Materialise 3-matic

Tutorial Videos: Lightweight Structures
Materialise 3-matic: Design Gradient Thickness Structures Exportable to FEA

This video shows how to implement a lightweight structure with a linear gradient thickness on the structure. This structure is then prepared to be exported for Finite Element Analysis.
Materialise 3-matic: Design a 3D Conformal Structure

This video shows how to design a structure conformal to the surface of your model. The 3-matic patterning function generates 3D patterns that follow the curvature of the part.
Materialise 3-matic: Design a Randomized Structure

This video shows how to design a randomized structure starting from a unit structure and setting minimum and maximum randomization levels.
Materialise 3-matic: Design a Trimmed Randomized Structure

This video shows how to design a randomized structure starting from a unit structure and trim the small edges that extend beyond the original external surface.
Materialise 3-matic: Design a Randomized Structure with Offset

This video shows how to design a randomized structure that fits perfectly to the original model geometry. In this example, no trimming is used.

To create this perfect fit, an offset is created from the original model geometry. Starting from a unit structure, minimum and maximum randomization levels are set, generating a randomized structure that does not extend beyond the original external surface.
Materialise 3-matic: Design a Structure inside a Steering Wheel

This video shows how to design a structure to be applied to the inside of a steering wheel while leaving the other parts of the steering wheel solid.
This video shows how to design a unit cell. This procedure can also be done in any other software and imported to 3-matic as Iges files, which present the structure in lines.
Materialise 3-matic: Design a Randomized Filtered Volume Structure

This video shows how to design a volume structure. After designing your structure, lines that have only one connection point and are under a certain angle can be filtered and removed.
This video shows one of the possible ways of designing a radial structure within a filter. By creating an offset inside the filter, a connection can be made between the two radial surfaces.
Materialise 3-matic: Design a Wing with Gradient Structure

This video shows how to design a structure that has a density gradient. In this example, a wing is subdivided into 3 sections with different mesh sizes. Afterwards, a volume graph is applied.
Materialise 3-matic: Using the randomize seed value and macros

This video demonstrates how to use the randomize seed value and how to create and apply a macro.

Starting from a randomized graph, the resulting seed value is incorporated into a macro. This macro is then easily applied to create randomized unit graphs.
Thank You!

Any questions? Please contact software@materialise.be