

Online boiler rapper monitor

Automatic – dependable – systematic



Systematic rapper measurements for top-flight boiler performance

Hitachi Zosen Inova's online rapper monitoring system supports you in your efforts to safeguard or improve the profitability of your plant. The reason: The functional integrity of the rapper is continuously and automatically checked during operation.

Together with the combustion system, the boiler constitutes the heart of every waste combustion plant. Accordingly, its maintenance and upkeep are critically important. The cleaner the boiler, the higher its efficiency. In turn, high efficiency assures that more energy can be extracted from the combustion process.

Every harp counts

To maintain a high degree of efficiency, the heat-exchanger surfaces in the boiler must be continuously cleaned. Even a single, poorly cleaned harp can have a negative impact on plant performance.

Various cleaning options are available. Pneumatic and mechanical rappers are very commonplace. The approach in both methods is to generate enough rapping energy to adequately deflect the lower headers and thus to induce vibrations in the individual boiler harps. The resulting accelerative forces detach the ash layers and remove them from the panels.

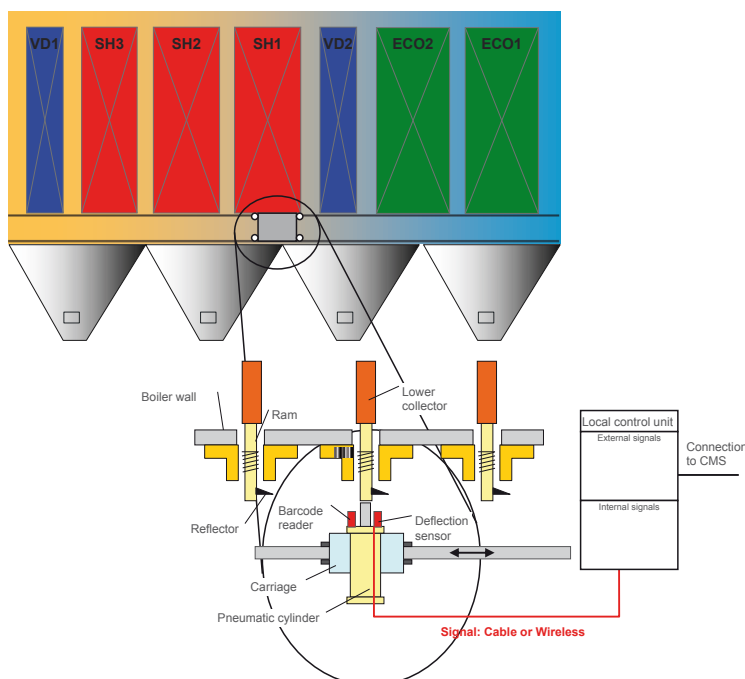
There are many reasons for insufficient harp kinetics:

The rapper does not strike with adequate force

The ram is jammed inside its guide

The header guide inside the boiler is blocked

The motion of the boiler harp is restricted by ash deposits



In such cases, the user-friendly online monitoring system automatically performs one of the following activities:

Repeated rapping of the affected rapping point

Increase of rapping force at the affected point

Adjustment of rapping frequency

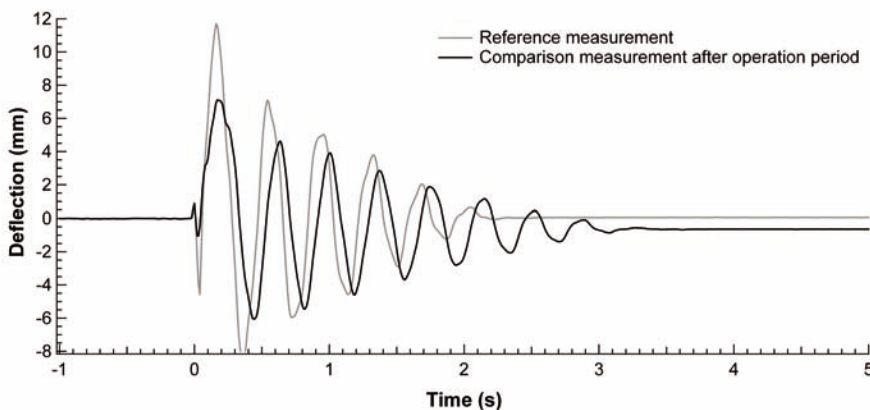
Alarm message to the operator

In-service monitoring

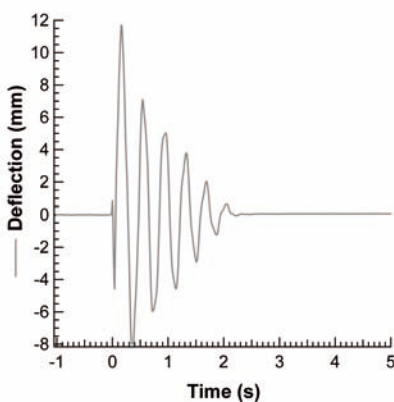
Whether or not a boiler rapper is operating correctly can be determined only by systematic monitoring. The unique Hitachi Zosen Inova rapper monitoring system has the great advantage that it verifies the movement of each individual header while the plant is operating. The motion is detected by a laser distance sensor that measures the deflection and the oscillation of the header and transmits this information to the respective process computer. The computer compares the measurements with stored reference data from the clean boiler.

Suitable for all rapping systems

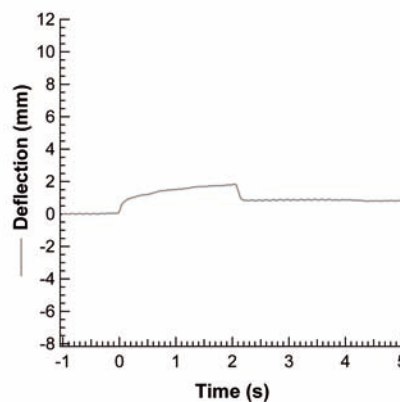
The online monitoring tool is compatible with mechanical and pneumatic rapping systems. With respect to corrective measures, however, pneumatic systems are more flexible because individual rapping points can be selected for corrective action. Moreover, the rapping energy can be varied with pneumatic cylinders and the measuring system can be integrated into the rapper carriage.



Comparison of a «good» rapping point measurement with its reference data



Sufficient deflection and number of oscillations: adequate cleaning effect



Insufficient deflection and no oscillations: No cleaning effect

The advantages at a glance

Continuous monitoring of the boiler rapper system assures that it operates as intended. This results in various benefits for your plant:

- Prevention of premature and excessive boiler fouling
- Longer boiler campaign durations
- Reduction of manual cleaning effort and related downtime
- Steadier and more predictable boiler operation
- Accurately plannable overhaul schedules

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