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### Introduction

Dijkstra Urban Solutions has developed the litter bin 'Wastelift'. The Wastelift collects litter below ground level and has a larger volume compared to a regular litter bin. With the present days increase in terrorist activities, there is a need for explosion resistant products. Therefore, Dijkstra tasked TNO to develop an explosion resistant version of the Wastelift. A research program has been conducted by TNO and an explosion resistant version of the Wastelift has been designed, manufactured and validated (see pictures). This flyer describes the validation process.

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### Our reference

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### Manufacturer Wastelift

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### Validation process

Terrorist activities are often carried out using improvised explosive devices (IEDs). For the Wastelift, two threats (limited explosive charges) have been identified as being representative:

1. IED producing fragments and blast;
2. IED producing mainly blast.

Explosion tests have been performed with both threats 0.5 m above and below ground level. During these tests the explosion effects (blast, fragments and fireball) have been determined and the injury level has been calculated. It can be concluded that the resistance of the Wastelift against the selected threats was good.

### Comparison

Comparing the effects of an explosion in the Wastelift with an explosion inside a regular litter bin, it can be concluded that the number of fatalities and severely injured people is reduced enormously. With an explosion inside a regular litter bin, people may get severely injured by the fragments of the explosive and the litter bin itself within a distance of 100 m from the explosion. For an explosion in the Wastelift, no severe injuries or fatalities are expected at a distance beyond 1 m from the Wastelift.



### Conclusions

TNO conducted a research program to develop an explosion resistant version of the Wastelift. The design has been manufactured and validated successfully. For the selected threat, no severe injuries or fatalities are expected at a distance greater than 1 m from the Wastelift.



*Before the explosion test*



*After the explosion test*