

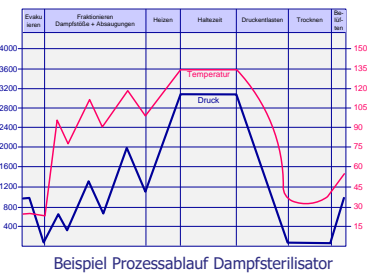
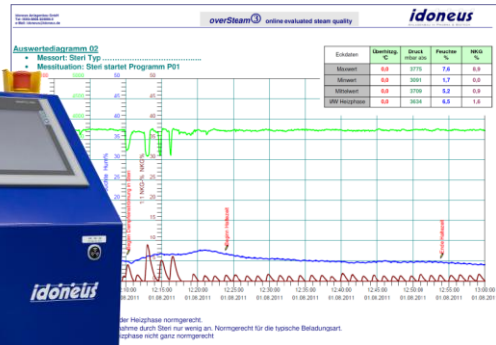
overSteam ³

ONLINE EVALUATED STEAM QUALITY

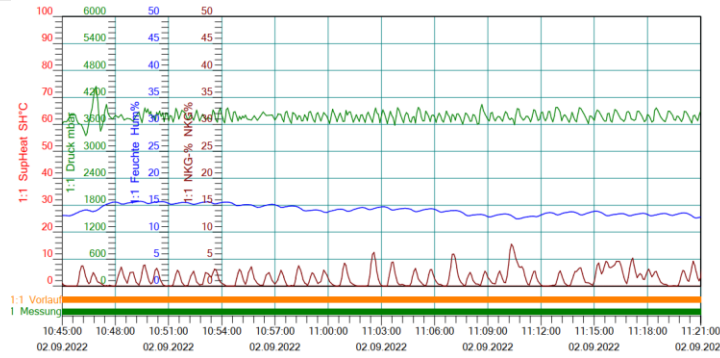
STERILDAMPF-QUALITÄT

PURE-STEAM-QUALITY

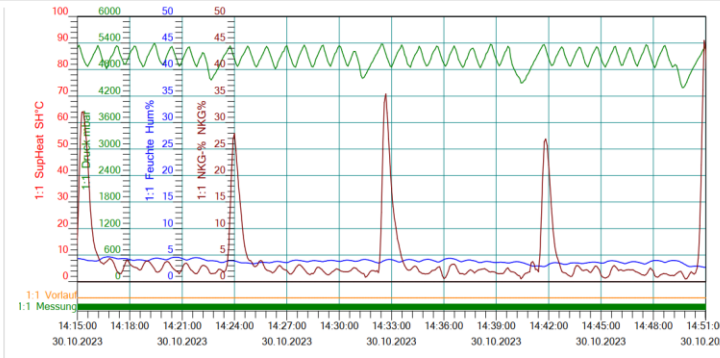
KEY FEATURE FOR
PROCESS-QUALITY



Sterilisier-Dampf → ? → aber welche Qualität



Analog	SupHeat SH°C	Druck mbar	Feuchte Hum%	NKG-% NKG%
Minimalwert	0,0000	3347,8	12,447	0,000
Maximalwert	0,0000	4443,4	15,709	7,771
Mittelwert	0,0000	3778,8	14,287	1,454



Analog	SupHeat SH°C	Druck mbar	Feuchte Hum%	NKG-% NKG%
Minimalwert	0,0000	4500,0	2,829	0,497
Maximalwert	0,0000	5398,8	4,596	35,431
Mittelwert	0,0000	5069,2	3,834	3,821

- Nicht-Kondensierbare-Gase - NKG**
 - Nicht Kondensierbare Gase im Dampf (N₂/O₂/CO₂ u.a. über Speisewasser gelöst eingebracht) behindern den Zugang von Dampf an schwer zugängliche Oberflächen des Sterilisierguts → **unsteril**
- Dampf-Feuchte <> Trockenheitswert**
 - Dampfnässe erzeugt kalte Stellen → **unsteril**
 - Hohe Restfeuchte an Verpackungen oder Filtern gefährdet die Sterilbarriere nach der Sterilisation – Gefahr des Durchwachsens von Keimen → **unsteril**
 - Mitgerissene Feuchte aus dem Dampferzeuger enthält Verunreinigungen → **Pyrogene am Sterilgut**
- Überhitzung**
 - Überhitzter Dampf hat ähnlich schlechte Sterilisierwirkung wie heiße Luft → **unsteril**

- Technische Merkmale**
 - Dampf-Probenstrom ca. **0,6 kg/h**
 - Kondensator luftgekühlt → kein Kühlwasser nötig
 - Inkl. Automatik Anschlussventil u. Schlaucheneinheit
 - Transportrollen integral, leichter Einsatzortwechsel
- Automatisierung u. Software**
 - auf Basis SIEMENS, TIA (alternativ JUMO)
 - Automat. Datenauswertung u. **Protokoll-Ausgabe** inkl. Min- Max- u. Mittelwert-Berechnung
 - integrierbar in kundenseitiges PLS od. Prozess-Datenaufzeichnungs-System
- Kalibrierung**
 - Auslieferung inkl. Qualifizierung u. Werkskalibrierung
 - Rekalibrierungs-Service durch idoneus



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Upstream + Downstream

INDIVIDUAL PROCESS EQUIPMENT



FERMENTER | BIOREACTORS

FILTRATION | UF - DF - UO

CHROMATOGRAPHY-SKIDS

ANSATZ-PREP | CHEM-REACTORS



Komplett-Leistungen | A-Z Complete Services

- ✓ Verfahrenstechnik | Process Tech.
- ✓ Engineering | Design
- ✓ Fertigung | Fabrication
- ✓ Automatisierung | Automation
- ✓ Inbetriebnahme | Commissioning
- ✓ Qualifizierung | Qualification

Sterilizing Steam or **Pharmaceutical Pure Steam** is subject to the requirements for the physical state of the steam in accordance with **EN285** and **DIN58950-7**. Limits are defined here for the content of non-condensable gases (NCG), the moisture content (=1/dryness value) and the maximum permissible superheating of the steam. For all three of the above-mentioned state variables, deviations from the permissible limits can lead to the sterilization items becoming unsterile.

overSteam-3 is a compact measuring system that evaluates the parameters steam moisture, superheat and NCG in one system. It can be permanently installed as an online measuring device in the pipe system, but can also be used alternately at different measuring points (spots), e.g. for cyclic monitoring - at the steam generator or steam consumer.

Sterilizing Steam

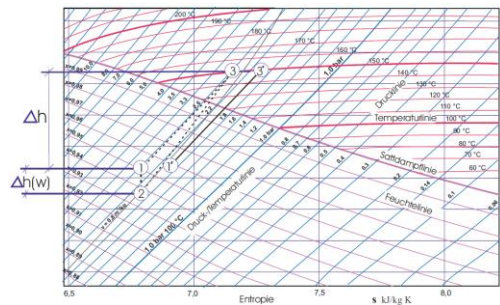


but what Quality

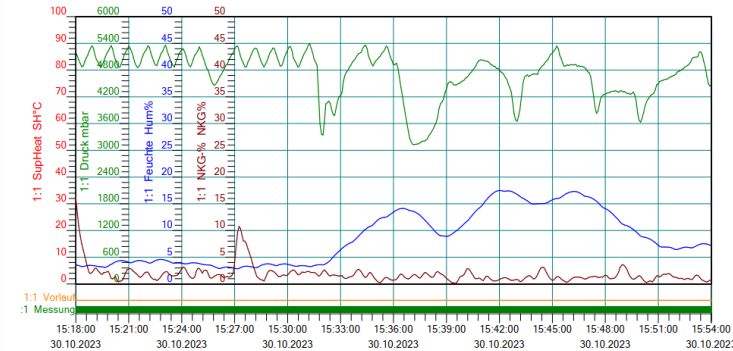
overSteam

3

ONLINE EVALUATED STEAM QUALITY



Mollier-hs-Diagram



Analog	SupHeat SH°C	Druck mbar	Feuchte Hum%	NKG-% NKG%
Minimalwert	0,0000	3128,2	2,843	0,092
Maximalwert	0,0000	5394,4	17,475	13,180
Mittelwert	0,0000	4761,5	8,648	1,879

- ✓ **Non-Condensable-Gases - NCG**
 - Non-Condensable Gases in the steam (N₂ /O₂ /CO₂, etc. introduced dissolved via feed water) prevent steam from reaching hard-to-reach surfaces of the sterilized goods → **non-sterile**
- ✓ **Steam humidity <> dryness value**
 - Steam moisture creates cold spots → **non-sterile**
 - High residual moisture on packaging or filters endangers the sterile barrier after sterilization – risk of germs growing through → **non-sterile**
 - Moisture ejected from the steam generator contains contaminants → **pyrogens on the sterile goods**
- ✓ **Superheating**
 - Superheated steam has a similarly poor sterilizing effect as hot air → **non-sterile**

- ✓ **Technical Features**
 - Steam sample flow approx. 0.6 kg/h
 - Condenser air-cooled → no cooling water required
 - Incl. automatic connection valve and hose unit
 - Transport rollers integral, easy change of location
- ✓ **Automation and Software**
 - based on SIEMENS, TIA (alternatively JUMO)
 - Automatic data **protocol output** including Min, Max, Mean value calculation
 - Can be integrated into the customer's **PLS** or process data recording system
- ✓ **Calibration**
 - Delivery incl. Quali. + factory calibration
 - Recalibration service by idoneus



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