

## #4 – UNCONTROLLABLE MONSTER

*(System-Environment)*



[8]"Monster truck accident Haaksbergen", *Onderzoeksraad*, 2022. [Online]. Available: <https://www.onderzoeksraad.nl/en/page/3687/monster-truck-accident-haaksbergen>. [Accessed: 24- Jul- 2022].

There was excitement that Sunday in Haaksbergen, Netherlands! Monster truck show was coming to town!! People were looking forward to enjoying the acrobatic abilities of these amazing vehicles as they tried to get the best spot to follow the event: did not want to miss anything! But something went wrong...the monster got out of control....bounced into the crowd... terrorized spectators run away... Some of them reported injuries, 3 people lost their lives.

How could a fun day so unpredictably and suddenly turn into a tragedy? Let's have a look at what exactly happened.

It was September, 2014, AutoMotorSportief 2014 was organizing the monster show; the monster truck was being operated by Mario D. an experienced stunt driver. The show was proceeding smoothly: the monster crossed over a few cars and spectators were amazed by the performance. The truck went again over a few cars; this time, though, whilst coming off them, the monster suddenly jolted forward and took a hard left turn and uncontrollably drove straight into the crowd.

In the investigations carried out, the driver reported that upon descending from the cars he released his foot from the accelerator; however, the clutch seemed to be stuck in place making it mechanically impossible to break and slow down the vehicle. Investigations found out that a piece of glass was stuck in the throttle valve, essentially keeping it open and preventing the clutch from being disabled. This in turn caused an increase in the RPM of the car, which is the reason for the sudden jolt aforementioned. The reason for the loss of control of the car is therefore attributed to this fact; however, the Dutch Safety Board (DSB) reports that the accident, despite the issue with the technical system, could have largely been avoided by the correct implementation of safety guidelines. The overarching factor which contributed to the loss of life and injury of the crowd was their placement and vicinity to the area of performance. The DSB's main argument is that the issue was with the issuance of the permit by the municipality. The DSB states that with issuing a permit, the level of safety must also be assessed and determined in that permit and that the municipality and other issuing bodies bear the responsibility of setting clear safety standards for the hosting organization to abide by. The DSB, based on this statement, determined that too little attention was given to this regard failing to identify the risks associated with an event of this caliber. After all, the only safety measure implemented across the whole show was placing a bike-barrier in between the performance area and the spectators.

Accidents do happen. At time can also be prevented. What could have been done to prevent this one?

As aforementioned, the accident, despite the malfunction of the technical system could have been prevented with the appropriate safety equipment and guidelines. In this regard, there are a few recommendations for future consideration based on the 3-step approach presented by ISO 12100.

### **Step 1: Inherently Safe Design measures:**

Upon issuing a permit for events such as the one at hand, issuing bodies must identify and assess the associated risks first, in order to subsequently impose efficient safety measures. If the level of risk is not assessed, it becomes very easy to overlook certain critical safety factors. Additionally, the primary cause of the accident was the excessively close proximity of the crowd to the performance area. For this matter, it should be noted that a greater distance between the performance area and spectators should be maintained and this safety distance should reflect the magnitude of the stunts to be performed. Events with bigger stunts and therefore greater risk should have a greater separation compared to events with a lower associated risk. Furthermore, having spectators placed on an elevated platform above the performance area would also be beneficial in decreasing the attributed risk. In certain circumstances, having the performance area entirely caged off could be done to even further

reduce the risk. It was also mentioned that glass was found in the throttle valve of the vehicle. It would be useful to perform checks on the cars beforehand and possibly during the show at certain intervals.

### **Step 2: Safeguarding and complementary protective measures**

In the event that the above measures are not sufficient, then there should be a way to bring the vehicle to an immediate stop. Technology to do so already exists and is widely implemented in most monster truck shows and is called on-board Remote Ignition Interrupter (RII) and allows operators to bring the car to a stop in such events. This device was not implemented in this accident, had it been present, the car could have been stopped and potentially the entire accident could have been halted.

### **Step 3: Information for use**

If the risk is still not low enough, communication, visual and audio signals could be used. For example, marked lines or other visual cues can be given to the driver to inform them of potential danger or when they are getting too close to the audience or when the extent of their stunts are of too high risk. Perhaps, the stunts to be performed should all be communicated to the organization prior to the event so an assessment of the risks can be done and communication of what is permissible and the manner of carrying things out can be detailed and specified.

This story is an example of the importance of considering the interaction between a technical system and the environment. It is important to understand that a technical system does not act in isolation but is rather part of a larger context (the environment). The implication of this is that in assessing risk and danger, the environment also plays a key role and can adversely affect the level of risk/danger associated with said technical system. In the case above, the system did face technical issues, but as we saw, this alone was not the principal cause of the accident, rather the environment was not safe enough to mitigate the effects of the technical system but rather enhanced it.

[4]*Mtra.us*, 2022. [Online]. Available: <http://mtra.us/2014/09/29/mtra-official-statement-haaksbergen-incident/>. [Accessed: 24- Jul- 2022].

[5]*Mtra.us*, 2022. [Online]. Available: <http://mtra.us/wp-content/uploads/2015/05/MTRA-Safety-Guidelines.pdf>. [Accessed: 24- Jul- 2022].

[6]"Fifteen months for monster truck stunt that killed 3", *NL Times*, 2022. [Online]. Available: <https://nltimes.nl/2016/04/15/fifteen-months-monster-truck-stunt-killed-3>. [Accessed: 24- Jul- 2022].

[7]"Haaksbergen monster truck accident - Wikipedia", *En.wikipedia.org*, 2022. [Online]. Available: [https://en.wikipedia.org/wiki/Haaksbergen\\_monster\\_truck\\_accident](https://en.wikipedia.org/wiki/Haaksbergen_monster_truck_accident). [Accessed: 24- Jul- 2022].

[8]"Monster truck accident Haaksbergen", *Onderzoeksraad*, 2022. [Online]. Available: <https://www.onderzoeksraad.nl/en/page/3687/monster-truck-accident-haaksbergen>. [Accessed: 24- Jul- 2022].