optimization and optimization of transport and storage efficiency

INITIAL SITUATION

For more than 10 years, our customer has been using a round cup with stacking foot and a dome lid for filling ice cream with swirled trimmings. Based on necessary replacement investments of the injection molds in connection with an optimization of the article geometry under consideration of sustainability aspects such as article weight and transport as well as warehouse utilization, the following business case has been developed.

BRANCH

Ice Cream

STRATEGY/ CAUSE

Optimization of weight and properties for transport & storage

TASK

The basic optical character should be retained as well as the previous filling volume in order to be able to fill a consistent quantity of ice cream with swirled trimmings. The processing at the customer's filling line must not be negatively affected, and additional investments in the filling line for new cell boards etc. are not acceptable. A new round cup with a dome lid must not weigh more than 10g in the set with at least the same filling line performance and, if possible, an optimization of the transport and storage capacity usage.



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REALISATION

By a detailed inventory with the use of a 3D scanner, the previous article geometry was analyzed and checked for possible optimizations. Using the most modern CAD systems, an optimized article geometry was designed and various packing layouts were simulated. Using realistic 3D patterns (STL patterns), initial tests were carried out on the filling line and a possible stacking scheme was tested in practice. From this knowledge, further development optimizations could be carried out and, by building 1-cavity sample molds, larger sample quantities (50,000 pcs.) could be produced and filled in the small series test. After successful release of the samples from the small series test, the final article geometry was transferred for the series tools.

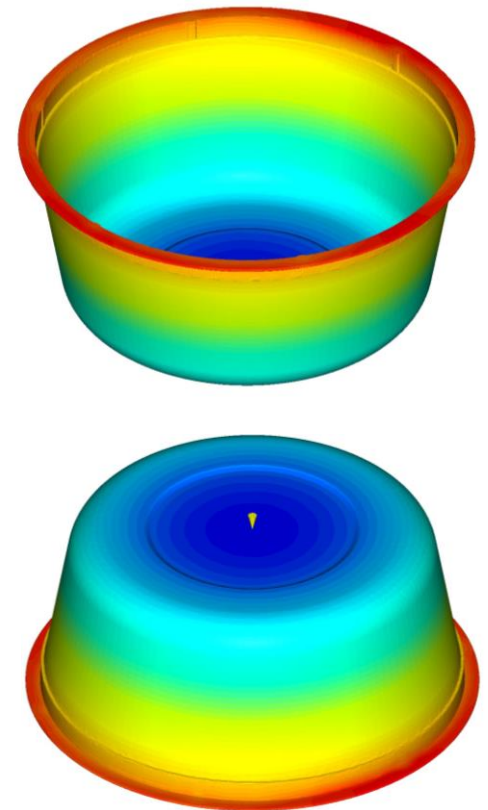
RESULT

By optimizing the article geometry, the cup weight decreased by about 13.9% and the lid weight was reduced by approximately 6.7%. The target weight of 10g per set was undercut by 2%. The modification of the article geometry also allows the transport and storage of about 16.7% more cups and approximately 24.1% more lids per Euro pallet.





CUSTOMER BENEFITS

The new packaging reduces transport and storage costs drastically and leads to higher productivity at the same time. The number of trucks is reduced by 13 per year and, assuming a transport distance of 400km (one way), by 5200km per year.

Because of the article weight reduction, 38,000kg (38t) of plastic is saved per year. The saved transport kilometers of the articles to the customer as well as the elimination of 38 tons (t) of plastic leads to a reduction of the thereby released CO² amount.



RESULT

-  **Article weight reduction**
-  **Transport and storage efficiency**
-  **Productivity**
-  **CO² reduction**