



LIFETIME MONITORING SYSTEMS

The latest generation power boilers is designed for long-term operation at increasingly severe process conditions in combination with high cycling capability. At the same time, operators are required to reduce operating costs and downtime of the boilers without jeopardizing operational safety and boiler lifetime. Therefore, operators require accurate and up-to-date information about the condition of their boilers. The NEM Lifetime Monitoring system provides this information with maximum accuracy.

SCOPE OF SERVICES

Long-term operation at high temperatures and high pressures in combination with large temperature and pressure fluctuations, associated with frequent start-up and shutdown, introduce accelerated material degradation of critical boiler pressure parts.

A Lifetime Monitoring (LTM) system continuously monitors the actual operation temperatures and pressures at those critical locations. It calculates the contributions of creep and fatigue and their interaction to lifetime consumption. Based on these calculations, the LTM system provides an overview of the actual usage factors. It also predicts the remaining number of load cycles until the end of the lifetime of the boiler installation. This way, the locations with an increased risk of premature failure can be identified and subjected to additional inspections.

LTM systems are used to provide a better insight into the effect of cycling operation on the lifetime of the boiler

and to allow an extension of inspection intervals. Experience has shown that this objective can only be achieved with a reliable and accurate LTM system.

The accuracy of the Lifetime Monitoring system depends on:

- Accurate identification of critical components
- Use of advanced calculation algorithms
- Credibility of the measurements

OUR APPROACH

As a globally leading supplier of all types of steam generation equipment, NEM has also accumulated a vast wealth of experience in the field of design life analyses. NEM is therefore in a unique position to address the need of operators for an accurate LTM system.

The NEM LTM system combines our specific knowledge of boiler design and boiler instrumentation with our extensive experience of lifetime calculations.

BENEFITS

The NEM Lifetime Monitoring system is an easy to use and sophisticated system with user-friendly graphical interface displays. NEM's specific expertise guarantees maximum possible accuracy of the usage factors and remaining lifetime prediction:

- Our specific knowledge of boiler design ensures accurate identification of the most critical pressure part components.
- Accuracy of the LTM calculation algorithms has been verified with our own dynamic simulation models, as well as historic data from existing boilers.
- The advanced calculation algorithms contain integrated plausibility checks to verify the credibility of all measured data.
- NEM's expertise in all aspects of lifetime monitoring ensures that the boiler design, the boiler instrumentation and the LTM system are all optimally integrated.