



Fatigue Monitoring System

for increased performance of your boiler components

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Fatigue Monitoring System (FMS) is designed to provide managers with constant information for right operational decisions. Through pre-configured, key Performance indicators (KPIs), FMS monitors highly stressed components from a boiler, displaying their fatigue and lifetime status which is fundamental for understanding components reaction to different plant loads, reducing time for component replacements and avoiding sudden fatigue and outage days.



Solution

- Collection of temperature and pressure data is automated for fatigue calculation.
- Creep and low-cycle fatigue in the boiler components is calculated.
- Calculation is done component specific according to standards DIN EN 12952.
- FMS calculates online & stores the results long term.

Initial situation

- Increasing market share by renewable energies may lead to an operational flexibility of power plants.
- Increasing load changes, start-ups & shut downs will increase the stress for the components.
- The life of highly stressed components in the steam piping systems is dictated by their fatigue.

Challenges

- Transparency on plant data and component fatigue for save plant operation.
- Non awareness of component lifetime status may incur in sudden failure and outage days.
- Reduce or extend boiler inspection intervals and increase plant availability.

Customer benefits:

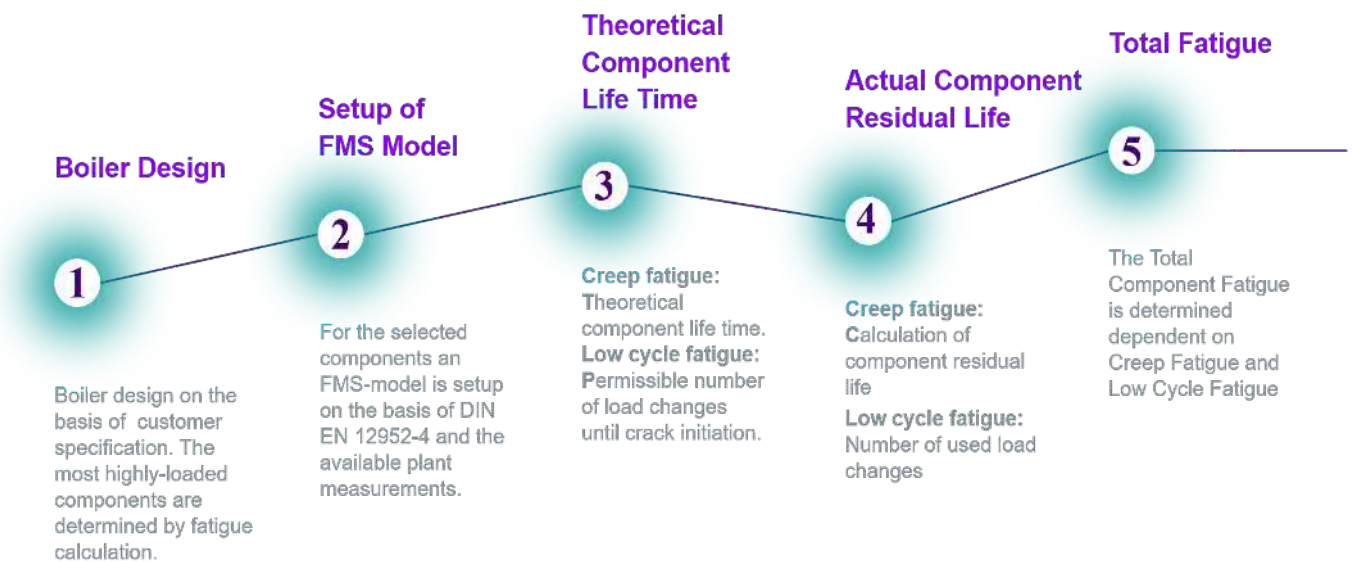
- Increased transparency through continuous recording of particular plant data, continuous documentation of component load and component fatigue.
- Real time evaluation recognizes high-wear operation modes and informs on actual component residual life and thus helps to prevent damages and unplanned downtime.
- Optimized maintenance planning thanks to harmonization of boiler outage with outage of other plant components.
- Increased safety by avoiding sudden component fatigue failure.
- Improved cost-efficiency by extending and simplifying the boiler inspection from 2 to 3 years.
- Compatibility with SPPA-T3000 or any other plant control system through OPC interface.

How does FMS look and feel?

Output table displays the status for each monitored component

Record type 1: Overview (Components)											
Tag	Starttime	Endtime ZSE	Endtime DWE	ZSE [%]	DWE [%]	DWE-R [%]	E0 [%]	Ecorr [%]	Eges [%]	tZSE [h]	taZSE [h]
81HAD30BB001D	2015-03-27 09:30:00	-	2020-09-14 03:12:41	-	0.6411	0.0071	0.000	0.000	0.6482	-	-
81HAD30BB001W	2015-03-27 09:30:00	-	2020-09-14 03:12:41	-	0.2826	0.0064	0.000	0.000	0.2890	-	-
81HAH20BR002	2015-03-27 09:30:00	2020-09-14 03:12:41	2020-09-14 03:12:41	4.5205	0.9678	0.0177	0.000	0.000	5.5060	47397.43	547.29
81HAH21BR003	2015-03-27 09:30:00	2020-09-14 03:12:41	2020-09-14 03:12:41	4.5579	0.1760	0.0000	0.000	0.000	4.7339	47467.77	476.94

How does FMS work?



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