# Cross Industry Oxygen Management Forum

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# Potential sources of Oxygen Intake .

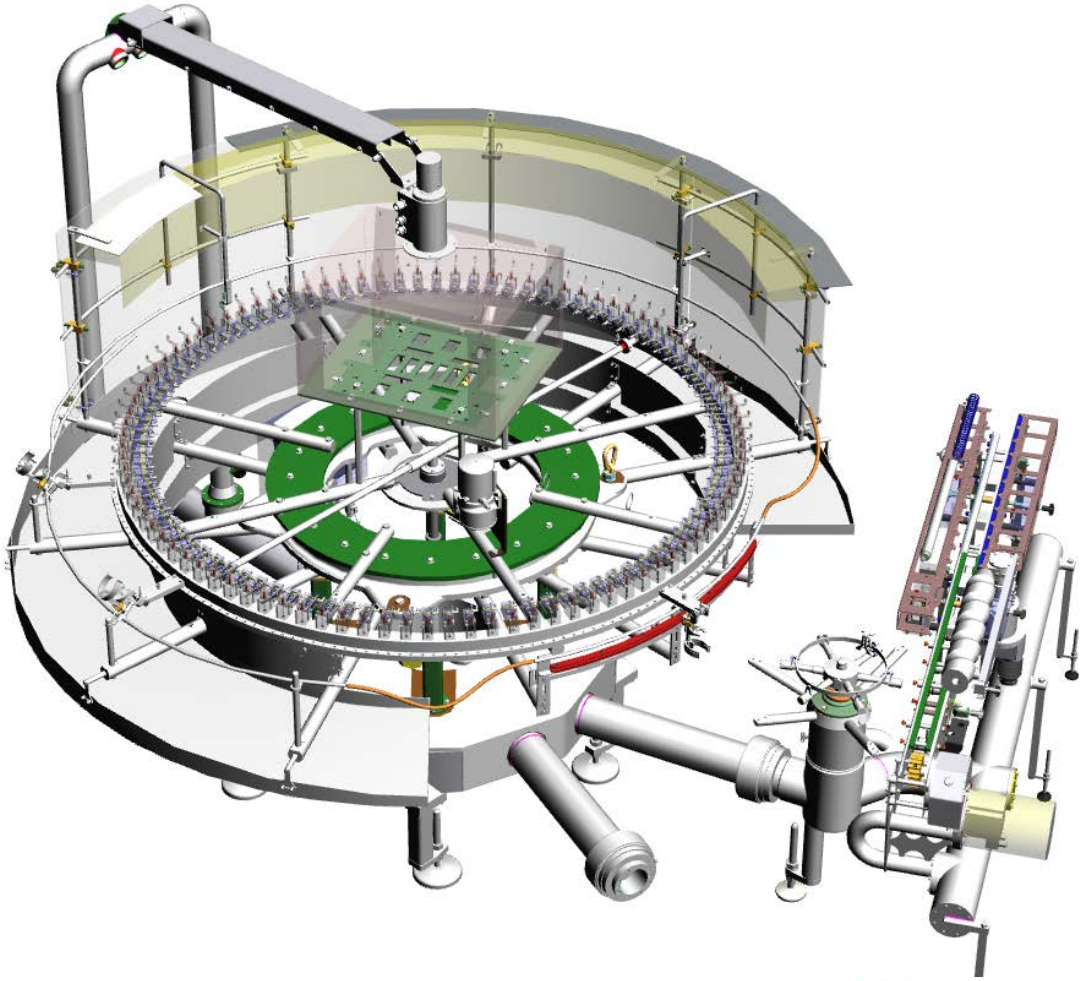
1.Transfer of the wine from storage to the filler --- will be avoided when using CO2/ N2 for pushing out the remaining water after CIP .

2. Remaining water after rinsing and carry over of O2 via Mixing of water and product------usage of degassed water for rinsing , where applicable inert gas flushing as rinsing

3. O2 pick up during the filling phase- ---double preevacuation and inert gas flushing, usage of a a swirl filling tube to establish calm and non turbulent filling.

4.Capping, and gas exchange after capping----flushing of the headspace with inert gas, gassing of the cap chute, liquid nitrogen injection, usage of materials with oxygen absorbing compounds.

# Moduljet – The Next Rinser Generation of KRONES



# Moduljet – Overview

- 1 Channel rinser/ 2 channel rinser
- Electronically actuated
- Electropneumatically controlled
- Water or sterile air or inert gas rinsing possible
- Diving nozzle
- Active gripping clamps

Methods in avoiding O 2 Intake:

- Purge the bottle with inert gas N2 or CO2
- When required use degassed water, depending on bottle shape and emptying time 5-6 ml remain in the bottle.



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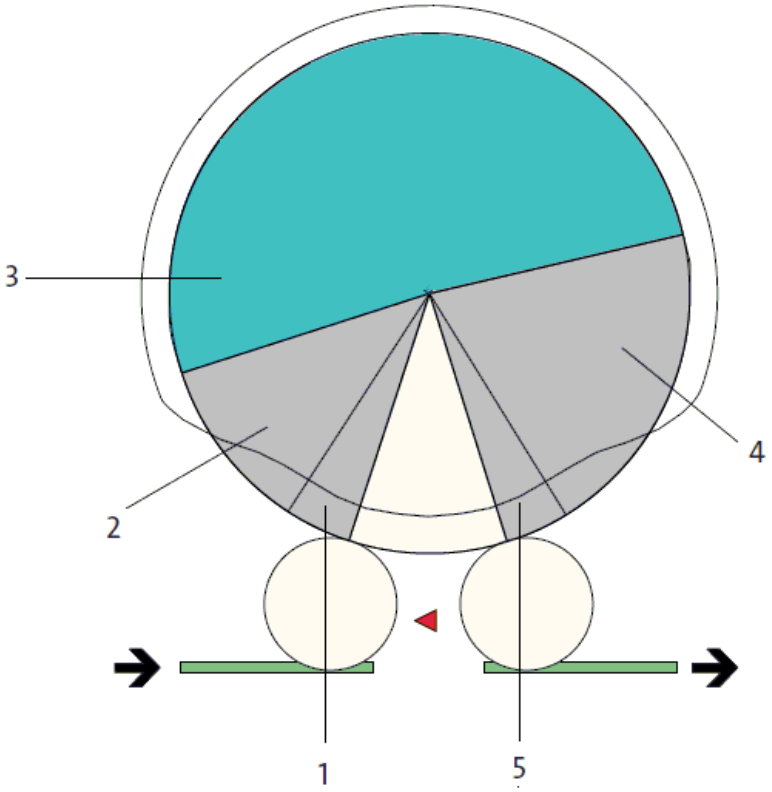
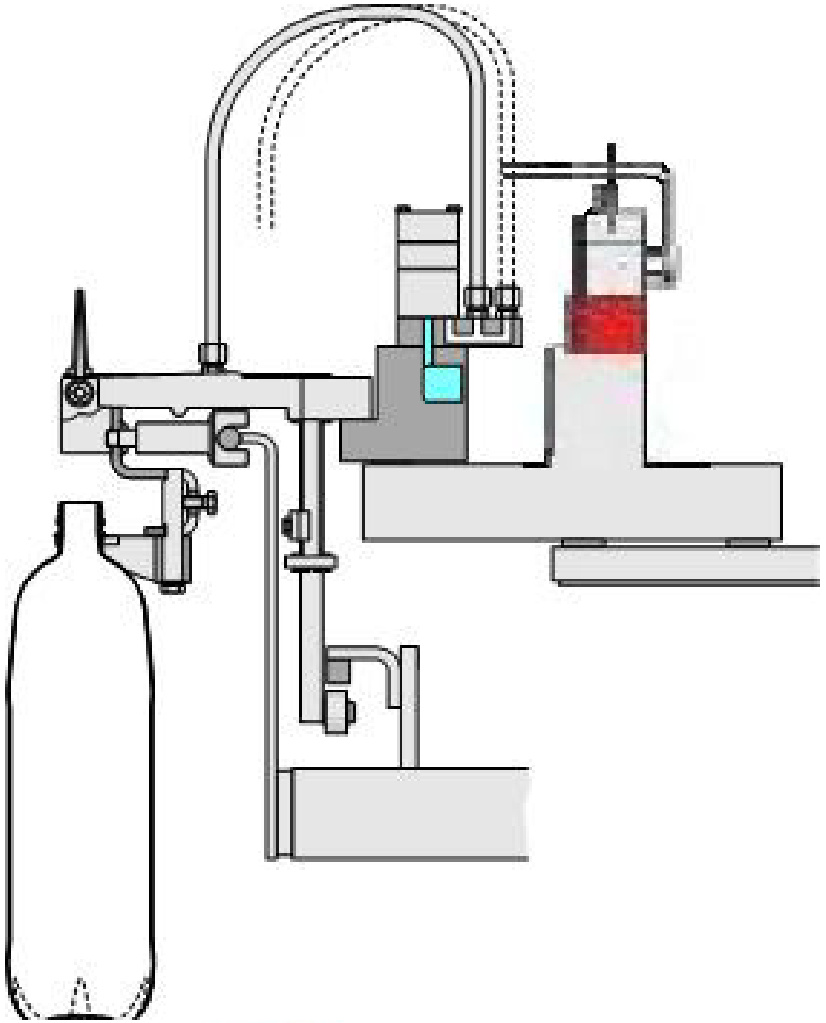
# Moduljet – Treatment phases




1 Infeed
2 Bottle inversion phase
3 Sterile-air blowing
4 Bottle return phase
5 Discharge





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Filling and Capping is the last step in the process chain, any O2 intake can not be corrected.

**Tab. 2: Sauerstoffzunahme bei verschiedenen Kelleroperationen**

| Behandlung | $O_2$-Aufnahme in mg/l |
|---|---|
| Weinabstich | 0,2–1,5 |
| Pressen ohne $CO_2$-Überlagerung | bis 6,6 |
| Pressen mit $CO_2$-Überlagerung | 0,2 |
| Pumpen | 0,1 |
| Schichtenfiltration | 0,2–2,2[1)] |
| Kieselgur-Filtration | 1,1 |
| Cross-Flow-Filtration | 0,5–4,3[2)] |
| Membranfiltration | 0,2–2,1[1)] |
| Kaltstabilisierung | 4,3 |
| Weinstein-Stabilisierung | 6,1 |
| Elektrodialyse | 0,2–2,7 |
| Abfüllung | 1,9–7,1[3)] |

[1)] Anfang der Filtration [2)] kleine Partien [3)] TPO „Total Package Oxygen" – Gesamtsauerstoffmenge der Verpackungseinheit (Summe von gasförmigem $O_2$ im Kopfraum und im Wein gelöstem $O_2$)

Total Package Oxygen as a sorce of changes in the aroma profile and flavonoids to turn bitter



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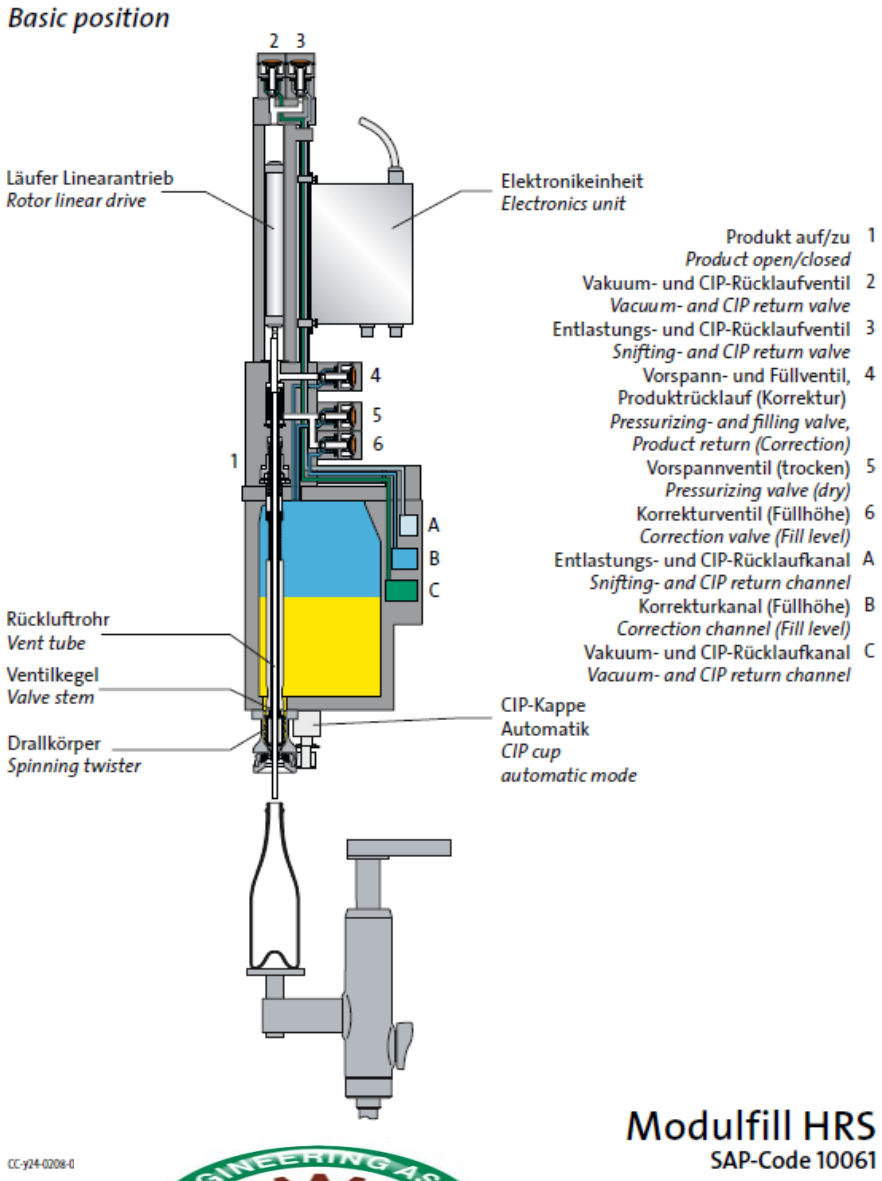
# Modulfill HRS 10061 (VKPV-ACF)

- Electropneumatic control system
- Automatic infinitely adjustable vent tube (linear drive)
- CF fill level correction with Co 2
- Shorter stroke
- Product feed with swirl insert
- Single or multiple evacuation
- Filling programme selection via touch-screen
- Use of magnetic clutch

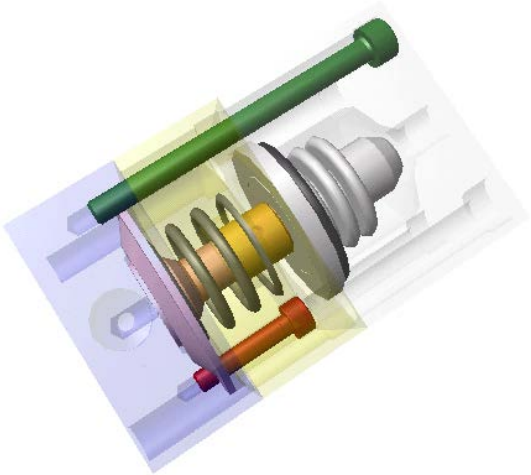
Customer benefits:

- Shorter conversion times
- Optimised hygiene
- Increased process safety and reliability
- Greatest possible filling accuracy
- Enhanced product quality



# Hygienic Pneumatic Control Valves

- Air-closed; spring-opened
- Easy exchange and maintenance
- Hygienic bellow design (PTFE, EPDM, V2A)
- Standard component for all filling systems



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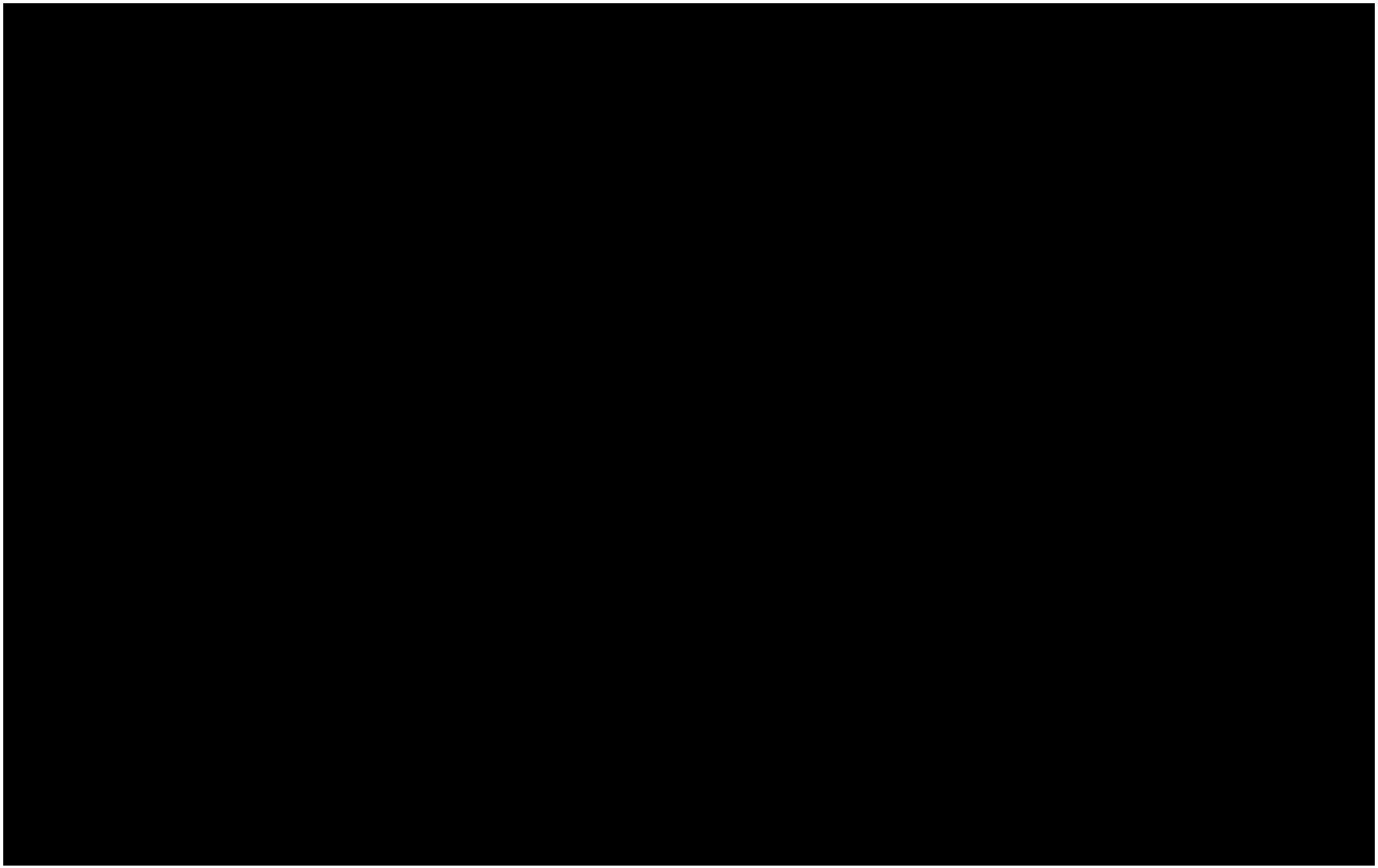
# Modulfill HRS 10061 (VKPV-ACF)



# Filling Technology

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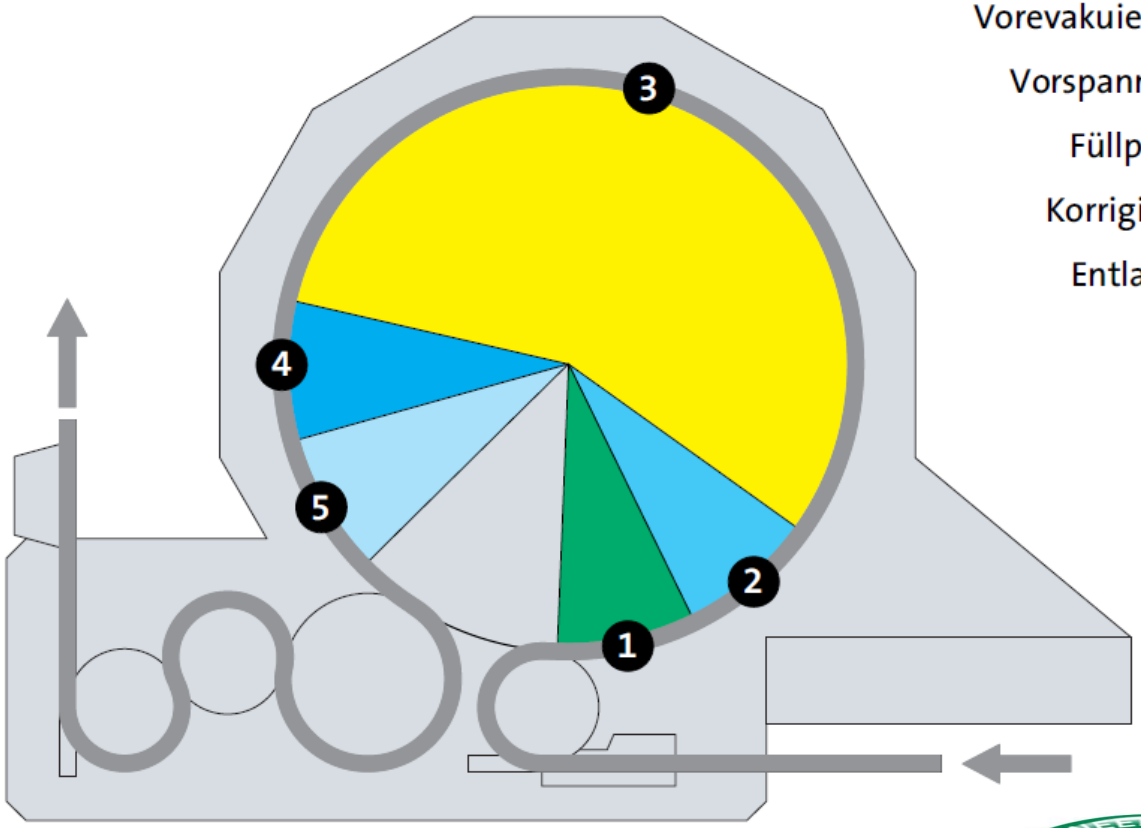
## Modulfill HRS (10061)

Verfahrensschritte - *Procedural steps*




| | | |
|---|---|---|
| Vorevakuierung | 1 | *Pre-evacuation* |
| Vorspannung | 2 | *Pressurizing* |
| Füllphase | 3 | *Filling phase* |
| Korrigieren | 4 | *Correction* |
| Entlasten | 5 | *Snifting* |



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1.In the first picture the transfer of the bottle is shown and the gassing of the headspace

2.Second picture shows the chute with the gassing of the closures

3. The complete assembly

Following the test approach the total oxygen pick up has been reduced frim 4,2 mg/ l to 3,2 mg / l.

Pick up during filling has been at 0,2 mg / l

Consumption of N2 for the degassing 20 kg / h

# Alternative meassures of O 2 reduction

1.High pressure water injection works with foaming liquids such as beer to drive out O2 from headspace

2. Bubble breaking and underlid degassing with CO 2 will work with cans

3. Liquid Nitrogen injection which will be evapurated and push out O 2 from headspace of the bottle. Also used in the PET industry to stabilize bottles

4.Use of Vitamin C and SO 2 to absorb oxygen.

Thank You!