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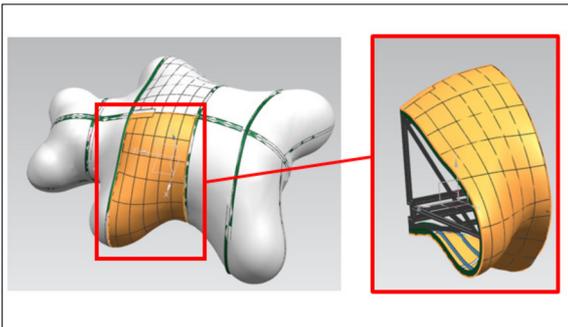
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Subject Area	Kunststofftechnik

Ultralight cloud shaped object

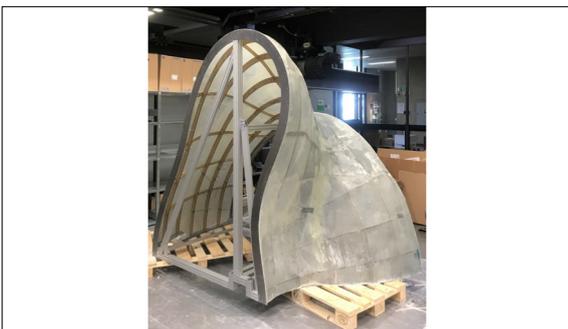
Implementation of a simple supporting structure for an ultralight cloud shaped object



Cloud shape object, 1.5m total length
Source confidential



Entire object and subcomponent
Own presentation



Subcomponent (2.5m x 1.5m x 2.8m)
Own presentation

Introduction: For public exhibitions, a cloud shaped object based on 9 spheres with different diameters and a total length > 6m should be arranged and illuminated by thousands of light dots (Figure 1). Whereas the current prototype has a length of approx. 1.5m and can therefore be built using conventional manufacturing techniques, the task of this thesis will be to design and evaluate a concept to upscale the structure to the new dimensions. The small object is manufactured out of two halves and with the help of a negative form. This manufacturing method cannot be used for the larger object, as it would generate a heavy and expensive structure. Thus, a new production concept has to be developed, that additionally fulfills the criteria of mountability, transportation and security for product and customer.

Approach: This bachelor thesis builds up on a semester thesis from 2019 [1]. The semester thesis defined the boundaries of the system and draws a first vague concept of the object. The first step of the bachelor thesis is to evaluate the concepts made in the semester thesis and work out one of these in detail. To evaluate the concept, a detailed design is developed and prototypes are manufactured: one for the shell and one for the connection between the frame and the shell. Afterwards, a subcomponent of the whole object is designed (Figure 2) and manufactured (Figure 3). For subcomponent and assembly, a step-by-step manual is developed. Furthermore, the building method of the subcomponent is evaluated.

Conclusion: The concept fulfills all criteria. The produced subcomponent represents the structure of 1/9 of the complete object. The next step would be to integrate the electronics and the centric beam. To get some experience with the manufacturing concept, it is possible to remove and reproduce the shell as described in the manual.