



## ANALYTICAL STRENGTH ASSESSMENT WIAM® FATIGUE RIFEST – THEORY AND PRACTICE WITH THE FKM GUIDELINE

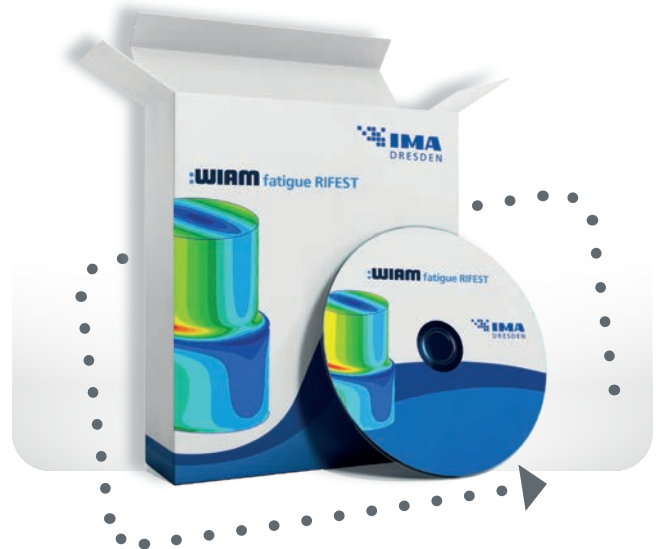
We are the partner you can contact when it comes to strength assessment. Determine this by calculation with the WIAM®fatigue RIFEST Software according to the FKM guideline.

# SOFTWARE WIAM® fatigue RIFEST

Our software is the solution for the construction process and component stress analysis. The software shows the guideline true strength assessment in accordance with FKM-Guideline issue 2012. WIAM® fatigue RIFEST currently uses the 7th edition of the FKM-Guideline of 2020

Engineers and constructors in several areas benefit of the theoretical knowledge and practical know-how of the methods and calculation algorithms:

- Strength assessment for selective present stresses basing on FEM calculations or strain gauge measurements



## PROGRAMME CONTENTS

### BASIC EDITION

- Fatigue strength assessment as assessment of the fatigue limit assessment or variable amplitudes fatigue strength assessment including required static strength assessment
- Strength assessment for several verification points on the basis of existing local elastic stresses (e.g. of FEM-calculation or strain gauges measurements)
- For volumetric non-welded components (base material)
- Comprehensive database for non-welded machine components: rolled steel, iron casting materials, aluminium materials (incl. material characteristics)
- Normal and increased temperature
- Updates, support and maintenance
- German or English version

### PREMIUM EDITION

The package Premium offers in addition:

- Shell-shaped welded components
- Comprehensive database for welded machine components
- Comprehensive presentation of the results in report form
- Two languages: German and English versions

### SERVER LICENSE VERSION

External on-demand server

- site-independent and worldwide use through an Internet access
- more flexibility during usage
- low IT effort
- automatic software maintenance
- constant availability
- shorter, more flexible terms
- cushioning of high loads

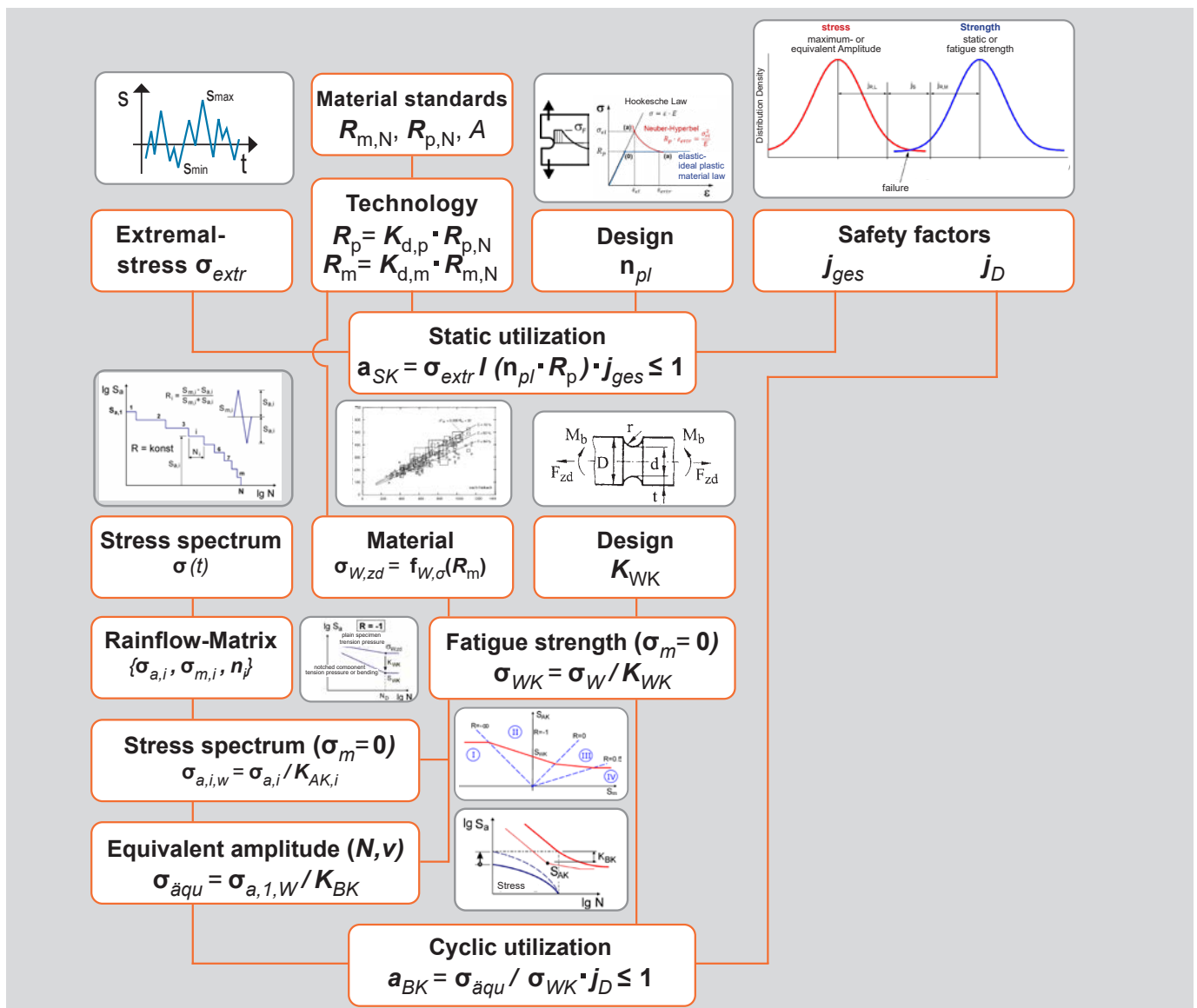
### BOOKABLE OPTIONS

- Server version
- Site License Model
- Group licence model
- Floating license
- Updates, support and maintenance after the first year
- Competent IMA consulting for FKM guide line
- Buying or rental license

# ANALYTICAL STRENGTH ASSESSMENT WITH FKM-GUIDELINE

The FKM-Guideline "Analytical strength assessment for components" has been published by the Forschungskuratorium Maschinenbau e.V. (FKM). The first issue of FKM-Guideline was published in 1994. IMA Materialforschung und Anwendungstechnik GmbH is significantly involved in the development of the guideline. The new version will be published by the 7th edition in November 2020.

The FKM-Guideline contains a calculation algorithm with a consistent structure for all cases of application. The algorithm consists of procedures, equations, tables and graphs.



# TRAINING FKM-GUIDELINE



## TRAINING CONTENTS

1. Introduction to FKM-Guideline
2. Non-welded components
3. Welded components
4. Acquisition of input values for strength assessment
5. Individual points of interest

We train you to the FKM-Guideline on site or in our house. The training shall explain the methods and background information of the analytical strength assessment according to FKM-Guideline.

# TRAINING WIAM® fatigue RIFEST

We provide trainings about the calculation programme and the FKM guide line.  
Please contact us and arrange a meeting—either at our facilities or directly at your site.

Visit for more information:  
[ima-dresden.de/Training](http://ima-dresden.de/Training)

## TESTVERSION

You can test WIAM® fatigue RIFEST with the demo download:  
<http://www.wiamnetwork.com/fatigueRIFEST/demo/de/wiamrifest>

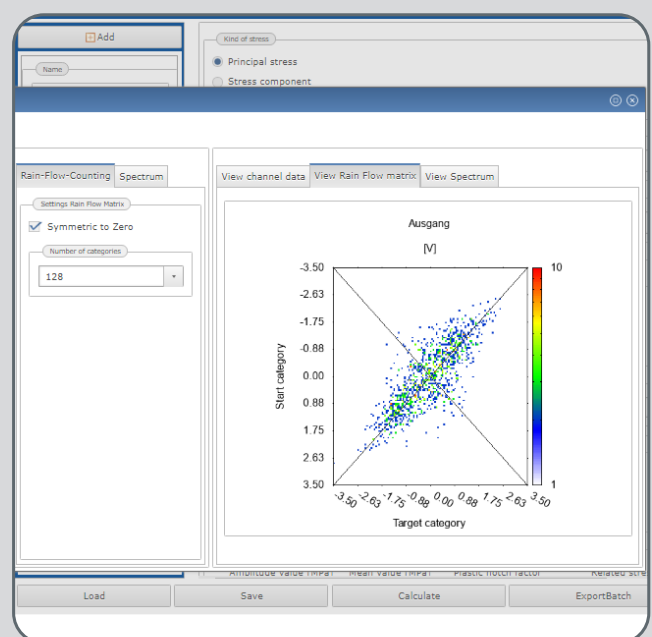


The screenshot shows the 'WIAM® fatigue RIFEST ()' application window. On the left is a sidebar with a list of tabs: '1 General information', '2 Construction' (selected), '3 Stress values', and '4 Safety factor'. The main area contains an 'Add' dialog box with the following fields:

- Name:** A text input field.
- Material:** A dropdown menu showing 'S235JR, 1.0038, 01 - Nonalloy structural steel (Rp1.235; Rm1.360; σwLzd1: 160.0)'. Below it is an 'Edit Material' button.
- Effective diameter (mm):** A text input field with the value '40.0'.
- Roughness (µm):** A text input field with the value '200.0'.
- Surface treatment/Coating:** A section with radio buttons for 'No surface treatment' (selected), 'Case hardening', 'Mechanical surface treatment', and 'Chemical thermal surface treatment'.
- Anisotropy factor ka:** A text input field with the value '1.0'.
- Temperature:** A section with 'Temperature [°C]' (20.0) and 'Period of time [h]' (100000.0) input fields.

At the bottom of the dialog are buttons for 'Load', 'Save', 'Calculate', and 'ExportBatch'.

View of the user interface

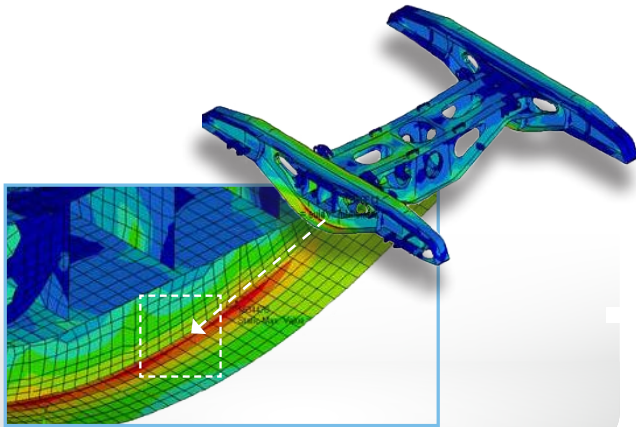


Output using Rain Flow Matrix as an example

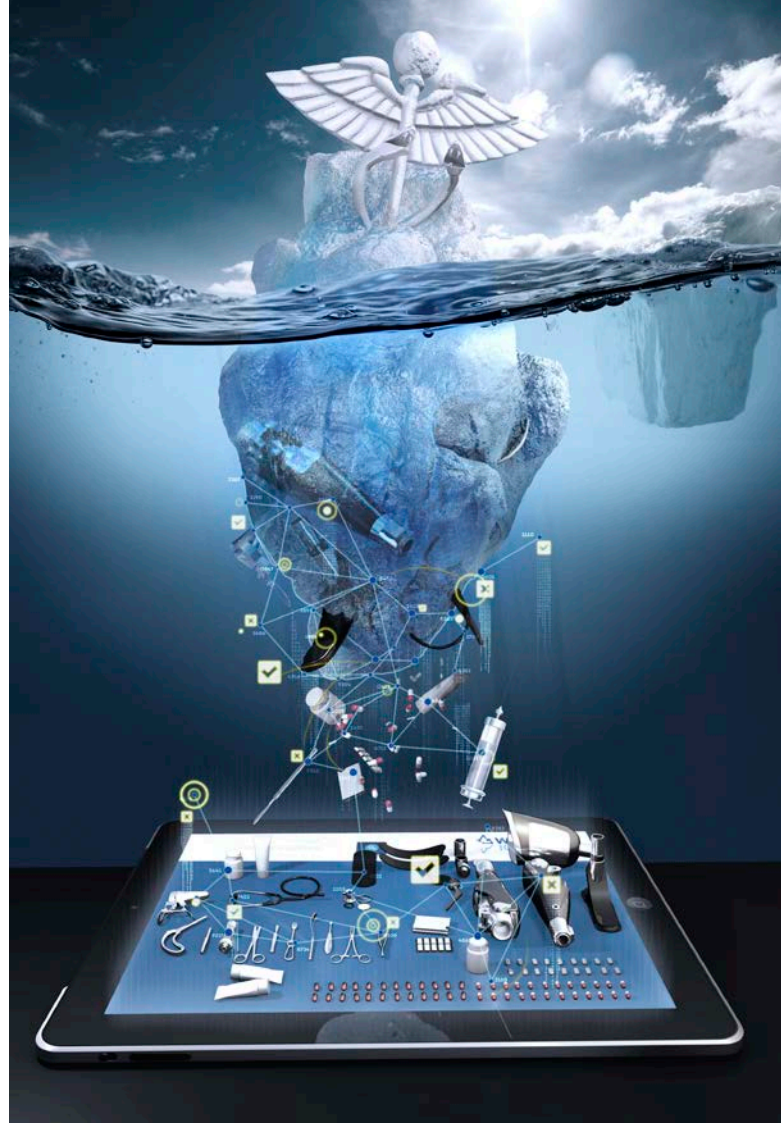
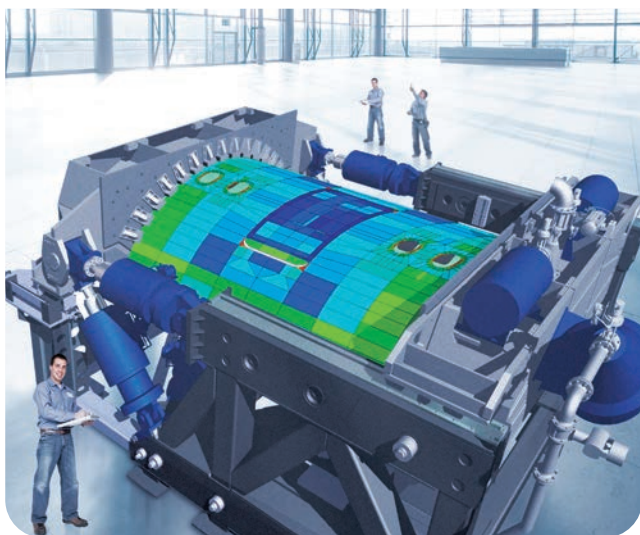


## SIMULATION AND COMPUTATION

- Development and elaboration of concepts for the analytical strength assessment for practical applications under consideration of our knowledge from several fields of industrial application
- Solution of urgent problems with component strength by methodical support, engineering services and constructive consultancy
- Analytical strength assessments on base of measured stresses, also in extraordinary problems



- Development and implementation of customer-specified software for analytical strength assessment and measurement data analysis
- Work on research and development projects to analytical and experimental strength assessments



## FIND INFORMATION, MANAGE DATA, NET- WORKING KNOWLEDGE: WIAM® ICE

The structuring, processing and management of information helps to ensure expert technological know-how in the long term, streamline processes and thus increase quality and efficiency. The standard WIAM® ICE product promotes the flow of knowledge, simplifies areas of complexity and ensures added value and innovative strength. Having originated in the field of Material Sciences, the generic WIAM data model can now manage all kinds of knowledge and information. With WIAM® ICE, you can record, research, link, visualise, compare and evaluate diverse data easily and clearly

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## BENEFIT FROM THE COMPETENCE OF APPLUS+ IMA DRESDEN

IMA Materialforschung und Anwendungstechnik GmbH, in short Applus+ IMA Dresden, is the development and test centre which can speed up the process for your new developments and ensure that they are suitable for the market. As an independent test provider we guarantee reliable results and strict confidentiality.

Whenever it comes down to strength, resistance, validation or material characteristic data, then Applus+ IMA Dresden can combine the efforts with regard to test standards, approval and certification tests as well as experimental investigations. We have over 10,000m<sup>2</sup> of test area in certified and accredited testing laboratories where we can test innovative products and technologies from aerospace, rail vehicle, automotive and medical technologies, shipbuilding, plastic, metal and electrical industries and other industrial branches. You can rely on us: the testing tasks at Applus+ IMA Dresden will be processed according to the current state of the art technology and enjoy worldwide acceptance and trust.

Since May 2021, IMA Dresden is part of Applus Laboratories.  
Please do not hesitate to contact us for any questions or inquiries at [sales@ima-dresden.de](mailto:sales@ima-dresden.de)

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