Intelligent valve

Pilot study with regard to an online sealing monitoring function

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Online monitoring for valve seals

Up to now, continuous maintenance and inspection of the valves and their sealing elements in the beverage and food industry has been based on visual inspection. Or it is based on monitoring the operating hours and preventative maintenance. In the first case, leakage gives information about the condition of the seal. In the second case, the user is informed about the condition of the seal within due time, but possible production time is wasted.

Both cases are not satisfactory for a safe production process. In a pilot project, EVOGUARD is currently testing whether an intelligent valve can provide online information about the condition of the seal.

At a glance

- Inspection process which detects the ageing and wear condition of an installed seal
- Real time measurement of the seal condition with LED indication
- Further improvement of product safety and line availability

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How does the online sealing monitoring function work?

Study: SYSKRON and EVOGUARD

The study

- Equipment of the valve with a special seal and its monitoring function
- Connection of a sensor cable for signal exchange to check the condition of the seal while it is installed
- Signalling process using signal lamps at the valve in green, yellow and red colours
- Integration in the data pool of the Key Performance Indicator (KPI) with real-time analysis in a cloud solution
- Can be called via front end app of a smartphone or tablet

green
ok

orange planned
replacement

rot
replacement

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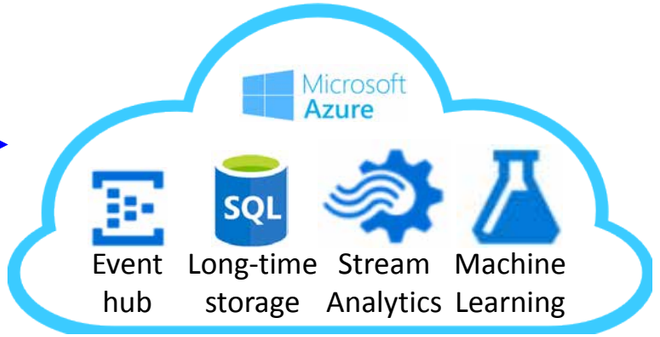
The communications module

Fermenting cellar

Cloud solution
Long-time solution
Lifetime storage



Lifetime analytics

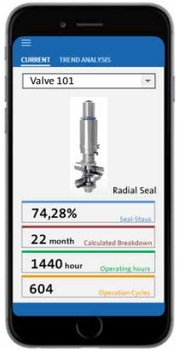
Data logger and
KPI creator

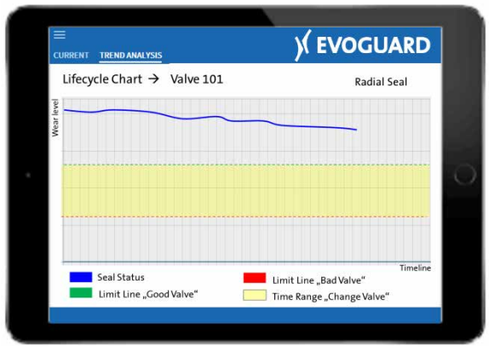
A/D converter

LED indicator light

Abrasion
cap.-charge

Front-end app





Mobile device

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Which information could be available to the user?

Display on a mobile device

Valve condition

1. Selection of a valve installed in a line
2. Type of seal: radial seal
3. Condition of seal: percentage value of the condition of the seal
4. Provident solution: calculative indication of the number of months until valve failure
5. Operating hours counter: operating hours in the line
6. Operations counter: number of valve strokes

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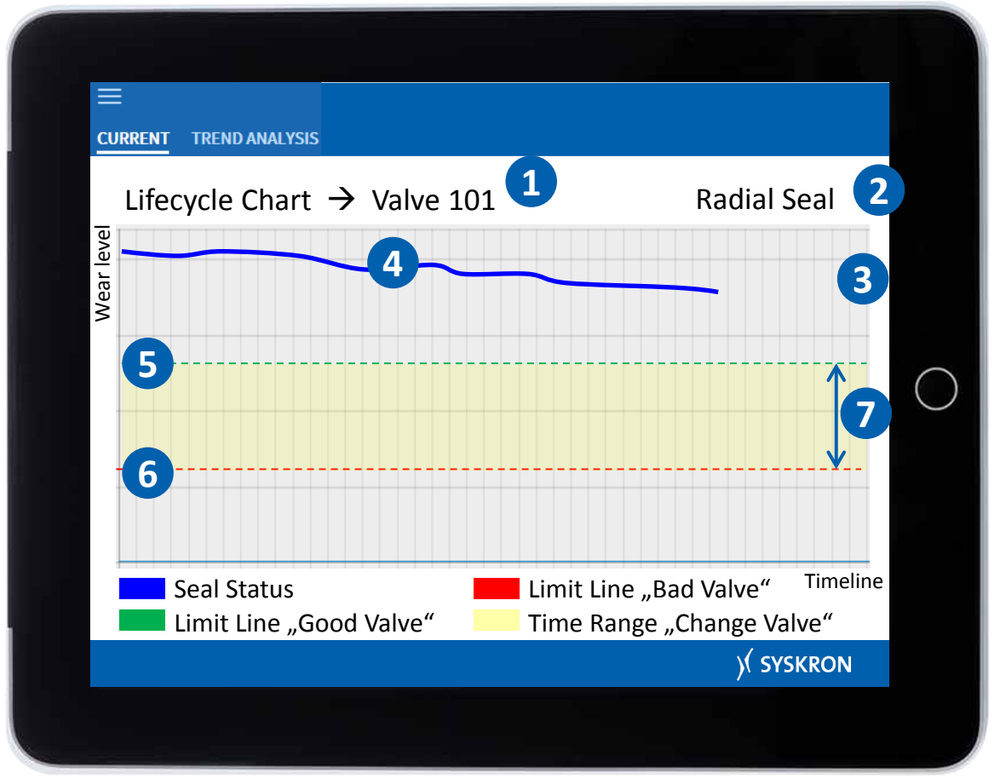
Which information could be available to the user?

Display on a mobile device

Trend overview

1. Display: selected valve
2. Type of seal: radial seal
3. Trend window: lifetime of the seal
4. Actual value display: in percent of the selected valve
5. Limit value 1:
   if the limit value is exceeded, coordinated planning of the seal replacement is required.
6. Limit value 2:
   once it is exceeded, the valve will already be in a "bad condition". Replacement is indispensable.
7. Time range: user experience with valves in the line



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Results of the pilot project

The "speaking valve" and the active measurement of the seal in real time can continuously monitor the condition of a seal.

- This will result in a high safety for your products as leakages can always be excluded.
- Maintenance is done within short time and only if required which will reduce the maintenance personnel's workload.
- A longer seal service life will be realised as only faulty seals will be replaced. The line availability will increase.
- Saved maintenance costs are also directly linked.
- The maintenance schedules including spare parts ordering can exactly be planned.

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