

Practical Introduction to the Analytical Strength Assessment of Components based on the FKM Guideline

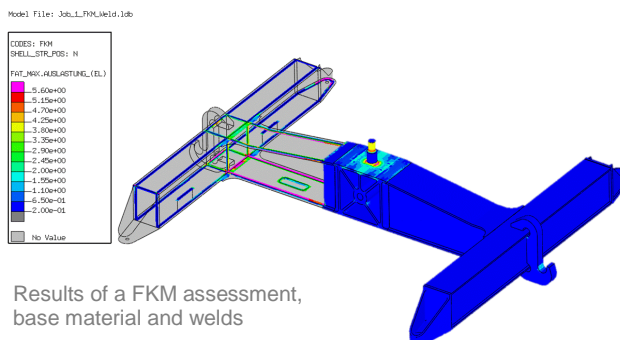
In recent years the FKM guideline has become an internationally acknowledged tool for strength assessments. Typical fields of application are general mechanical engineering, railway, windturbines, automotive applications, plant engineering and many more.

This course offers a **practical introduction to the analytical assessment of components with respect to static and fatigue failure**. In a step by step approach, the methodology for structures made of steel, cast iron and aluminium is presented and the relevant parameters are discussed. The assessment of welds based on different stress concepts such as nominal or structural stresses will also be explained.

Examples of different applications in combination with Finite Element analysis will be demonstrated using the assessment software LIMIT.

Content:

- Base material
 - Stresses types and modelling strategies using finite element analysis
 - Static assessment including technological size effects and local yielding
 - Fatigue assessment considering local stress gradients and surface effects
 - Examples
- Welded structures
 - Discussion of different stress concepts
 - Static assessment of welds
 - Fatigue assessment based on FAT-classes and S-N curves
 - Examples



Target audience: engineers in charge of performing strength assessments with experience in Finite Element analysis. The course offers insight into **state-of-the-art assessment technologies**.

Course Language:

The course will be held in English.

Date:

Date: Jan 30th 2019
Time: 9:00 – 16:00

Location:

Grupo AyS
Parque Tecnológico de Álava
c/Leonardo da Vinci, 14
01510, Miñano, Álava

Fees:

400 € including coffee break and lunch

Instructor:

Nikolaus Friedl has been working in the field of strength assessments of structures for 20 years. Within the company CAE Simulations & Solutions GmbH he is responsible for engineering service projects and for the development of the assessment tool LIMIT.



Registration:

Please register by mail to:

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AGENDA:

- 9:00 Recepción y entrega de documentación
- 9:15 Presentation and Introduction to **FKM Guideline**
- 9:30 **Strength assesment of NON-WELDED Structures**
Assesment of STATIC Strength using Local Stresses
Non-welded, FKM, Chapter 3
Stresses components used for FKM assessments;
Volume elements, shell elements
Equivalent stresses
Example
- 10:30 Assesment of **FATIGUE** strength using Local Stresses
Non-welded, FKM, Chapter 4
Charateristic Service stress, fatigue
Strength dependent fatigue limit
Influence of design characteristics
Component fatigue limit
Degree of utilization
- 11:30 Coffee brake
- 11:45 Example
- 12:15 **Strength Assesment of WELDED Structures**
Stress Concepts for Welded Structures
Single sided fillet weld
Double sided fillet weld
Thin wall welded structure
Nominal Stresses
Structural Hot Spot Stresses
Effective notch stress
Element coordinate systems vs weld directions
- 13:30 Lunch brake
- 14:15 Assessment of STATIC Strength using local stresses
Welded, FKM, Chapter 3
Degree of utilization
Example
- 15:15 Assesment of **FATIGUE** Strength using local stresses
Welded, FKM, Chapter 4
Material properties, Design parameters, permissible stress
FAT classes, weld types
Component fatigue limit
Assessments
Example
- 16:45 Resume and end of the session

