



DELIVERABLE REPORT

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DISSEMINATION LEVEL: **RESTRICTED**
TITLE: **ONE PROTOTYPE VOLUME OPTIMIZED DEMONSTRATOR FOR THE WP6 TEST PHASE (TECHNICAL DOCUMENTATION)**

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Executive summary

A new trailer has been designed which improves the transport efficiency by increasing the load volume (bigger inner length) and making the load volume more flexible, to be able to put more pallets in the trailer. The flexibility comes from a new double floor system, to put pallets from different heights above each other, in all possible configurations, to gain efficiency. It also has a roof that can be shaped to reduce the aerodynamic drag and thereby lower fuel consumption. The new designs are integrated in one demonstrator that will be tested in a real logistic network.

A new flexible bulkhead is made to get more inner length in the front area of the trailer and a very thin back portal is made to gain length on the back side of the trailer. A standard trailer, with a flat front wall, has an inner length of 13567 mm, and the new demonstrator has an inner length of 13688 mm, thereby gaining 121 mm.

A new floor, named the flexible floor, is created. The flexible floor consists out of eight sections where 4 pallets can be placed both on top and under each section. The flexible floor also has one front floor where 2 pallets can be placed both on top of and under the section, making the maximum number of pallets per shipment 68. The heights of the pallets vary up to 1390 mm under the flexible floor and a pallet height up to 2650 mm on top of it. The maximum weight the flexfloor can carry is 2500 kg. The flexible floor has no restrictions because when it is not used it integrates in the trailer floor leaving an effective inner height of 2700 mm. The total extra weight of the flexible floor is about 950 kg. The flexible floor must be set to its desired height by a fork lift. A fully automated flexible floor is a, to be designed, option

The moveable roof is a sectional roof of 4 parts. All sections have the same length. The stroke in the front part, the front bulk head, is 500 mm down and 100 mm up. All other sections have a stroke of 100 mm up and 800 mm down. The 100 mm stroke up is used to make the loading process on the flexible floors easier because of the extra space. In lowest configuration the height of the trailer is 3,5 m in the front and 3,2 m in the back.

The setting of the different roof shapes is fully automated and done by a one touch operation, by the driver, It is expected to do the action in less than 80 seconds. The roof needs no extra securing and is in every position watertight without any action from the driver. The roof sections are, by 24V electromotor, driven spindles integrated in the sidewalls.

The Volume Optimized demonstrator is built with a boat tail in the back and side wings from Wabco on the sides to reduce the aerodynamic drag to the optimum. The boat tail moves up and down with the roof and must be folded in and out by hand.

Because the trailer is not built at this moment ,in D6.1 some pictures from the VO Demonstrator, as it was built, will be integrated.



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