PLEVA
Sensors and Controls

Sustainable SuccessStory at Steamers:

Increasing Energy Efficiency and Product Quality

The Situation

Oxygen as the crucial parameter in steaming processes

- Air in a steamer atmosphere **influences color fixation and pretreatment reaction processes** of textiles significantly.
- The amount of oxygen has a **direct influence on dyes and thickening agents and on redox processes during the fixation process.**
- E.g. water insoluble dyes are reduced under alkaline conditions to a water-soluble form so that the dye can penetrate into the fine pores of the cellulose fibers and be absorbed onto the fibers. To have better substantivity, **it is important that the steamer is air-free or in other words oxygen-free. The presence of oxygen leads to premature oxidation which in turn inhibits the dye penetration into the pores of the fibers**. Thus, color deviations in the fabric arise.

- **Negative impacts on the goals of production and process reliability can occur.**

The Solution

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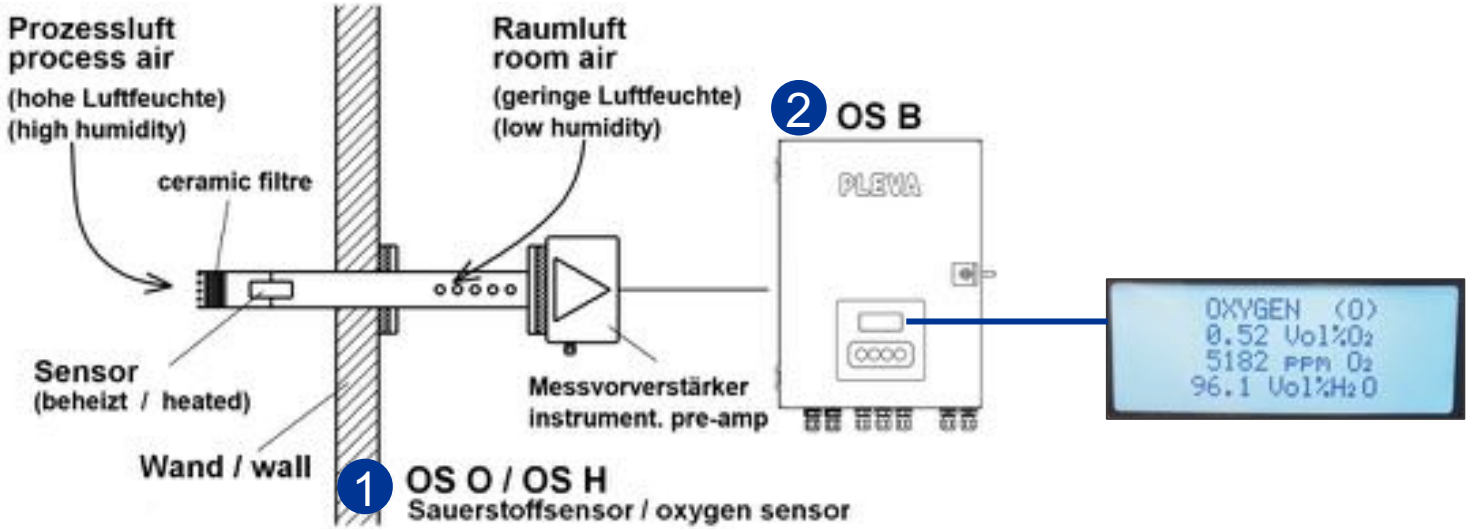

Continuously monitoring the oxygen content in the steamer

- Sensors are installed on both sides of steamer
- Consisting of 1 **oxygen sensor OS** and 2 **evaluation electronic box OS B**
- Measurement and display of Vol% O_2 and Vol% H_2O

Fig: OS sensors installed at pad-steam machine at TenCate Protective Fabrics, The Netherlands.

The Success

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Loop ager for reactive printing

„Once we start running fabric, we can see the oxygen level drops, which indicates we have a chemical reaction taking place in the steamer. ***The lower the oxygen level the better. Too much oxygen prevents the optimum reaction taking place and will cause the colours to be weak****. With OS we can also watch the percentage water volume: Too much can cause droppers forming in the chamber, so we can control the l/hr of water entering the chamber depending on the fabric we are running.“*

Engineer at Standfast Barrack

Pad-steam process

“The pad-steam machine at TenCate Protective Fabrics production facility is being used for the development of vat dyes, reactive dyes, disperse dyes and Azoic dyes. (…) ***With PLEVA OS the operator can easily look at the oxygen content and control the temperature settings of the steamer as required.*** *Although temperature is the control parameter,* ***the display of oxygen measurement gives more insights on the steamer conditions and behavior during process changes and enables decision making in changing process parameters*** *such as speed of the machine, temperature in the steamer and amount of steam dosing.“*

Vindhya Chirumamilla, Process Engineer, TenCate Protective Fabrics

The Sustainable Success

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- Continuous measurement
- High responsiveness and great measuring accuracy
- Requires no maintenance and is extremely robust
- Quick and easy installation
- Steamer readiness is indicated after start up and after breaks

Our impact as your HEROES FOR SUSTAINABILITY

- Status of the textile steamer is checked at all times to provide **quality control**
- Prevention of color deviations
  → **Reduction of second choice or rejected goods**
- Reduction of steam consumption and thus, **enhance energy efficiency** dramatically