

DIN ISO 18459:2016-08 (E)

Biomimetics - Biomimetic structural optimization (ISO 18459:2015)

Contents

Page

National foreword.....	3
National Annex NA (informative) Bibliography.....	4
Foreword.....	5
Introduction.....	6
1 Scope.....	7
2 Normative references.....	7
3 Terms and definitions.....	7
4 Symbols and abbreviated terms.....	9
5 Principles of self-optimization in nature and hence transferred optimization methods.....	9
6 Application of methods.....	11
6.1 Application range and limits.....	11
6.2 Computer Aided Optimization (CAO).....	12
6.2.1 Stress-controlled growth.....	12
6.2.2 Shrinking.....	13
6.2.3 Finite elements in practical applications (FEA).....	14
6.3 Soft Kill Option (SKO).....	14
6.3.1 Principle of the SKO method.....	14
6.3.2 Implementing the SKO principle in the finite element analysis.....	15
6.3.3 Examples of applications of the SKO method.....	17
6.4 Computer Aided Internal Optimization (CAIO).....	18
6.4.1 Example of the CAIO method: bent cylinder.....	19
6.5 Method of Tensile Triangles.....	20
6.5.1 General.....	20
6.5.2 Tensile triangles for saving material.....	21
6.5.3 Tensile triangles for optimization of fibre orientation.....	23
6.5.4 Example of the Method of Tensile Triangles: shoulder fillet.....	24
Bibliography.....	26