



Prototyping in automotive design: development of scale models with hybrid finishes and surfaces treatments

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Abstract:

The new digital vision typical of industry 4.0 offers the automotive sector new and advanced operational tools, functional to the best product/process system also for the prototype sector in the prototyping phase. Specifically, through a strong characterization on the use of new technologies, the “governance” of the processes linked to the creative phase of Concept Design will be increasingly manageable, where the flows of technical and stylistic information converge in the first physical identification of a new product. This operation is generally implemented through the creation of prototypes on a small scale, where the need to create new operational spaces is still governed by the ability of both the prototype maker and the performance of the hardware. In the specific, the need to create products using the new technologies attributable to the 3D printers typical of additive manufacturing, is confronted with the awareness that, in the panorama of 3D printers, the majority (85%) have operational performance limited by the extraction plate of about 300X400X400 mm. These dimensional limits in fact propose a use of printers with considerable limitations for prototypes that require development in scale with larger dimensions. The essay describes the methodology used which is based on the combined use of a careful 3D CAS modeling procedure functional to the modular rationalization of the pieces to be assembled in post-production and the hybrid techniques for the creation of the surface finishes to complete the physical prototype. This approach demonstrates the quality, technical sustainability, and inclusiveness of the digital approach as they are at the center of the project, proposing a case study of automotive design linked to a bus intelligent mobility, the result of a funded research project, IBIS, which has as its output the construction of a full-scale functioning demonstrator intended for urban mobility in an eco-regime.

Biography

Graduated in Industrial Design with a thesis on a concept related to innovative mobility, he obtained a research grant on the same topic with experiments that included 3D modeling and rapid prototyping with the most modern Polyjet prototyping technologies. Expert in rapid prototyping with production and repair of machinery and different 3D printing technologies, he has achieved various activities in rapid prototyping with prototyping machines ranging from FDM, DLP, Polyjet, and with hybrid methodologies that include different professional fields, ranging from design to modern bodywork. The prototyping activity is implemented with the ability to electrify and animate the different components, obtaining fully functional prototypes.

Publication of speakers

1. Fittipaldi Francesco (2013) New concepts for urban mobility. Napoli: Luciano Editore, p.01-136, ISBN: 9788860261694.
2. Kimio Toda, Abraham Salazar, Kozo Saito (2013) Automotive Painting Technology. Springer Netherlands, p.4-184, IBSN: 9789400750944.
3. Fittipaldi Francesco (2011). Ergonomia, progettazione e sperimentazione virtuale. Napoli: Luciano Editore, p. 1-136, ISBN: 9788860261199.
4. Stefano Turri (2007) Vernici, Materiali, tecnologie, proprietà. cea, P.1-448, IBSN: 8808181421

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