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Space Engineering — Thermal design handbook

Part 1: View factors

National foreword

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European Foreword

This document (CEN/CLC/TR 17603-31-01:2021) has been prepared by Technical Committee CEN/CLC/JTC 5 “Space”, the secretariat of which is held by DIN.

It is highlighted that this technical report does not contain any requirement but only collection of data or descriptions and guidelines about how to organize and perform the work in support of EN 16603-31.

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This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This document has been developed to cover specifically space systems and has therefore precedence over any TR covering the same scope but with a wider domain of applicability (e.g.: aerospace).

This document is currently submitted to the CEN CONSULTATION.

1 Scope

In this Part 1 of the spacecraft thermal control and design data handbooks, view factors of diffuse and specular thermal surfaces are discussed.

For diffuse surfaces, calculations are given for radiation emission and absorption between different configurations of planar, cylindrical, conical, spherical and ellipsoidal surfaces for finite and infinite surfaces.

For specular surfaces the affect of reflectance on calculations for view factors is included in the calculations. View factors for specular and diffuse surfaces are also included.

The Thermal design handbook is published in 16 Parts

TR 17603-31-01	Thermal design handbook – Part 1: View factors
TR 17603-31-02	Thermal design handbook – Part 2: Holes, Grooves and Cavities
TR 17603-31-03	Thermal design handbook – Part 3: Spacecraft Surface Temperature
TR 17603-31-04	Thermal design handbook – Part 4: Conductive Heat Transfer
TR 17603-31-05	Thermal design handbook – Part 5: Structural Materials: Metallic and Composite
TR 17603-31-06	Thermal design handbook – Part 6: Thermal Control Surfaces
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TR 17603-31-16	Thermal design handbook – Part 16: Thermal Protection System