framatome

FAtigue MOnitoring System-V (FAMOS-V)

KEEP VIBRATIONAL FATIGUE UNDER CONTROL

The high-accuracy vibrational fatigue monitoring system **FAMOS**-V provides the basis for extending the operational lifetime of components and equipment

Challenge

Industrial structures are subjected to vibrations and the material fatigue induced by these phenomena can be the limiting factor of their lifetime. Today, there is a lack of control of the plant operator over the plant ageing process and a lack of knowledge about its actual remaining life duration. In contrast to existing structural health monitoring system which aim to detect the appearance of an unexpected fatigue damage, a system is needed which is able to predict fatigue damage before it occurs.

Solution

FAMOS-V, developed by Framatome, gives a real time assessment of the remaining life duration of structures exposed to vibration induced fatigue.

FAMOS-V calculates actual fatigue usage factors of the monitored component by analysing accelerometer measurements. Even the smallest vibrations are caputred and are processe. Additionally, the remaining lifetime is displayed based on the calculated fatigue usage factors.

FAMOS-V constitutes the best/most realistic solution for the vibrational fatigue assessment of components, thanks to the direct processing of the measuring signals. Based on these information the user is in the position to operate the monitored system in a fatigue friendly manner. The system is adjusted to fit the customer's specific needs.

FAMOS-V Viewer

Customer benefits

- Realistic computation of cumulative usage factors thanks to sensoric vibrational load measurements with qualified instrumentation and data acquisition methods
- Real time assessment of the remaining life duration of structures submitted to vibration induced fatigue
- Monitor areas that are difficult to access due to fact the location of sensor does not necessarily need to be installed close to the area of interest
- Prediction of fatigue failures before they occur
- Optimization of maintenance and inspection costs
- Cost savings through plant lifetime extension and through the increase of plant availability

Your performance
is **our** everyday **commitment**

Technical information

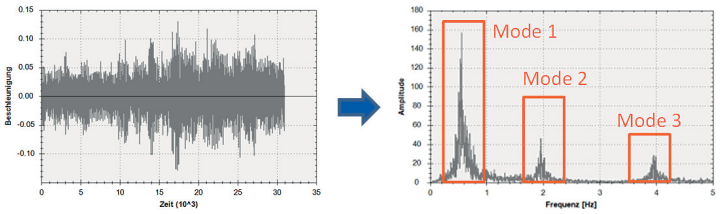
FAMOS-V is composed of a hardware part and a software part:

The hardware consists of simple and robust accelerometers or displacement sensors that measure the vibration at a few selected key locations of the structure.

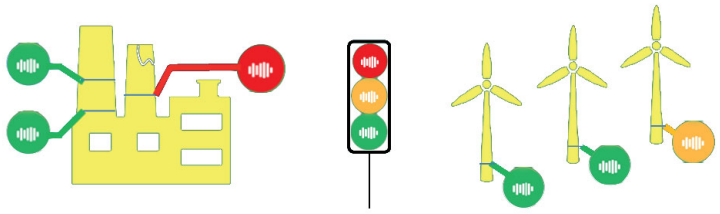
The software identifies the contribution of each dynamic vibration mode in the measured signal and transforms this information into an estimation of remaining lifetime at each weld or other locations of interest. The location of interest does not necessarily be located next to the measurement position. Depending on the structure, locations of interest far away from the acceleromater can be monitored. This is customized by Framatome experts for each particular structure.

An accompanying service package is proposed to the customer on a case by case basis, including technical support for the hardware and/or software, as well as additional expertise.

For structures submitted to both thermal and vibration induced fatigue, a coupling of **FAMOS**-V with the thermomechanical **FAMOS**-i system is possible.

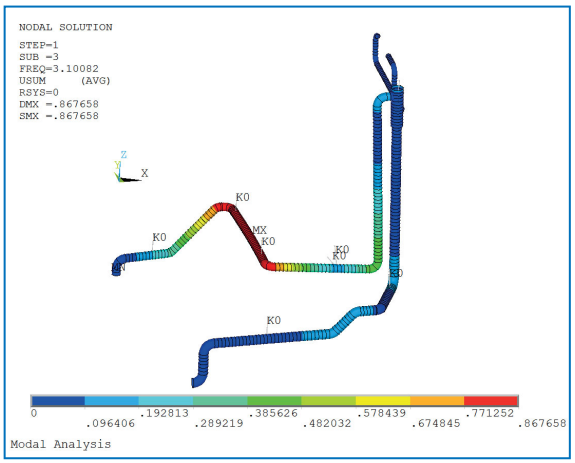


Acceleration measurement and comprised Eigenmodes



Example for lifetime status visualization

Monitored chemical plant structures



Vibrations in technical structures

Key figures

Several Systems Successfully operating on chemical plant structures.

> 35 years of experience in fatigue monitoring

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