

# PlayFountain size ability of the floor

*Lisa Kusters*

*Industrial Design Engineering*

*University of Twente*

*The Netherlands*

*Expanding PlayFountain's product portfolio referencing to the fountain floor.*

PlayFountain is a Dutch company that produces an interactive water fountain. The fountain consists of a portable floor from where waterjets spray water up, the jets are computer driven can form patterns to play games. The fountains were intended for the rental market of city locations and small festivals. The global pandemic forced them to expand their market to direct fountain sales. They found a new market in the leisure and attraction park industry. The company wants to keep innovating its product to maintain satisfied customers. Furthermore, the company would like to offer more alternatives to their current product to different customers and grow their sales in the near future. This assignment was intended to expand their product portfolio focusing on the sales market, the focus for the new innovation was on the most appearing factors for customers, the floor and the interactivity of the fountain.

The main research question was: How can PlayFountain expand its product portfolio by means of the floor?

Their market and users had to be understood first in order to understand the need to expand PlayFountain's product portfolio. Furthermore, their product had to be researched to understand the innovation possibilities. From the research phase, it became clear that PlayFountain is a unique product but rather on the high end of pricing in the water attraction sales market. The most important findings in the attraction park market were the need for experience-based attractions and the possibility of personalization of the products. Currently, PlayFountain only produces one product with no variation possibilities. The need for variation was expressed in two different concept directions, the size ability of the floor and the variation of experience represented by decoration and interactivity. The final decision to focus on floor size ability was made because of its long-term value addition and to stay close to the current product.

The size ability had to be reached within limits; the most important limitations were the price, amount of stock parts, and amount of variation (different set-ups) gained. For the pricing, it was hoped to have the possibility of creating cheaper alternative set-ups of the PlayFountain. The production price could be limited by re-using as many current stock parts and production methods as possible, like the current extrusion profiles. Stock parts are an essential factor for PlayFountain because they wish to have all spare parts for a fountain in storage, having more variation in fountains means also having more spare parts.

Furthermore, when creating as many possible set-ups as possible with as few different parts as possible, a modular system was the best option. Limited amounts of new parts will fit together with existing parts as puzzle pieces that can be placed in many different ways. The technical limitation of size ability was expressed using the same 2x1 meter (active) floor panels where a maximum of 36 panels in a grid of maximal 10,5 meters could be laid. The structural parts

beneath the panels were the parts that needed (re-)designing. The structure consists of beams and edges connected with connection blocks.

The new modular plan presented multiple new lengths of edges and beams as well as some new connection parts and corners. The new parts were analyzed on structural performance as well as their integration with the current system. Because many parts use the same materials and extrude, the new parts and current parts can coexist in one set up. When analyzing the new set-up possibilities, it was found that smaller set-ups will result in cheaper alternatives. However, the price difference is lower than hoped; this is caused by the processing costs of shorter elements. When statical analysed the newly designed connectors, the inside connector showed a lack of safety factors in assembly. This lack in stiffness could be caused by the chosen design of the connector, the shortening of the extrudes or the lack of direct support due to the geometry of the edge.

This assignment found that PlayFountain can expand its product portfolio by creating a modular plan for structural floor components. These components can fit like a puzzle together to create variation in floor layouts. The PlayFountain can be offered at different prices depending on the desired set-up. It is recommended that PlayFountain decides which set-ups are the most popular to base their modular component base around. This way, the price could be optimized further.