

## Acoustic monitoring of in-line feedwater strainers

### Online and fully automated loose parts monitoring system

Detect noise generated by loose metal (foreign material) debris inside strainers causing costly damage to the strainer

#### Challenge

Loose metal (foreign material) debris inside feedwater strainers pose a significant threat to the operational behavior and functionality of the component.

An excessive debris load in the feedwater strainer could lead to minimized flow performance or higher pressure drop. Therefore it is essential to monitor the equipment for debris capture in order to evaluate the level of accumulated debris inside the equipment to organize maintenance activities accordingly.

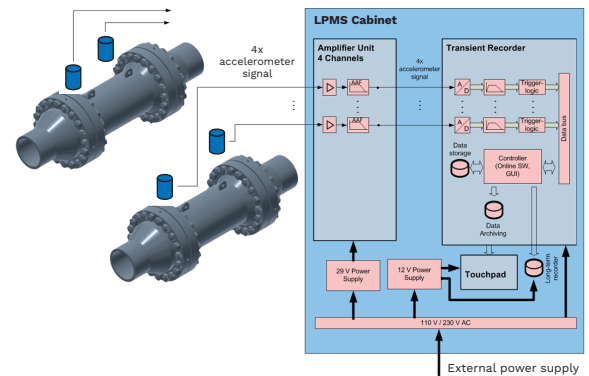
#### Solution

A reliable detection of foreign material and comprehensive assessment prevents consecutive damage of the feedwater strainer.

The lean and economic loose parts monitoring system supports the operator to better anticipate, detect and prevent degraded performance of components like feedwater strainers.

The loose parts monitoring system identifies loose parts and foreign material in real-time. It automatically monitors and records structure-borne noises, detects signal bursts, analyzes and locates them and finally assigns them to event classes. Based on the event classes the system provides information on the properties of the bursts as well as diagnostic information to the operator.

A highly sophisticated event classification and pattern recognition function decides whether the given event belongs to a group of known events which do or do not require alarm or is an unknown event type.



Schematic of the loose parts monitoring system

#### Technical information

- Compliance with NRC 1.133, IEC 60988 and DIN 25475 Part 1
- Event triggering with relative and absolute thresholds
- Event classification and pattern recognition
- Adaptive, teach-in system, graphical event analysis, digital signal processing functions
- Analysis in the time and frequency domain
- Event localization with different methods
- Mass estimation
- Statistical evaluation functions

#### Key figures

More than **50** systems in operation and over **30** years of operational experience

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#### Customer benefits

- Protects assets by real-time analysis of loose or loosened parts
- Contributes to safe and cost-effective component operation
- Detects mechanical irregularities and incipient damages early
- Increases plant availability by minimizing false or unnecessary alarms and usage of advanced data evaluation methods

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