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.

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.

Solution

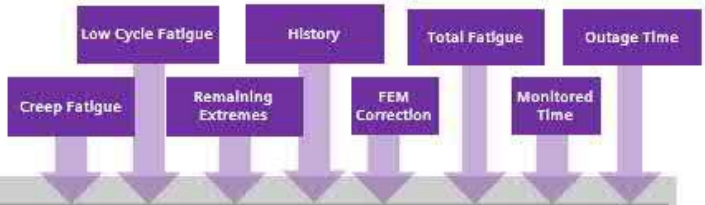
- Collection of temperature and pressure data is automated for fatigue calculation.
- Creep and low-cycle fatigue in the boiler components is calculated.
- Calculation is done component specific according to standards DIN EN 12952.
- FMS calculates online & stores the results long term.

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 Omnivise T3000 or any other plant control system through OPC interface.

How does FMS look and feel?

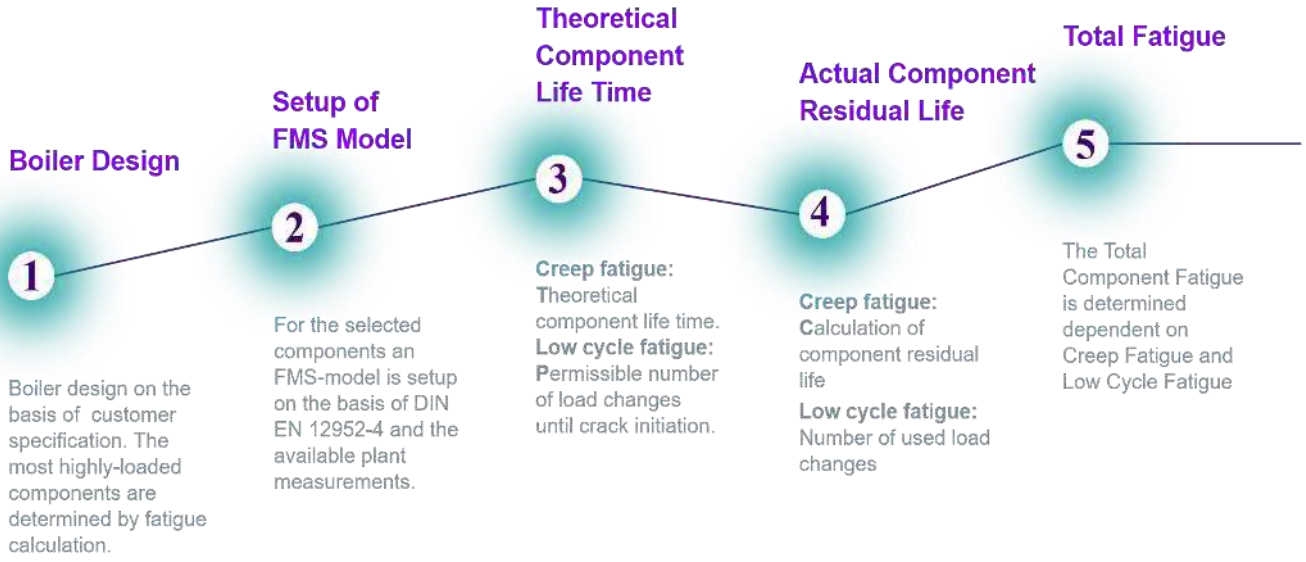
Output table displays the status for each monitored component



Record type 1: Overview (Components)

Tag	Starttime	Endtime ZSE	Endtime DWE	ZSE [%]	DWE [%]	DWE-R [%]	E0 [%]	Ecorr [%]	Eges [%]	tZSE [h]	taZSE [h]
61HAD30BB001D|	2015-03-27 09:30:00	-	2020-09-14 03:12:41	-	0.6411	0.0071	0.000	0.000	**0.6482**	-	-
61HAD30BB001W|	2015-03-27 09:30:00	-	2020-09-14 03:12:41	-	0.2826	0.0064	0.000	0.000	**0.2890**	-	-
61HAH20BR002|	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
61HAH21BR003|	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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Gas Services
Siemenspromenade 9
91058 Erlangen, Germany

Siemens Energy, Inc.
4400 Alafaya Trail
Orlando FL 32826, USA

For more information, please visit our website:
siemens-energy.com/Fatigue-Monitoring-System