

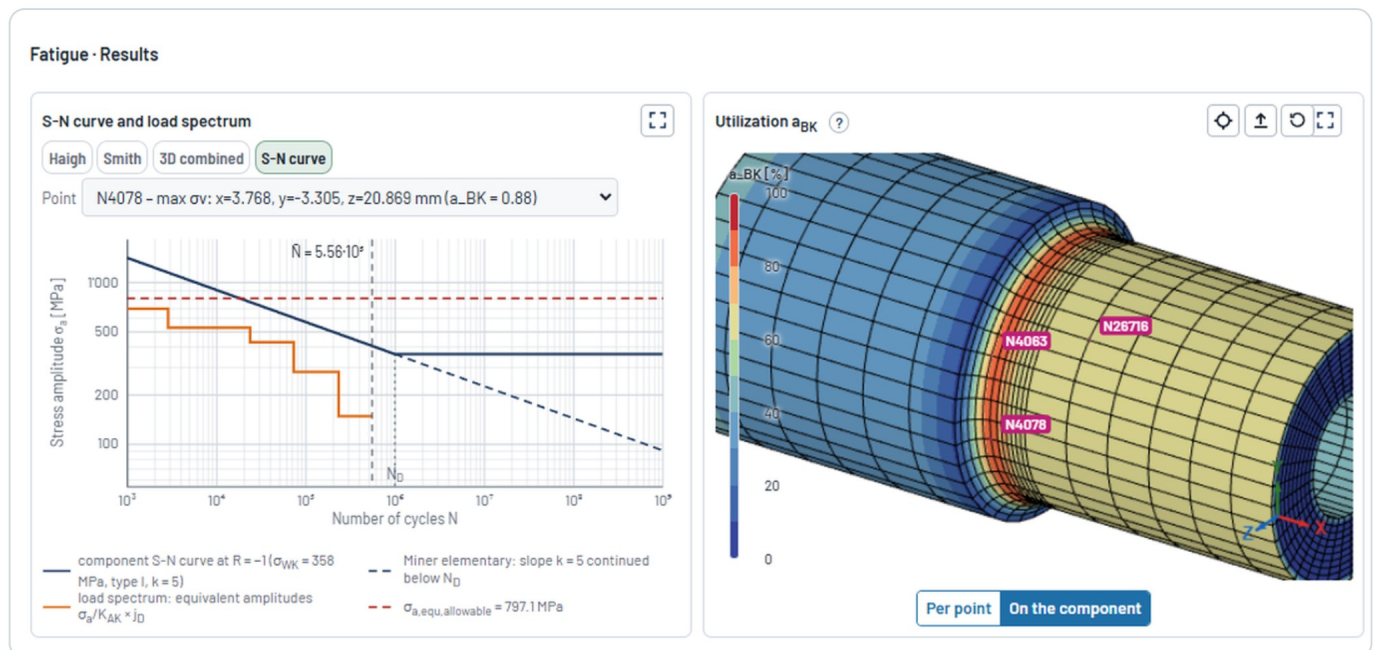
WEB TOOL FOR ENGINEERS

Closed beta – request access

FKM Assessment

Complex FKM assessments. Made simple.

Intuitive static and fatigue strength verification for base material, surface-hardened zones and welds, with sensitivity analysis, material optimization and a bidirectional CAE interface – according to the FKM guideline, 7th edition (2020). The tool handles factors, tables and equations; you focus on the design.



Fatigue results: S-N curve and load spectrum at the governing point, utilization on the 3D model; allowable cycles and load reserve per point below. Example: shaft shoulder from M. Wächter, C. Müller, A. Esderts: Angewandter Festigkeitsnachweis nach FKM-Richtlinie, Springer Vieweg, 2nd ed., 2021.

BIDIRECTIONAL INTERFACE

1

Export from your CAE tool

One click in Mechanical: stresses of all load steps, surface normals, hardening zones and depth profiles go to the web tool.

2

Assess in the web tool

Choose the material and follow the guided workflow for static and fatigue strength. Save the project.

3

Back into your CAE tool

Utilization returns as result objects in the solution tree, static and fatigue: all faces, base material, all hardened zones and each zone.

Interfaces for ANSYS Mechanical and Abaqus; Femap and Nastran in preparation. Independent of the CAD system: stresses from the FE file or entered by hand.

FEATURES

From input to the right material



Material database and factors

About 200 steels and cast irons with size, anisotropy and temperature factors – or enter your own material.



Fatigue strength

Load cycles, mean stress, S-N curve, Haigh and Smith diagrams, stress gradient from the FE. Welds with FAT classes.



Static strength

Plastic support and safety concept. Welds: base material and weld, from nominal, structural or notch stresses.



Surface-hardened zones

Hardening, nitriding, shot peening, deep rolling per zone: K_V factor or the detailed FKM check at surface and core, static included.

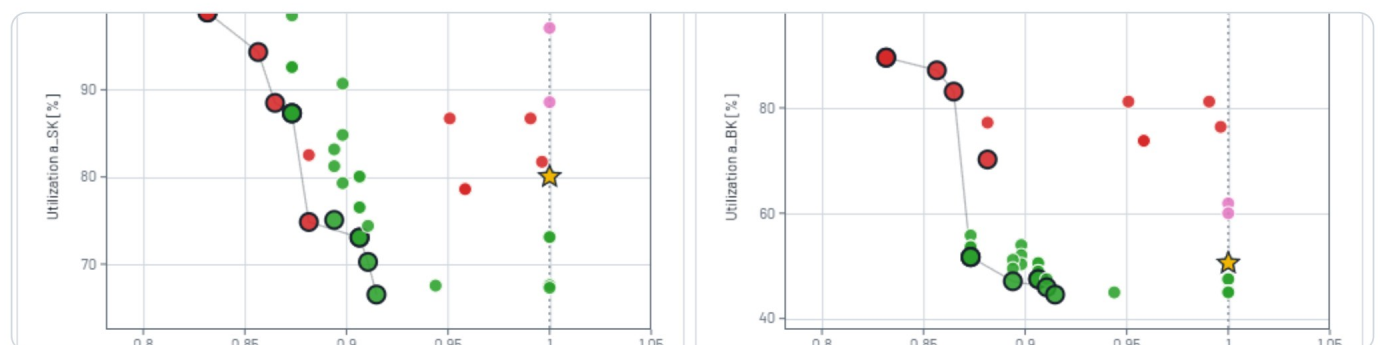
Sensitivity analysis

Find the critical inputs: change any input by a few percent and see how strongly static and fatigue utilization respond.

Parameter	Value	Change		$\Delta a_{SK} [pp]$ -10 %	$\Delta a_{SK} [pp]$ +10 %	$\Delta a_{BK} [pp]$ -10 %	$\Delta a_{BK} [pp]$ +10 %
- MATERIAL DATA							
- Material Strength							
$R_{m,N}$	900 MPa	<div><div></div></div>	$\pm 0 \%$	+28.50	-9.38	+3.22	-2.68
$R_{p,N}$	700 MPa	<div><div></div></div>	$\pm 0 \%$	+6.37	+8.72	± 0.00	± 0.00
A_N	12.00 %	<div><div></div></div>	$\pm 0 \%$	± 0.00	± 0.00	± 0.00	± 0.00
E	210'000 MPa	<div><div></div></div>	$\pm 0 \%$	± 0.00	± 0.00	+0.26	-0.26
- Size influence							
$d_{eff,N,m}$	16.0 mm	<div><div></div></div>	$\pm 0 \%$	+3.19	-1.86	+0.37	-0.34

Material optimization

Which other materials qualify, and where can you save? Compare materials by utilization and estimated cost – static and fatigue – with Pareto-optimal candidates.



VERIFIED CALCULATION

Book examples as reference

136 reference cases and 228 hand-calculated cases, checked with every release.

240,619 automated tests

Including 89,788 surface-layer cases against an independent implementation.

Calculation sheet

Every quantity of the static and fatigue check with its FKM equation number.

AI EXPERT

An AI Expert on every page

A chat opens over any page and answers questions about your current assessment and the FKM method. Its FKM knowledge grows continually. Every number comes from the tool, not from the AI.

Tool: calculates every number

AI Expert: explains and advises

Your FKM partner

On every page, aware of your current assessment. Guides you step by step – work with confidence even after a long break.

Material recommendation

Proposes materials with pros, cons, cost, manufacturing and risks. Every number comes from the assessment.

Your company know-how

Knows the FKM method and every input of the tool. Add your own standards and rules: only your AI Expert sees them.



Calculation sheet and reports

Every quantity with its FKM equation number and intermediate values, to print or as PDF. Short and full reports in PDF and Word.



Available wherever you work

Open your projects in the browser – at your desk, at the customer or on a tablet in a meeting. In English; German in preparation.

DATA PROTECTION AND SECURITY

Hosted in Switzerland

Web server and database in Switzerland (Swizzonic, Zurich), automatic encrypted backups. The page loads nothing from other servers.

Swiss AI service

AI services by Infomaniak (Geneva): data centres only in Switzerland, no training on your prompts. Project name, number, customer and author are never sent.

Encrypted and protected

Saved projects are encrypted on the server; two-factor sign-in; sessions end automatically.

According to the statements of the providers. Details in the tool under About, "Where your data is processed".

An aid for the engineer's verification: the assessment follows the method of the FKM guideline as implemented by Artificient. It does not replace the guideline or the responsibility of a qualified engineer according to the applicable codes and standards. The user is responsible for the inputs. AI Expert answers are suggestions.



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The tool is currently available to selected accounts. Information: www.fkm-assessment.com · Contact: info@artificient.ch · More tools: www.artificient.ch