

CASE STUDY: FINISHING ON 3D PRINTED LATTICE STRUCTURE

Subject

To find the limit of aesthetical finishing in additive manufacturing.

Market

AUTOMOTIVE – LUXURY

Target

FINISHING – HIGH POLISH – MIRROR SURFACES

AM technologies enables designers to create forms regardless of the manufacturing process, by the way some characteristics of the technology can create limitations to the potential applications. It's the case of the 'skin' of metal 3d printed parts that

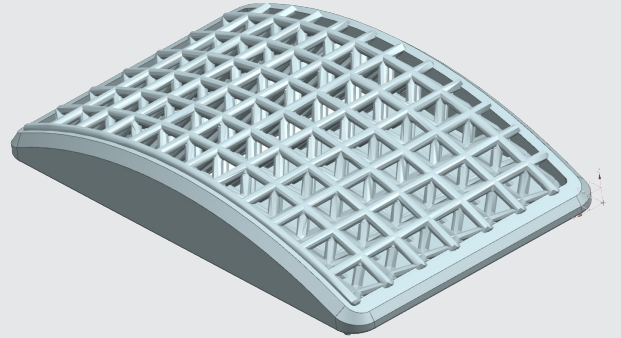
looks unpolished and difficult to be used in specific demanding contests. The target of this case study is to see which 'level' of aesthetical appearance could be reached using a lattice structure as potential design innovation pattern.

Summary

The case study analyzes the aesthetical finishing level achievable on 3d printed parts, with a specific focus for lattice structures.

Engineering

The first step was to create a lattice structure that could 'follow' the surface in order to control the result on the visible area:



Manufacturing

Part was then built with AISI 316L on our M290 EOS printer with a thin layer to keep the maximum level of detail



Post Processing

The post process has been performed in different steps, a first high pressure sandblast used to homogenize and clean the part followed by mass finishing.



Conclusions

The final Ra level achieved and the aesthetical 'polish' effects look homogeneous and suitable for aesthetical applications. The internal beams of the lattice structures

can be cleaned and homogenized, but not polished, while all 'external' surfaces can reach a mirror-like effect and appear well defined and without marks or holes.