



# CASE STUDY SAVE ON TOTAL COST OF PACKAGE



**WORLDSTAR  
WINNER  
2013-2014**

## SANOFI PASTEUR'S 10 COUNT SYRINGE CARTON FOR FLU VACCINE BECOMES WORLDSTAR WINNER

### BACKGROUND

Flu vaccines are a high volume commodity product, in which price, availability, and Time-to-Market are key factors for success. The entire production for the flu season takes place within a 3-4 month period. Production operates on 24/7 basis. In addition, vaccines are shipped and stored in a cold-chain. This requires cold storage within the facility and the warehouses in the distribution channel. Refrigerated trucks are also required for intermediate transport. Dispensing pharmacies and clinics must also store the vaccine in a refrigerator.

Furthermore, the entire flu vaccine industry is moving away from multiple doses, typically 10 per vial, to avoid preservatives by using single dose pre-filled syringes. This means there is a need to package 10 times the number of syringes than vials in the same timeframe. Taken together, the importance of machine output and efficiency has never been more critical.

### Previous Design – 10 ct Syringe Pack

Side Load Carton with 2 Blister Trays  
Pack Volume: 725.4 cm<sup>3</sup>  
Note: Trays are shown without Tyvek lid material



### INNOVATION

**Creative Application:** Major benefits were obtained by replacing pre-made plastic trays & lid material with a 100 % paperboard material, consisting of a carton and partition.

**Technical Advances:** Most compact 10 count flu vaccine syringe package on the market. Design Advances: Two layers of 5 syringes are cradled in a paperboard partition with no glass-to-glass contact. The overall package volume was reduced by more than 50 % using a new top-load carton design jointly developed between Sanofi Pasteur and Dividella. New Material Applications: The use of 100 % paperboard material for the carton and partition, instead of pre-made plastic trays & lid material, offers a reduction in material cost, lower in-bound logistics costs, as well as a more environmentally friendly package.

### PROTECTION

**Protection Required:** The sterility of the flu vaccine is maintained by the integrity of the glass syringe barrel and plunger. Cracked glass or a large movement of the plunger would compromise the sterile barrier. Broken glass is clearly unacceptable. The new package uses a specially designed paper partition that precisely fixes each syringe in a nest. There is no glass-to-glass contact, thus preventing cracks and breakage. The plunger movement is limited by the tight tolerances between the syringe and inner walls of the pack. Sanofi Pasteur's internal testing lab follows industry standard protocols (e.g., ASTM 5276 and ISAT 1A). The package has met the test requirements. More importantly, there were no damaged syringes reported from customers.

### ECONOMICS

**Material Cost Savings:** The elimination of the pre-made blister trays & lid material, and 1 booklet, saved over 33 cents per pack. Cold-Chain Storage & Distribution Savings: The reduction in package volume by ~ 50 % cut the number of refrigerated trucks and internal cold-chain storage burden in half. Investment in additional cold-storage capacity was eliminated.

**In-Bound Freight Savings:** The carton and partition for the new pack arrive as flat blanks. Much smaller than receiving pre-made plastic trays. Combined savings for the above changes are greater than a million dollars annually.

### PERFORMANCE

**Package Opening:** The new package is based on a top-load design. The top lid is opened by depressing a tamper evident tab in the front of the carton. Note: The previous design was a side-load carton that required a wafer seal on both ends to provide tamper protection. The lid is re-closeable (reverse tuck).

**Machine Performance:** Sanofi Pasteur invested in a Dividella NeoTOP 804 cartoner with the capability of packaging up to 800 syringes per minute. In addition to syringes, the machine was configured with the flexibility to package vials, needles, and combination packs. Integrated force sensors within the syringe placement tooling prevent damage during the loading process. Verification of the syringes and booklets within the cartons after each loading operations is achieved with vision technology (Cognex). This functionality eliminated the need for a check-weigher on the line. The Overall Equipment Efficiency of the cartoner is greater than 70 %. This is up from 35 % with the previous packaging system.

### New Design – 10 ct Syringe Pack

Top-Load Carton with Paper Partition  
> Two Layers of 5 Syringes  
Pack Volume: 323.9 cm<sup>3</sup>  
Volume Reduction: 55 %



**Integration:** The packaging line included upstream machines from Groninger for inserting the plunger rods into the syringes, syringe labeling machines with printing and OCV, as well as buffers and merging units to ensure high uptime resulting from minor disturbances and imbalances. An automatic case packer from PRB was integrated at the end of the Dividella NT804 machine.

**Benefits to End-Users:** The booklet and syringes are completely visible to the person performing the dosing of the vaccines, allowing instant recognition if the contents have been compromised. The cartons are typically stored in a small refrigerator within the pharmacy or clinic. Because the volume is over 50 % less, the customer is able to store 50 % more product in their refrigerators.

### MARKETING

Key to the marketing process is minimizing the package size since practitioners have only limited refrigerated space available in their offices. The reduced package size helped conserve this space for health care providers and allowed them to stock more product than would otherwise have been physically possible.

### ENVIRONMENTAL IMPACT

The 100 % paperboard NeoTOP carton is completely recyclable, compared to the former plastic trays with Tyvek lid stock. As such, the disposal costs are lower and the sustainability is much higher.

“THE OVERALL PACKAGE VOLUME WAS REDUCED BY MORE THAN 50 %.”

## THE CUSTOMER'S REQUIREMENT

Flu vaccines are a high volume commodity product, in which price, availability, and Time-to-Market are key factors for success. The entire production for the flu season takes place within a 3-4 month period. Production operates on 24/7 basis. In addition, vaccines are shipped and stored in a cold-chain. This requires cold storage within the facility and the warehouses in the distribution channel. Refrigerated trucks are also required for intermediate transport. Dispensing pharmacies and clinics must also store the vaccine in a refrigerator.

## THE SOLUTION

Sanofi Pasteur invested in a Dividella NeoTOP 804 cartoner with the capability of packaging up to 800 syringes per minute. In addition to syringes, the machine was configured with the flexibility to package vials, needles, and combination packs.

## CUSTOMER BENEFITS

The top-load carton is made from 100 % recyclable paperboard material, and eliminated pre-made plastic trays and lid material, resulting in a savings in excess of \$1,000,000 annually. A reduction in pack volume of 50 % cut the expensive cold-chain shipping and storage costs in half. The NeoTOP 804 syringe cartoning system from Dividella provided four times the throughput of the previous system, with a capacity of 800 syringes per minute. The Overall Equipment Efficiency (OEE) doubled from 35 % to over 70 %.



Dividella NeoTOP 804

## TECHNICAL DATA

### NeoTOP 804

Modular and extendable packaging system for the production of large lots.

<b>Format range:</b>	Length x Width x Height [mm]
minimum	60 x 45 x 17
maximum	240 x 170 x 70
<b>No. of partitions</b>	4
<b>Output packs/min.</b>	80

The modular concept allows the machine to expand at any time. (For example, integration of another product inserter or a manual inserting module, etc.). The NeoTOP concept is adaptable to accommodate extreme product changes and complex pack arrangements.

In addition to the Award Winning 10-count Syringe format, Sanofi Pasteur is also running other formats on the same machine:

2x5 Syringes (award pack)  
1x5 Syringes – 5 Vials + 5 Syringes – 5 Vials + 5 Vials



Syringe Infeed up to 800 syringes per minute



## AWARD



Sanofi Pasteur's syringe carton, awarded with the AmeriStar in summer 2013, won another important packaging price: the WorldStar Award 2014.

Since 1970, the World Packaging Organisation (WPO) has given awards in seven categories to numerous new packs from all around the world. In November 2013, Dividella won the title "WorldStar" in the category "Pharmaceutical & Medical".

Representatives of 24 packaging associations, all members of WPO, judged 249 packaging projects, from 35 countries, that applied for WorldStar Awards 2014. In total, 139 projects were awarded the title "WorldStar".

WorldStars are presented only to those packages having already won recognition in national or regional competitions. Dividella's syringe carton has been awarded the AmeriStar 2013 (category "Drug & Pharmaceutical") from the Institute of Packaging Professional in June.



**Left to right:**  
Michael DeColibus, President Körber Medipak Systems NA  
Charles Listigovers, Senior Director, Global Technology Innovation, Sanofi Pasteur  
Stefan Knellwolf, CEO Dividella AG, Christoph Hammer, CTO Dividella AG  
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