Invitation to our winLIFE Seminar

FKM-Guideline

Computer-Aided Fatigue Life Calculations for Engineering Components

in Niederstotzingen-Stetten near Ulm
Steinbeis Transfer Centre
New Technologies in Traffic Engineering
Tel.: 07325 3306
Fax.: 07325 4992
http://www.stz-verkehr.de

**Aims:**
The FKM Guideline has been issued by the German Forschungskuratorium Maschinenbau e.V. (FKM) for calculated durability proof for machine components and has become established as a quasi-standard.

The aim of the seminar is to understand the FKM Guideline and be able to use it. The fatigue durability and the static strength verification for non-welded components are discussed with regard to the FKM Guideline.

To make this clearer, examples from the FKM Guideline are re-calculated, mainly using the program winLIFE.

**Requirements:**
Basic knowledge of fatigue calculation, mechanical engineering and use of MS-Windows.

**Program:**
Computers for all participants will be provided. If a participant wishes he can bring his own computer. The practical examples are done by all participants. The data necessary is installed on each computer and the participant will be shown the key issues of the problem.

**Seminar Program**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00</td>
<td>Welcome and introduction</td>
</tr>
<tr>
<td>9:15</td>
<td>The make-up of the FKM Guideline</td>
</tr>
<tr>
<td>9:45</td>
<td>Static strength verification for non-welded</td>
</tr>
<tr>
<td>10:30</td>
<td>Practical Examples</td>
</tr>
<tr>
<td>11:00</td>
<td>Break</td>
</tr>
<tr>
<td>11:15</td>
<td>Fatigue Life strength verification for non-welded components</td>
</tr>
<tr>
<td></td>
<td>Analysis according to the nominal stress concept for non-welded components, materials, temperature, loading, form factor, stress gradient, surface quality, technology influence, component size, mean stress sensitivity, safety, capacity utilization.</td>
</tr>
<tr>
<td>12:00</td>
<td>Practical Example</td>
</tr>
<tr>
<td>12:30</td>
<td>Lunch Break</td>
</tr>
<tr>
<td>13:30</td>
<td>Static Durability verification for welded components</td>
</tr>
<tr>
<td>14:00</td>
<td>Practical Example</td>
</tr>
<tr>
<td>14:30</td>
<td>Break</td>
</tr>
<tr>
<td>14:45</td>
<td>Fatigue durability proof for machine parts for welded components, Basics, concepts, nominal stress, notch stress, structure stress concept, various influencing factors, FAT-classes, plate thickness, edge layer factors</td>
</tr>
<tr>
<td>16:00</td>
<td>Practical Example</td>
</tr>
<tr>
<td>16:30</td>
<td>Discussion Time</td>
</tr>
<tr>
<td>17:00</td>
<td>Official End: Further possibilities for individual questions if required.</td>
</tr>
</tbody>
</table>

Steinbeis-TZ Verkehrstechnik, Rosenstr. 5, 89168 Niederstotzingen
Tel.: 07325 3306 email: guenter.willmerding@t-online.de
Organisational Details:

Time: from 9 AM to 5.15 PM

Place: Hotel Zum Mohren, Familie Dörflinger, Oberdorfstrasse 31, 89168 Niederstotzingen-Stetten, Tel. +49 (0)7325 92247-11, Fax. +49 (0)7325 92247-12, info@lonetalhotel.de, www.lonetalhotel.de

It is also possible to reach us by train. The nearest railway station is Niederstotzingen.

There are enough PCs for all the participants.

Cost: 680 € + VAT

Registration: Due to limited space, we can only accept a maximum of 10 participants. All applications are binding. As soon as we have received your application, we will send you confirmation and an invoice which we would ask you to pay as soon as possible.

Accommodation: We recommend the conference hotel where the course is held: Zum Mohren, Oberdorfstrasse 31, 89168 Niederstotzingen-Stetten, Tel. +49 (0)7352 92247-11, Fax. +49 (0)7325 92247-12, info@lonetalhotel.de, www.lonetalhotel.de

Organising Company: Steinbeis Transfer Centre New Technologies in Traffic Engineering, Tel.: +49 (0)7325 3306, Fax. +49 (0)7325 4992

Lecturers: Prof. Dr.-Ing. G. Willmerding and Mr. Jakob Häckh MSc

Aims: To provide the participants with knowledge of fatigue life calculations of dynamically loaded components with multiaxial loads. We cover the basic theory of multiaxial fatigue life analysis and calculate examples using winLIFE. Test results exist for all the calculation examples we do this and it enables the participant to assess the accuracy.

Requirements: The knowledge gained in the winLIFE-BASIC Seminar is essential for this course. This Seminar is therefore only recommended for participants who have already attended the winLIFE-BASIC Seminar.

Seminars:
Three times a year:
- winLIFE-BASIC (2 x German, 1 x English)
- winLIFE-MULTIAXIAL (2 x German, 1 x English)

Once a year
- FKM-guideline: static strength and dynamic fatigue proof (German, English on request)
- Power-User: Effective use of winLIFE for complex problems (German, English on request)
- Crack Growth and Random Fatigue (German, English on request)

The Modules

The Modules can be used in conjunction with finite element programs such as NASTRAN for Windows, IDEAS, SAMCEF, WTP 2000 and, with the help of FEMAP, with all standard FE programs. Measured data can be transferred from several programs (LMS Roadrunner, winEVA). The interfaces are documented in such a way that they can be programmed by the customer.

- FKM QUICKCHECK static strength analysis and fatigue analysis according to FKM-guideline for non-welded components, welded components can be analysed by a hot spot search (not according to FKM).
- BASIC is for the basic procedures of fatigue life analysis.
- MULTIAXIAL is for calculating special problems where the direction of principal stress is not consistent. This program is an extension to the BASIC module and is for solving the most difficult of problems.
- GEARWHEEL&BEARINGS is for calculating gear wheels and bearings according to standard calculation procedures without finite elements. It is designed to transfer data from the program to our drive train simulation program winEVA and the measuring programs winADAM and DIANA.
- CRACKGROWTH You can calculate the crack growth of a component according to established theories.
- RANDOM FATIGUE Based on a given acceleration of a component in g2/Hz (PSD-spectrum) the stress PSD is calculated and a fatigue calculation performed.

Applications

has been sold to more than 240 customers and is used in the automobile, military and engineering industries, ship building, wind energy, mining industry, planning and universities.

Short Description / Demo-Version

http://www.stz-verkehr.de
Registration

Please send this page by post to: Steinbeis Transfer Centre
New Technologies in Traffic Engineering
Rosenstrasse 5
89168 Niederstotzingen
Or fax to: +49 (0)7325 4992.

Registration for the Seminar

Computer-Aided Fatigue Life Calculations with winLIFE
FKM Guideline

on _____________________

This application is binding.

After receiving the registration confirmation and the invoice, the applicant agrees to transfer the seminar fee of 680 € + VAT to our bank account at the Volksbank Brenztael eG IBAN DE92 6006 9527 0063 7300 06 BIC Code: GENODES1RNS

When we receive your registration form we will send you confirmation within three days.

Surname_____________________________________________________

First name___________________________________________________

Title________________________________________________________

Company_____________________________________________________

Dept.________________________________________________________

Street_______________________________________________________

Post code__________Town_____________________________________

Tel________________________________________________________

Fax________________________________________________________

Email_______________________________________________________

Date______________Place_____________________________________

Signature __________________________________________________

22.01.2019

Steinbeis-TZ Verkehrstechnik, Rosenstr. 5, 89168 Niederstotzingen
Tel.: 07325 3306 email: guenter.willmerding@t-online.de