



The Silent Side of the Paint Shop in Automotive Manufacturing

Optimize your Liquid Material Usage and Reduce Costs



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Introduction

The automotive industry has undergone significant automation over the previous decades, which has changed the manufacturing process in multiple ways. It has become more efficient and, generally speaking, we are able to produce more automobiles in less time at lower cost. However, there are still chokepoints in the manufacturing process that are keeping automotive manufacturing costs higher than they ought to be. This white paper will take a closer look at one of the bottlenecks that can be easily solved with the Fluid-Bag packaging innovation.

Wasting Money Using Old Manufacturing Methods

The paint shop is the manufacturing phase that consumes the most energy in an automobile's manufacturing process. This is obvious when considering all of the machinery and equipment used in the paint shop. The energy cost is primarily due to the extensive usage of waterborne materials requiring the control of both relative humidity and temperature. Later in the process comes the heating of ovens to cure the various materials; post-oven cooling consumes a great deal of energy as well.

Other causes of increased energy costs are the air recirculation and air cleaning systems in use in almost all paint shops. In order to keep manufacturing costs down, improvements are constantly being made to reduce energy consumption.

These improvements are important for two reasons. The first is cost reduction and the second is environmental concern. Again, this is all rather obvious; but what about those things that occur off the production line?



There are systems that have been in use for a long time, operating on the same principles now as they did 30 years ago.

An example is how liquid bulk products are supplied to paint shops in rigid IBC containers, 200-liter steel drums, or 1000-liter steel totes. This occurs because in most cases this is how it has always been done.



Factories are becoming larger and producing more cars, meaning that the consumption of liquid materials is increasing. The OEM industry is constantly trying to optimize processes so that they use less paint, less sound dampening material, and less adhesive; this is a good thing. Optimizing the usage of these materials will also bring down vehicle manufacturing costs.

These materials are delivered in the types of containers that were mentioned previously. There are improvements on the market that have been put into use. For example: a liner is usually used within containers to prevent liquids from contacting the walls, reducing the need for cleaning; and there are cone bottomed plastic IBCs, which allow liquid to flow out without becoming stuck in the corners.

With high viscosity products the situation is completely different. The liquid is usually stored in steel containers that hold 1000 liters. However,



there often remains 50–100 kg of unused materials in a container during the application process.

This directly affects the bottom line and is a massive waste, both economically and environmentally. We throw away material that would suffice for approximately 20–30 cars per container.

This is how it has always been done, and the OEM industry will continue to throw away money if it does not change the way it operates.

A Cost-Effective Solution for Optimizing Liquid Material Use

At Fluid-Bag we believe in constantly rethinking the way people work in order to create a better future for us all. We have successfully done so for decades, and have invented several products that save money on the production line. We want to share the insights we have gained in order to help the paint shop to the next level. We have created a set-up for the automotive industry that elegantly optimizes liquid usage in the paint shop.

Rather than using 1000-liter rigid IBC containers, 200-liter drums, or 1000-liter steel totes, **Fluid-Bag** has created a smart and flexible soft plastic packaging solution with several benefits.



REDUCE WASTE:

You only pay for disposal of 15kg instead of 40-50 kg.

REDUCE CHANGE OVER TIME:

Fast, clean, and easy to switch containers. No need for cleaning or changing expensive O-rings.

IMPROVE QUALITY:

No large surface exposed to air, reduces curing.

REDUCE CLEANING:

No need to clean containers. Lower water consumption, less waste water.

IMPROVE LOGISTICS:

After emptying the containers, only a stack of seven empty Fluid-Bag pallets, which had contained 7000 liters, remains. In comparison, a single 1000-liter steel container takes up the same amount of space.

REDUCE MATERIAL CONSUMPTION:

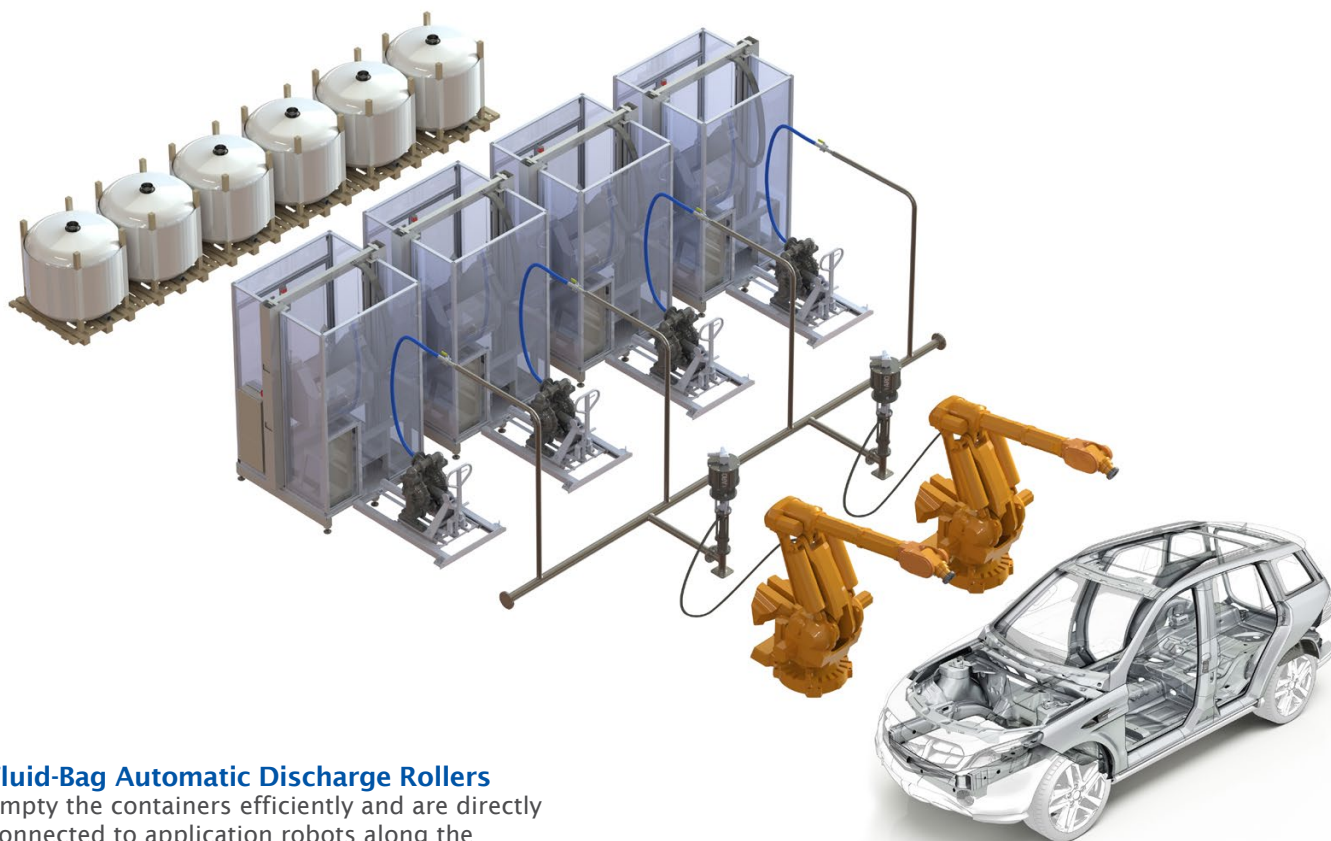
Use more of the purchased material. Fluid-Bag leaves only 15 kg of residue for LASD, sealants, or adhesives; compared to 40-50 kg in a 1000-liter steel tote.



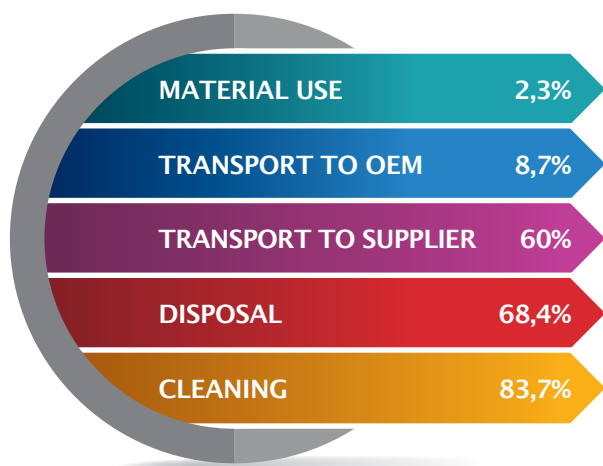
The Fluid-Bag Set-up for the Automotive Industry



Fluid-Bag Containers are used for liquid-applied sound dampening, cavity waxes, coatings, sealants, and similar products. In the image a Fluid-Bag MULTI with 4 inch outlet pipe.



Fluid-Bag Automatic Discharge Rollers empty the containers efficiently and are directly connected to application robots along the production line.



How Much Can Be Saved with Fluid-Bags?

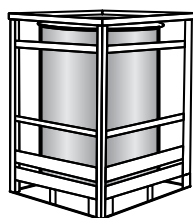
We know that every penny counts, and we have gone through every stage of the automotive manufacturing process to check where and how much can be saved by utilizing Fluid-Bags rather than steel totes.

The case presented is for a yearly tote amount of material consumption of 800,000 kg and includes the following stages: transport to OEM, transport to supplier, disposal, and cleaning.

The amount of money saved annually by switching to Fluid-Bags is around **86,600 euros**.

The entire comparison here:

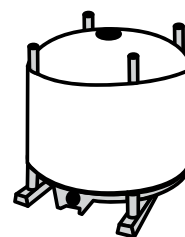
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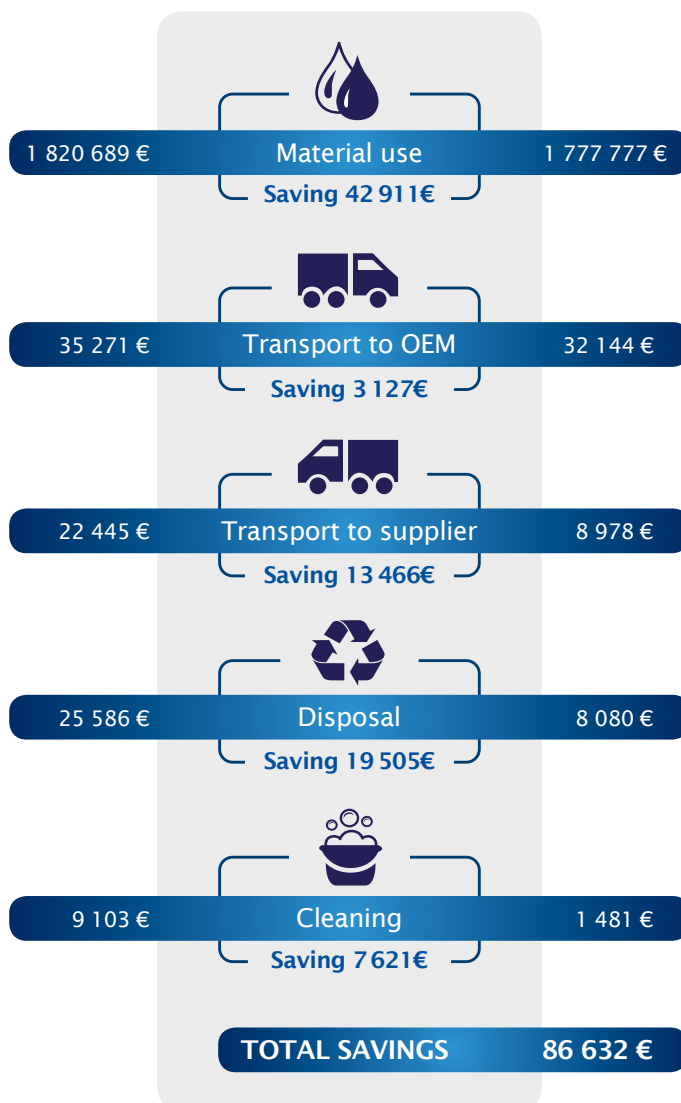
Tote container

Cost comparison

Annually 552 steel totes vs. 539 Fluid-Bags



Fluid-Bag container





Reference case: Toyota Manufacturing UK

Fluid-Bag Discharge System for Liquid Applied Sound Deadening at Toyota Manufacturing UK's Burnaston Plant

Fluid-Bag Discharge System for Liquid Applied Sound Deadening at Toyota Manufacturing UK's Burnaston Plant

Since 2007, four fully-automatic Discharge Roller units have been supplying sound damping materials to the vehicle manufacturing lines. The materials are delivered in Fluid-Bag MULTI containers.

Previously the material was supplied in stainless steel totes with barrel press, which according to Steve Dale, Paint Shop Engineer Senior, had several downsides that Toyota Manufacturing UK has been able to redeem using Fluid-Bag's container solution.

Problems while using totes and barrel press	Advantages using Fluid-Bag MULTI and automatic Discharge Rollers
⊖ A long time taken to change to a new tote incl. cleaning time (56 min.)	✓ Time needed to change to a new bag: 10 min.
⊖ Labour intensive system.	✓ One person needed to change the bag (with pneumatic cylinder option).
⊖ Excessive waste product left inside the tote (95kg).	✓ Waste product per bag is reduced to approximately 30 kg.
⊖ Generates waste water product requiring on site treatment.	✓ No waste water product.
⊖ Very messy operation.	✓ No mess. Clean and tidy supply room.
⊖ Unpleasant odour from waste water.	✓ No odours.
⊖ Suction pump blockages at the follower plate.	✓ Robust reliable equipment.
⊖ Poor customer support.	✓ Excellent customer support and after sales service.





Conclusion and Summary

When it comes to transporting and storing high viscosity products there are several options on the market.

We all know that demands and requirements differ for sound dampening materials, adhesives, sealants, coatings, silicones, and waxes; and that there is no onesize-fits-all solution. But there are many new and innovative storage options and many ways to optimize liquid material use and reduce paint costs in the automotive industry.

Using Fluid-Bag's flexible soft plastic solution is one of them, and we are happy to have our concept tried, tested, and recommended by one of the world's largest automobile manufacturers.

Still need proof?

Check out this video on using Fluid-Bags in the paint shop: <https://www.fluid-bag.com/media/video-gallery/equipment-discharge-roller-automatic-automotive-industry>



Get in touch with us, we'll help you evaluate how Fluid-Bag fits your set-up.



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