# Procedure description

for

# FEA/FEM calculation

of

# Simatek A/S filters

in relation to

# Pressure-shock-resistance

**Document: 1030115**

# Foreword

This document is prepared by Simatek A/S. Simatek A/S designs and manufactures filters for dust collection and aspirations systems within a widespread industrial setting.

Attention is drawn to the usage and safety of the equipment in an industrial setting.
Due to the environment in which materials (dust) are being handled during filtration, an eminent and potential explosion hazard is present. Therefore Simatek A/S uses Non-linear Finite Element Analyses (NFEA) to design equipment, where the potential hazard from an explosion can be minimized. By calculating the potential pressure-shock-resistance of the equipment, the risk assessment is incooperated in the design.

In accordance with VDI2263-3, section 4 and considering the previous TÜV approved test results (Certificate TÜV NORD number 0124FK02330 from 10.12.1993) for the type approval of Simatek's filter, the hydrostatic pressure testing can be replaced by using NFEA simulations according to EN 13445-3.

This document is an approval of the Simatek methods used for NFEA in relation to pressure-shock-resistant loads with respect to EN1127-1 chapter 6.5 (as guideline) and associated with EU guideline 94/9/EG as well as VDI2263-3 and DIN EN 14460.

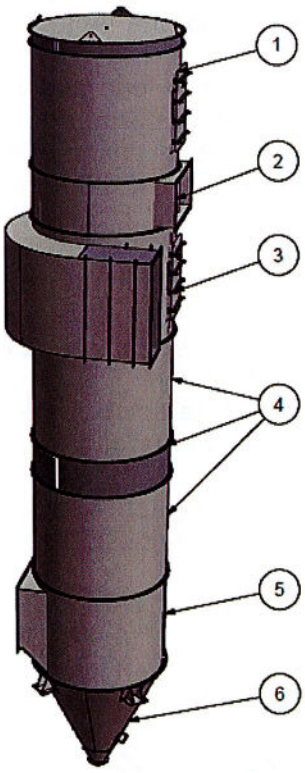
# Description of the Design

The designs of the filters are characterized by a cylindrical shape and modular construction. The filters are designed to operate with dust explosion vents according to the German VDI 3673 guidelines, alternatively the European Standard EN 14491. Other positions of the vent system can occur.

The main components (sections) are shown in figure to the right:

- 1 Top
- 2 Clean air section
- 3 Inlet section
- 4 Filter section(s)
- 5 Mediate flange assembly (for pressure-shock-resistant vent system)
- 6 Bottom cone / Scraper bottom
- Main vessel / body (as one unit)

The shown components are illustrated for terminology only, meaning that the designs may differ depending on the filter type within the filter segment of Simatek A/S.

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