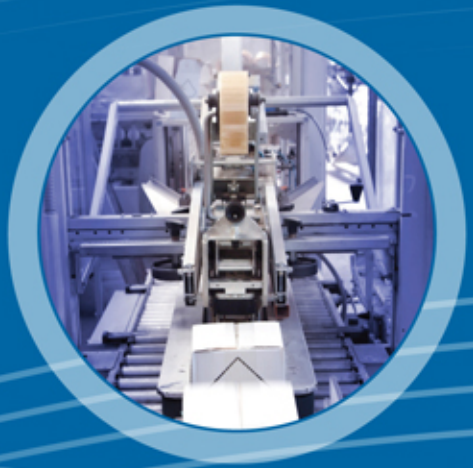
Connecting People, Science and Regulation

One Isolator for different filling machines and all packaging Formats



04.11.2014

Frank Lehmann, SKAN AG, Head of sales engineering

Content

- Modular standard Isolator and features
- Transfer options
- Ready to use packaging material
- Sample applications
- Fast track project compared to conventional Isolator technology
- Summary

One aseptic barrier Isolator for…

Applications:

- Small scale production, startup batch sizes, clinical trial, stability batch, formulation, compounding, stopper refilling, aseptic toxic handling, …

Environment:

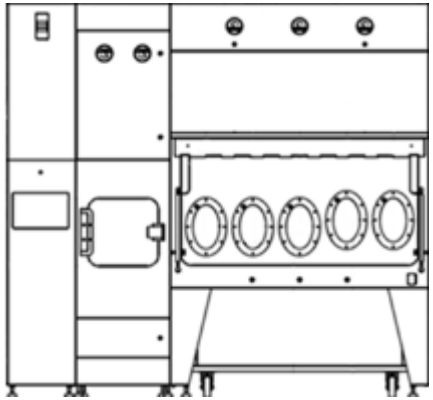
- aseptic conditions
- high potent pharmaceutical ingredients

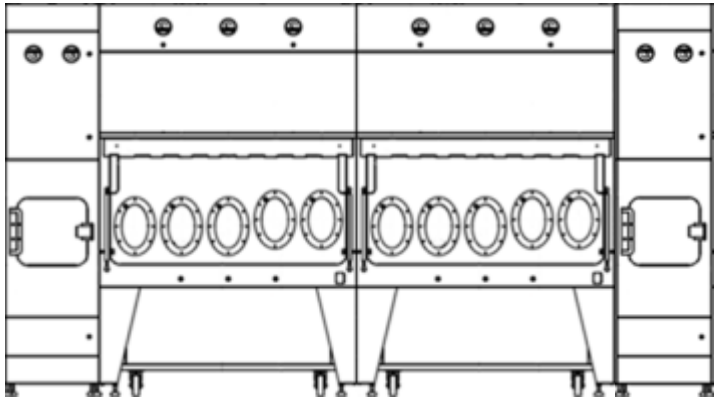
Packaging formats:

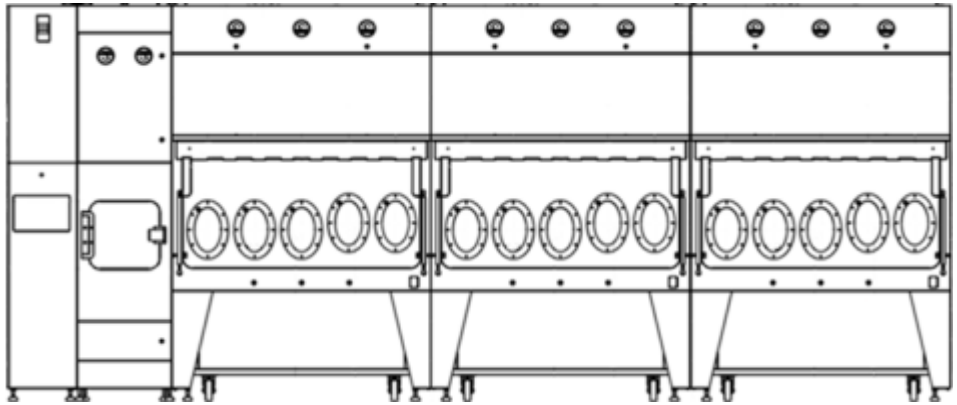
- glass bottle / vial, syringe, medical device, bag, ampoule, other…

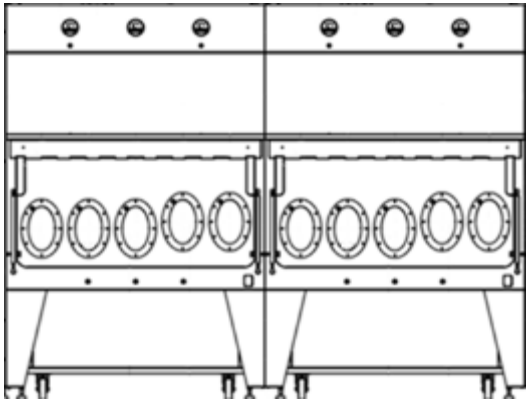
The solution:
the adaptable, multifunctional Isolator platform

Isolator technology
A large choice of possibilities









Isolator technology
Scale up and production flexibility

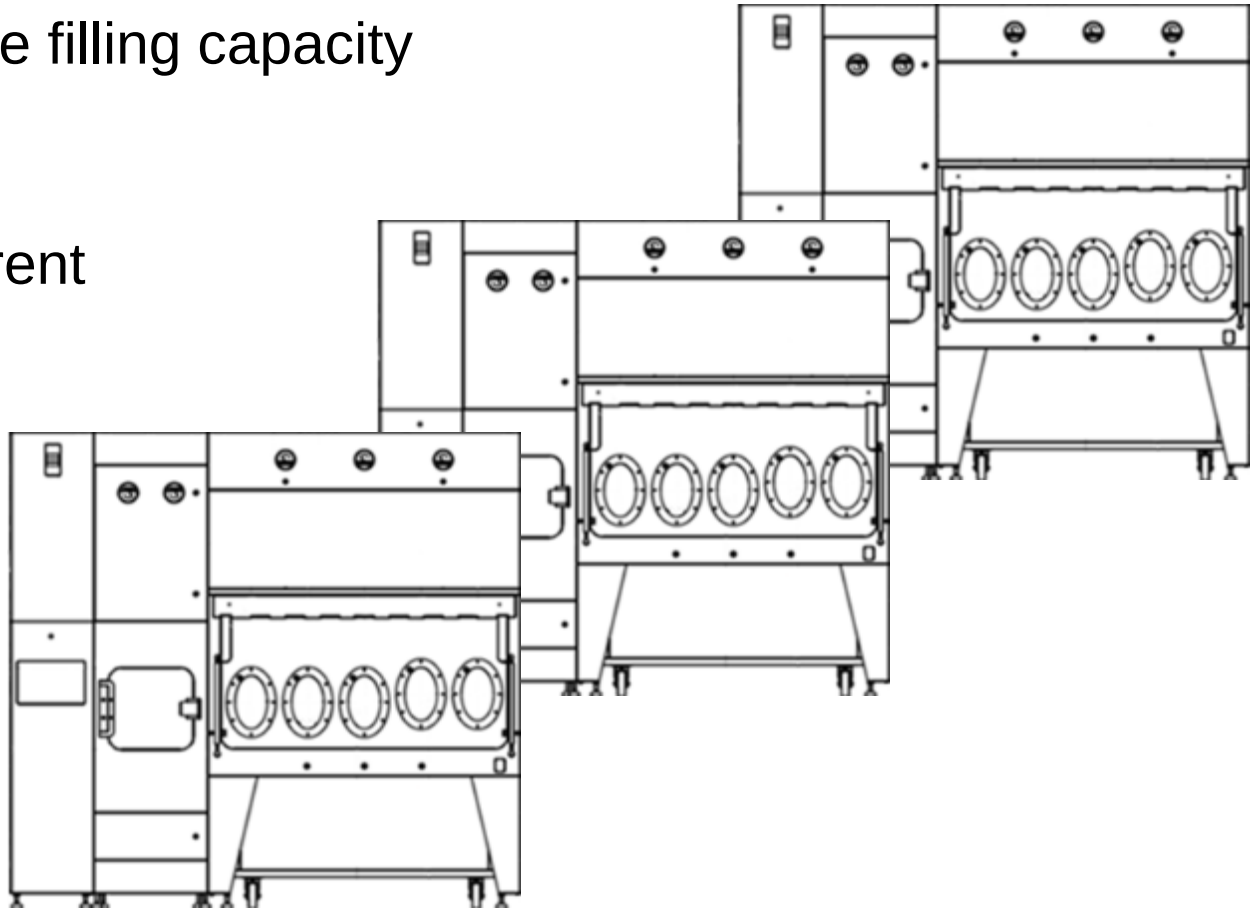
Simple to scale up the filling capacity

or

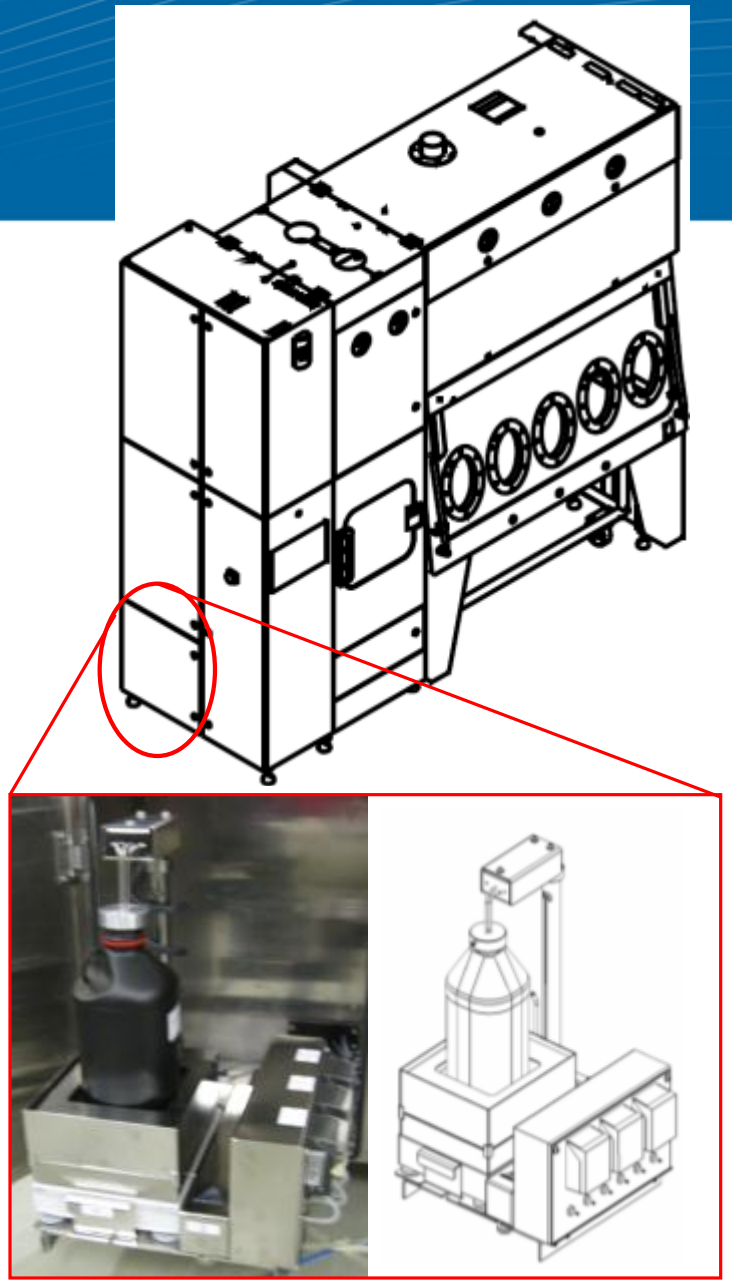
parallel filling of different

substances in one

cleanroom

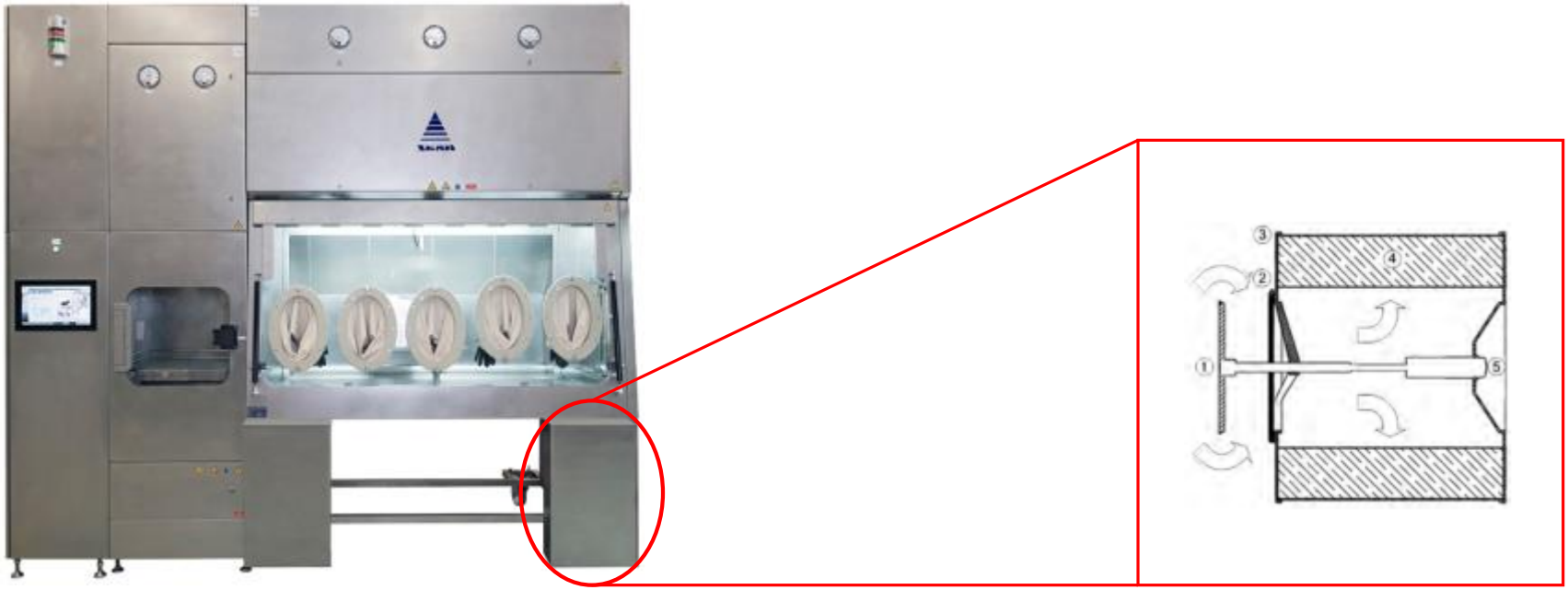


Decontamination with integrated H2O2 system

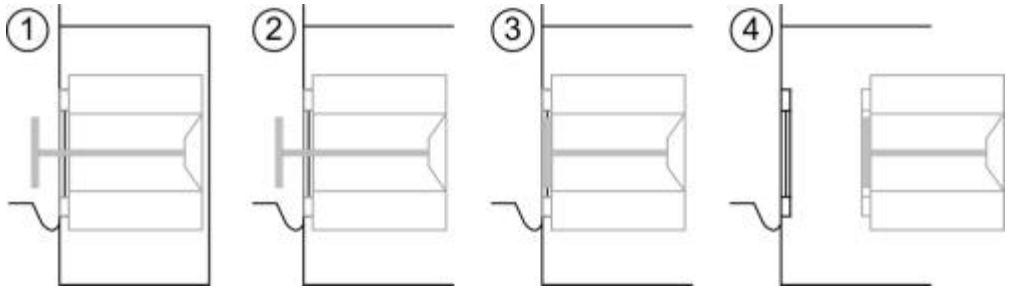


- Easy to use
- 100% automatic
- Decontamination SAL 10^{-6}
- Working chamber < 210 min

Optional safe change filter system for handling of high active ingredients

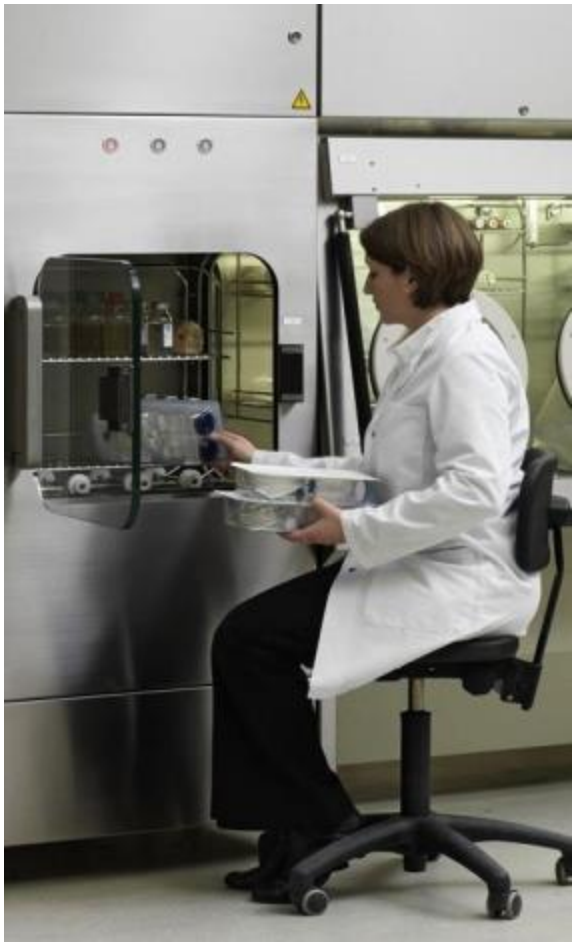


Safe Change Filter System 1 - 4



Isolator technology
Material transfer with H2O2 decontamination

- Rapid transfer
- Integrated H_2O_2 decontamination system
- Grade A, ISO 5 with unidirectional air flow
- Automatic leak test
- Independent control system, air handling and deco-system
- Transfer time $\geq$15 minutes



Isolator technology
Transfer of Material

First setup and material:

- front-door / main chamber

Continuous transfer:

- RTP ports
- SART system (liquid)
- Rapid H_2O_2 airlock(s)
- Sterile endless tubing systems
- mousehole(s)

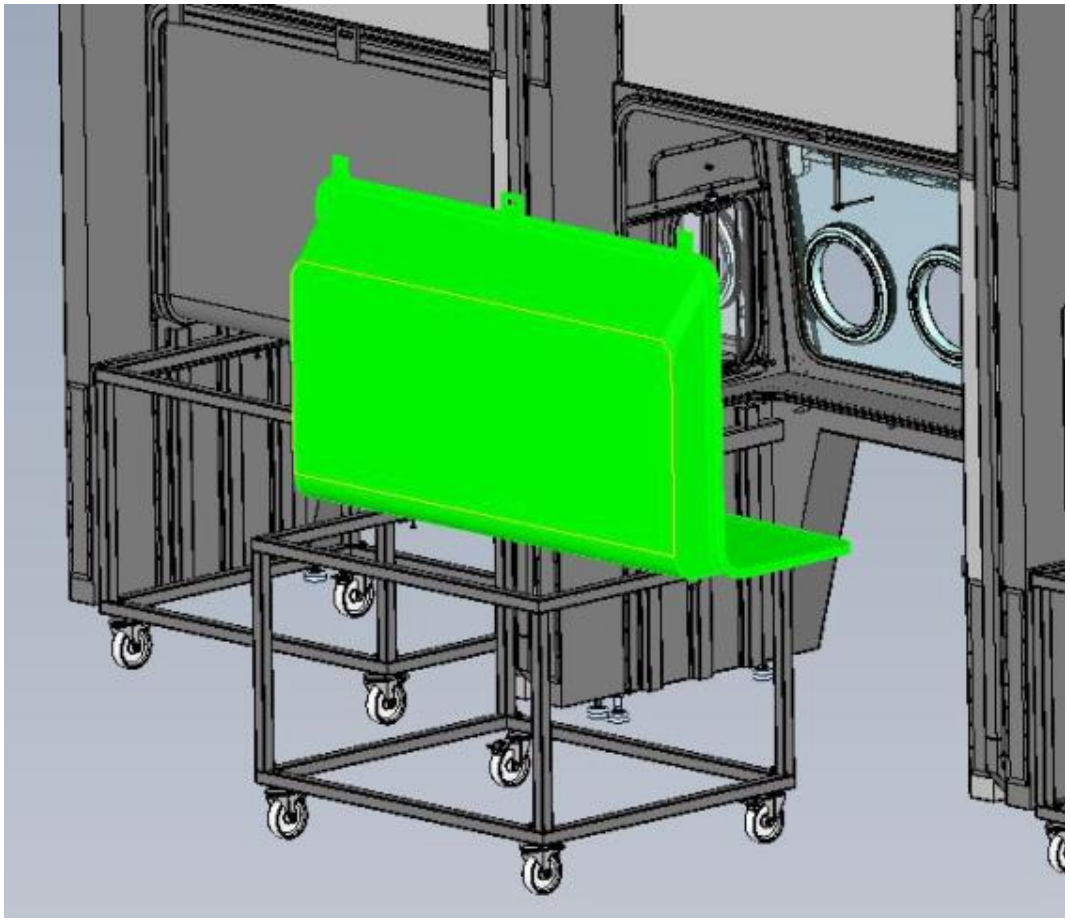
Foto: Getinge

Isolator technology
Standard options

- Non-viable Monitoring stand alone unit
- Integrated particulate counter with isokinetic probe
- Air velocity sensor
- H_2O_2 sensors
- TLV sensor
- Glove stretcher
- Optional Safe-Change filter system

Foto: Bausch + Ströbel

Isolator technology
Backside with interchangeable L-Flange



Isolator technology
L-Flange with inflatable sealing (red)

Ready to use (RTU) packaging material

Foto: Stevanato Group

- Ready to use means:

  ➔ washed, sterilized and packed under aseptic conditions

- Stoppers, caps in bags
- Washed, depyrogenated glass bottles in foil
- Sterile syringes in TUBs

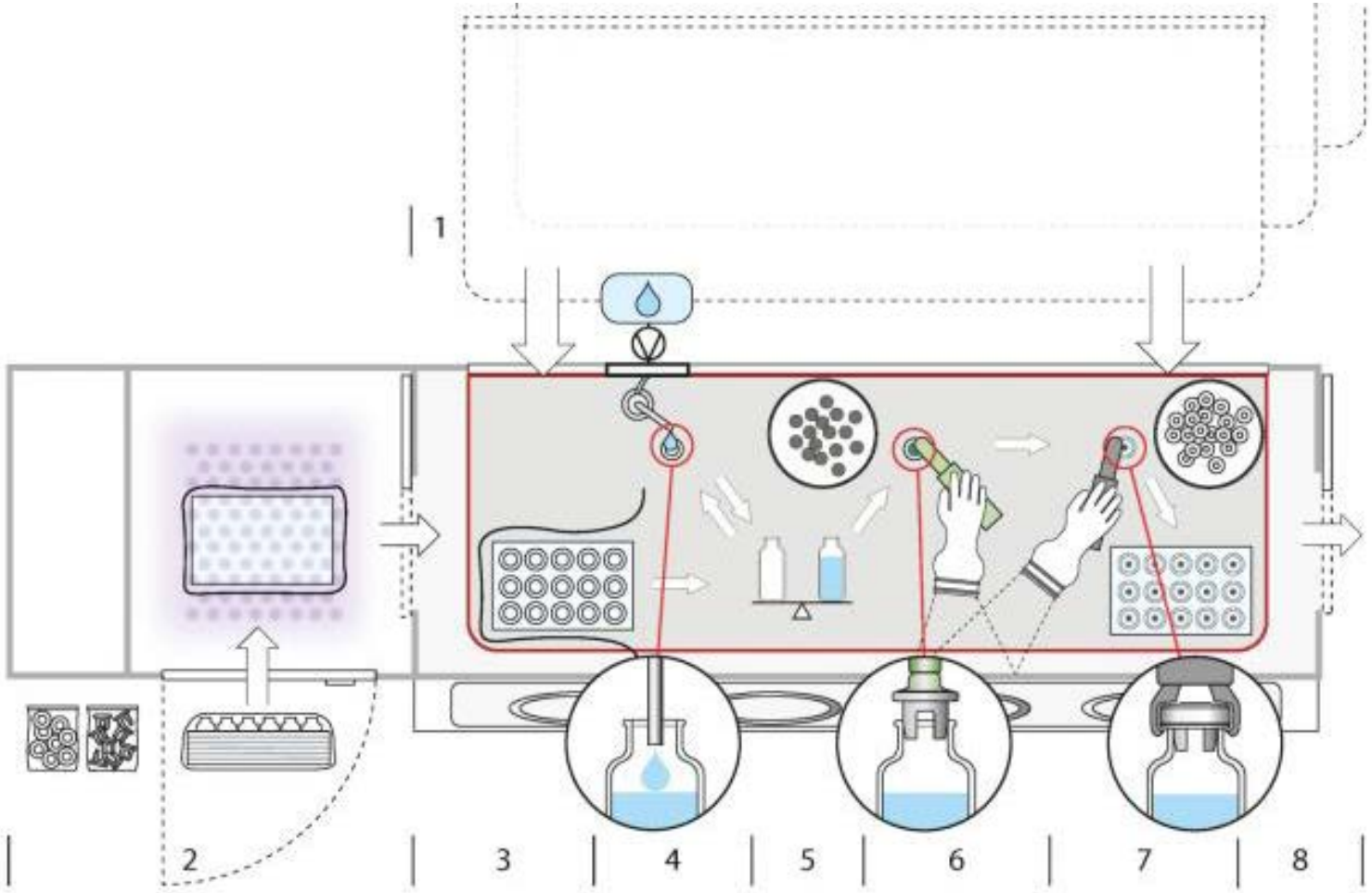
- All packaging material needs to be H_2O_2 resistant

Foto: Schott AG

Small Scale GMP Production
Compounding process

- Connection of bulk vessel with L-flange
- Transfer of needed raw materials with RTP, SARA, etc.
- Weighing
- Blending
- Disconnection of bulk vessel

Small Scale GMP Production
Manual transfer, process automated



Small Scale GMP Production
Manual transfer, process automated

Foto: Bausch + Ströbel

Small Scale GMP Production
Manual transfer, process automated

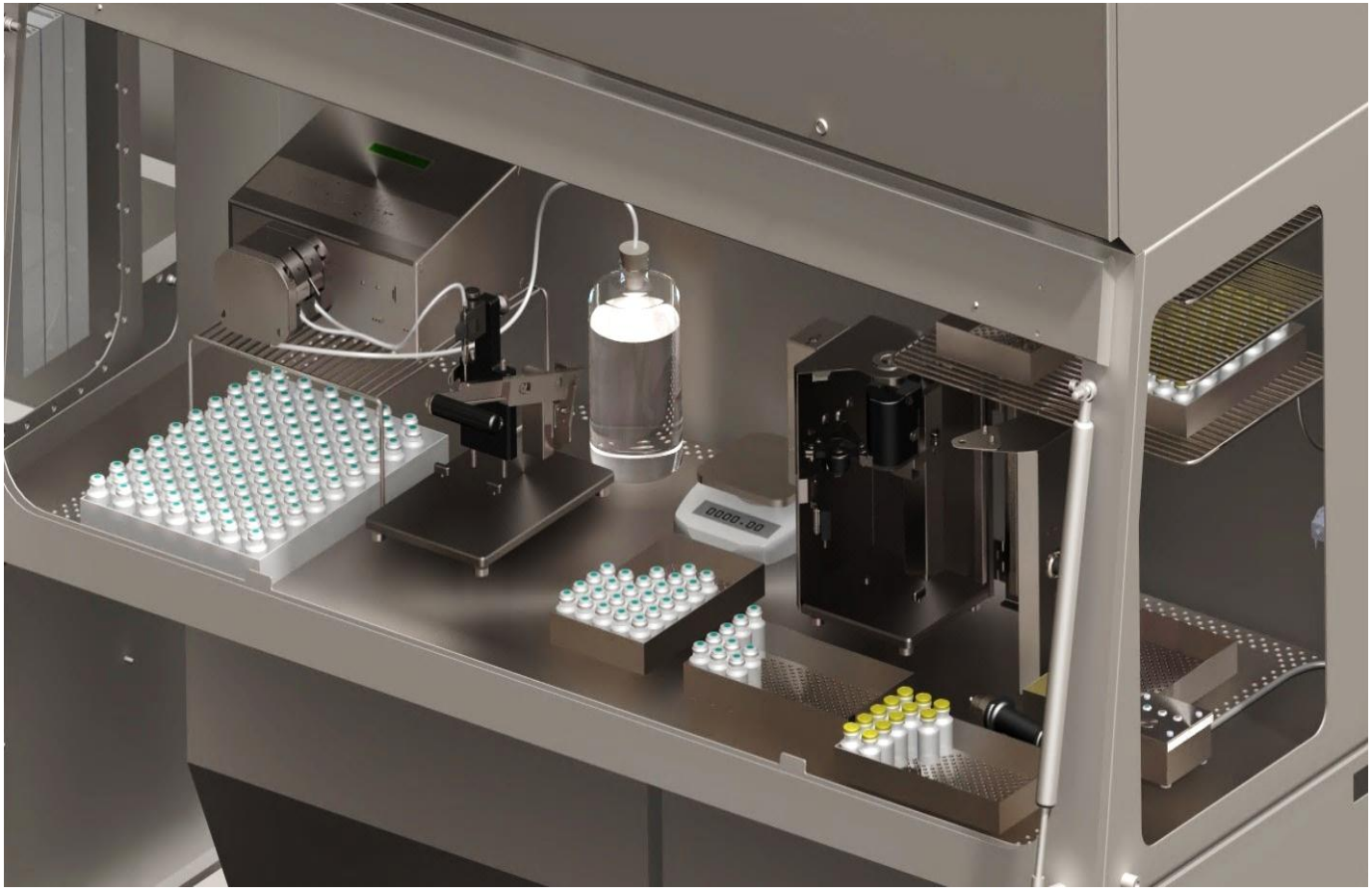


Foto: Aseptic Technologies

Small Scale GMP Production
Bag filling (aseptic) max. 600 bags/h (500ml)

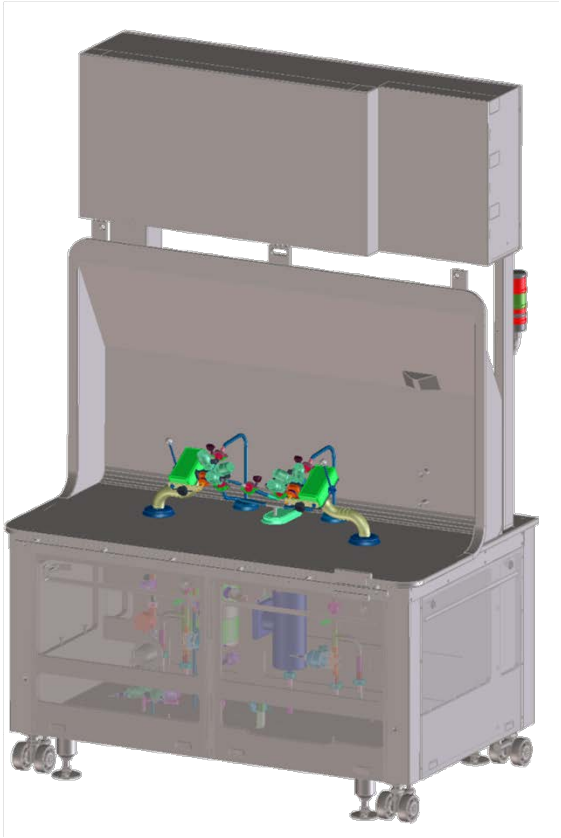


Foto: Bausch + Ströbel

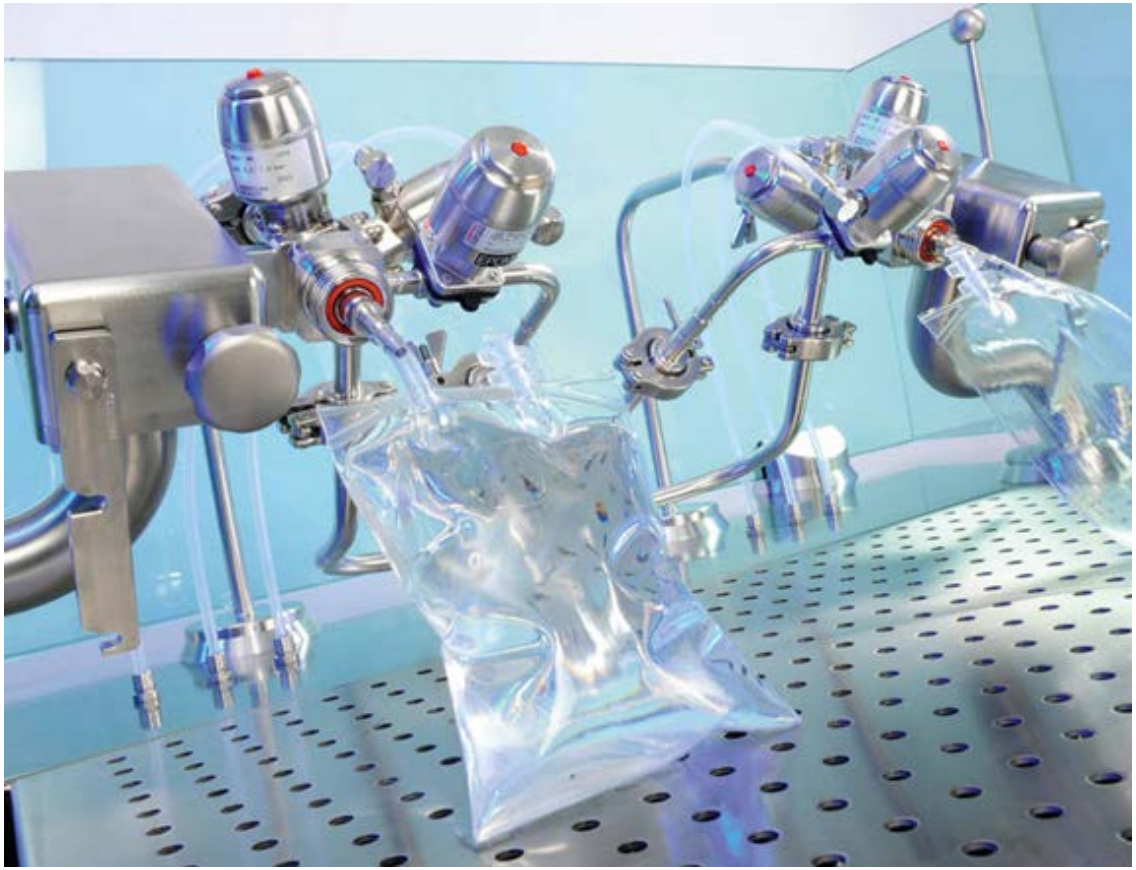
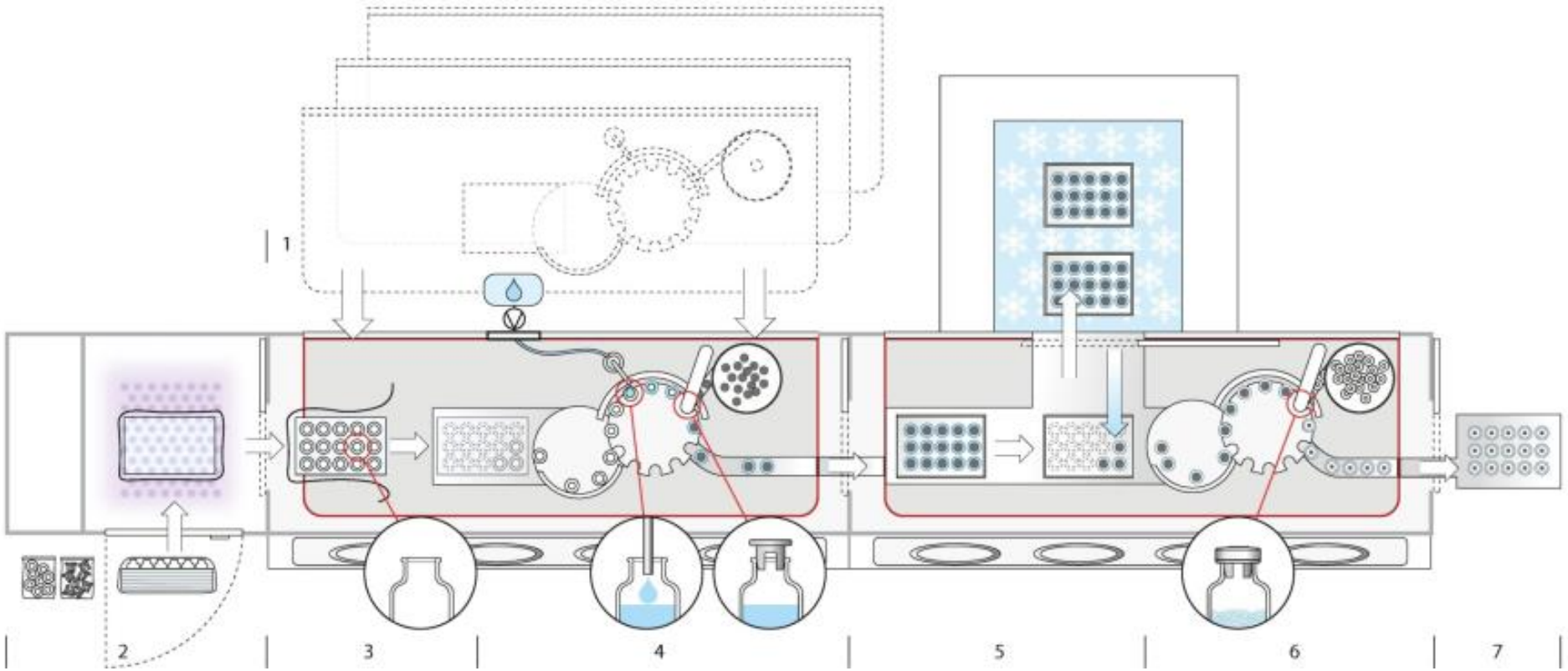


Foto: Harro Hoefliger

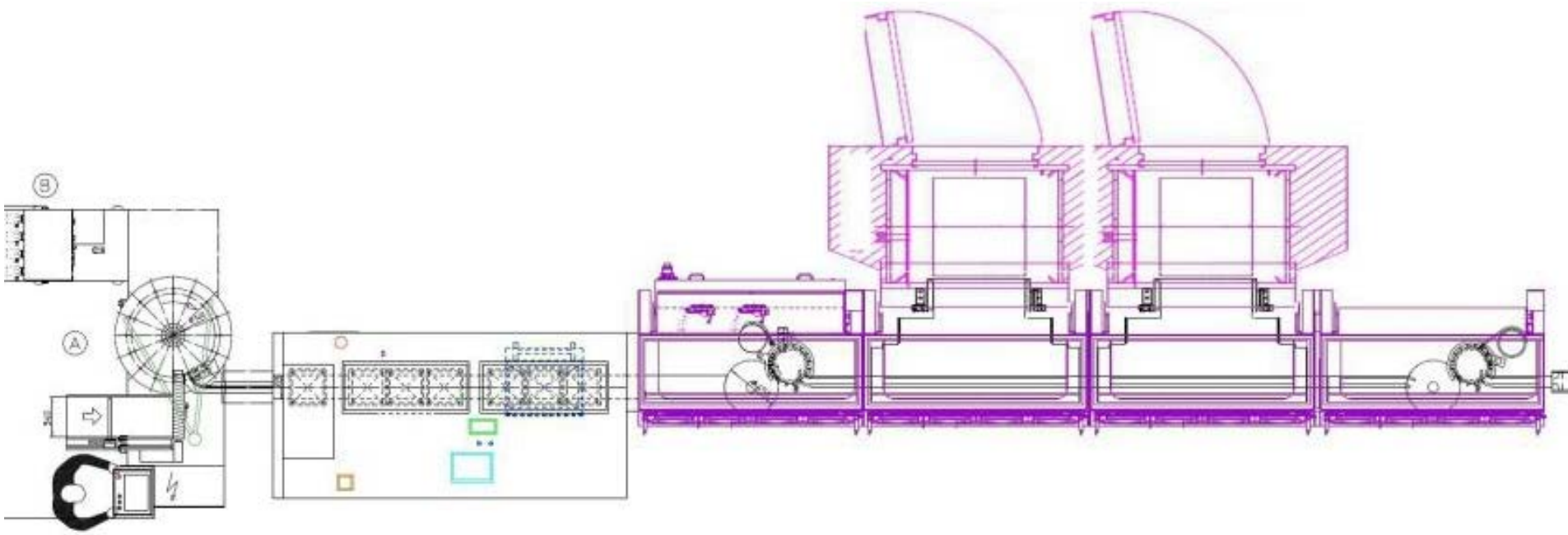
Small Scale GMP Production
Vial filling, stoppering, lyophilisation, capping



Small Scale Filling
Detail vial filling, stoppering, capping machine

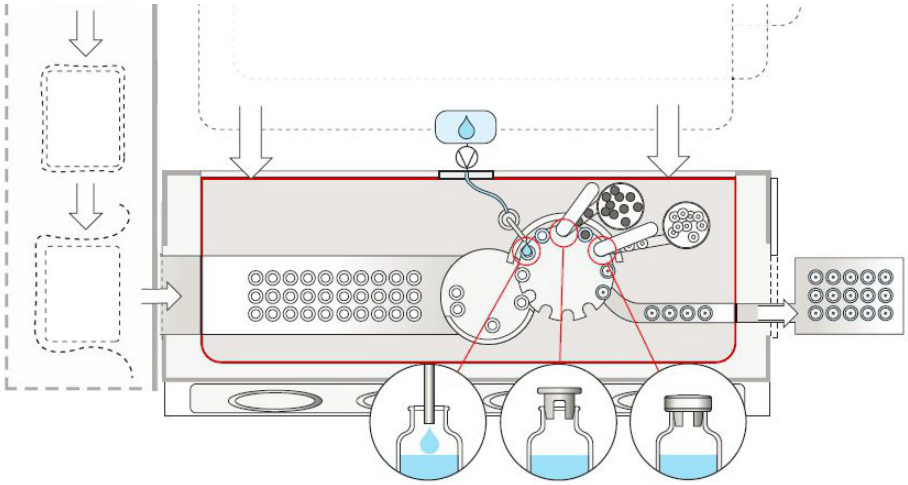
Foto: Bausch + Ströbel

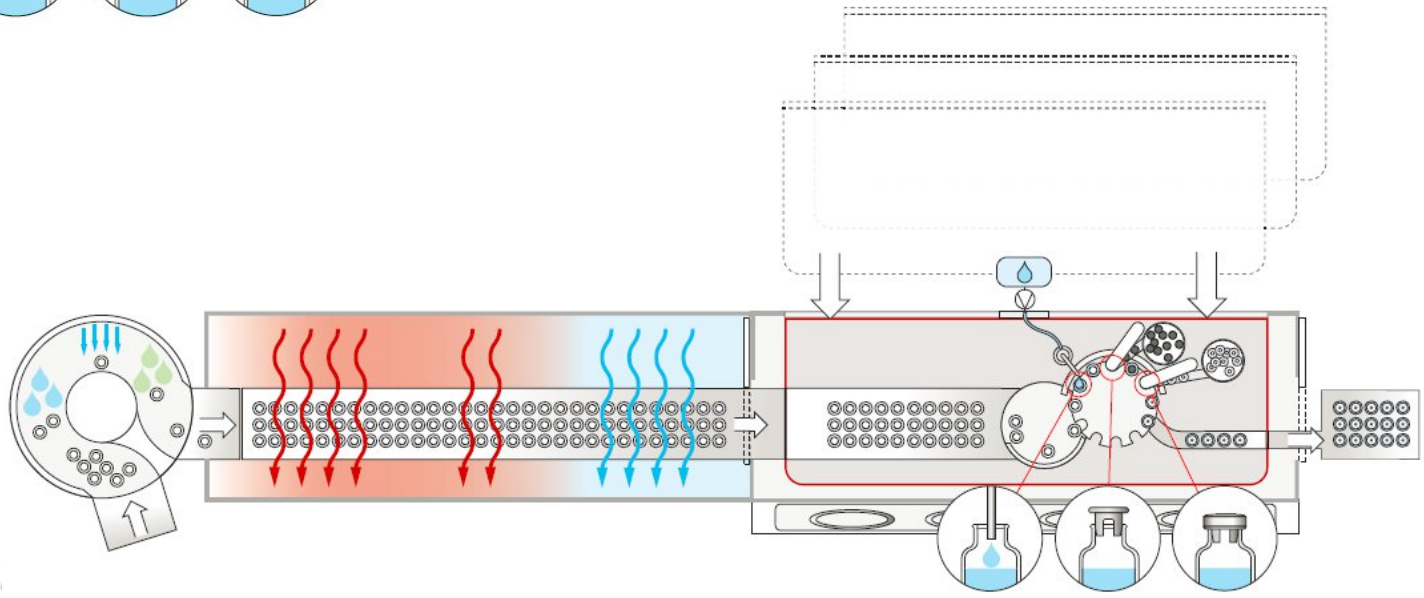
Small Scale Process
3000 bulk vials/hour with lyophilisation, capping



2x standard lyo size of 4.5m^2,
optional automatic loading system

Small Scale GMP Production
3000 bulk vials / hour process





Medium Scale
3000 bulk vials / hour

Foto: Bausch + Ströbel

Foto: SKAN AG

Medium Scale
3000 bulk vials / hour

Foto: Bausch + Ströbel

Stopper processor system

- Stopper/cap, siliconising, sterilisation, drying
- Sterile transfer of stoppers and caps into endless bags
- Second bag to exit the isolator
- Third bag outside isolator for transport

➔ Ready to use for several filling lines in other rooms / buildings

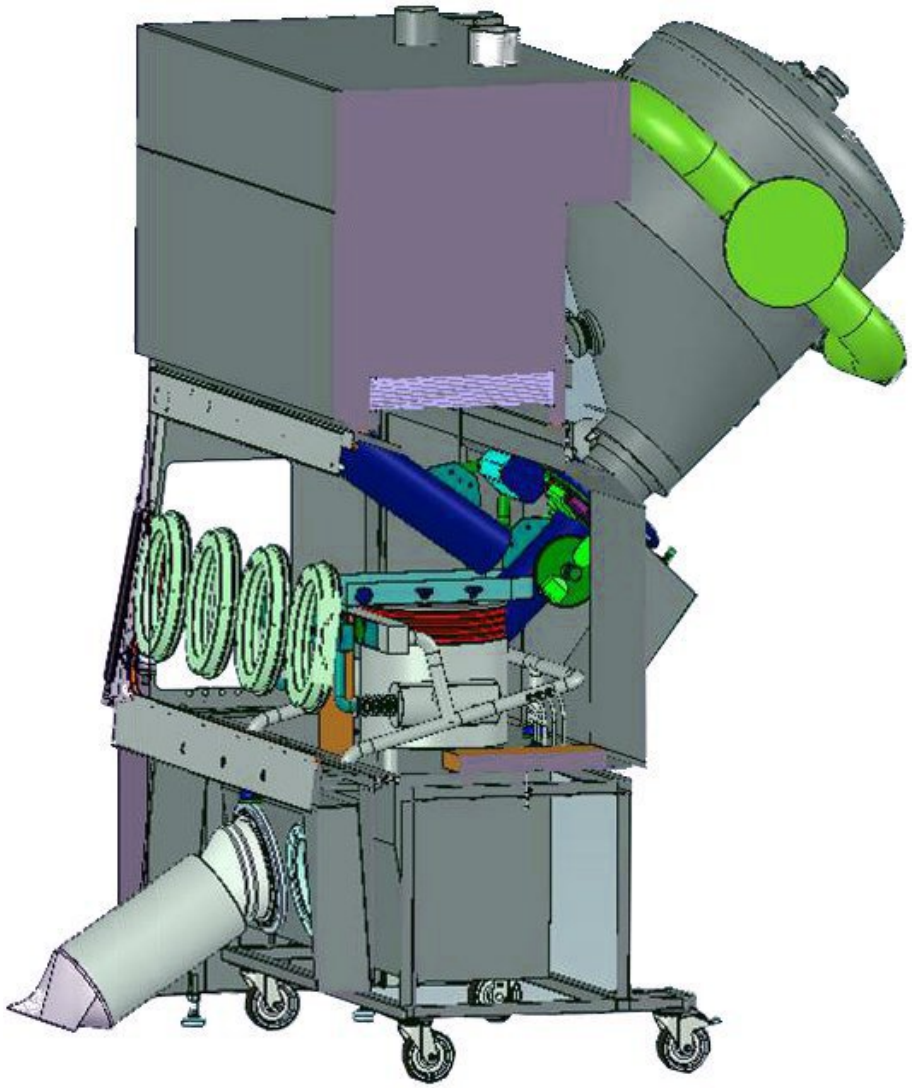


Foto: ATEC Steritec GmbH

Small Scale – Closed Vial Versatile Robot Line

One single robotic machine to fill several ready-to-use containers:

- Closed Vials (filling, laser re-sealing, snap-fit capping)
- RTF glass vials (filling, stoppering, alu capping)
- RTF syringes (filling, plungering)

All containers are supplied and processed in nests

Easy change of the robot heads

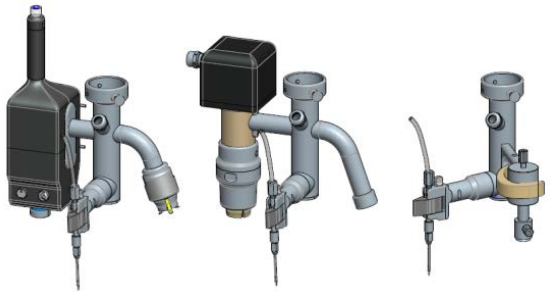


Foto: Aseptic Technologies

Small Scale – Closed Vial Filling, Laser Re-Sealing, Capping

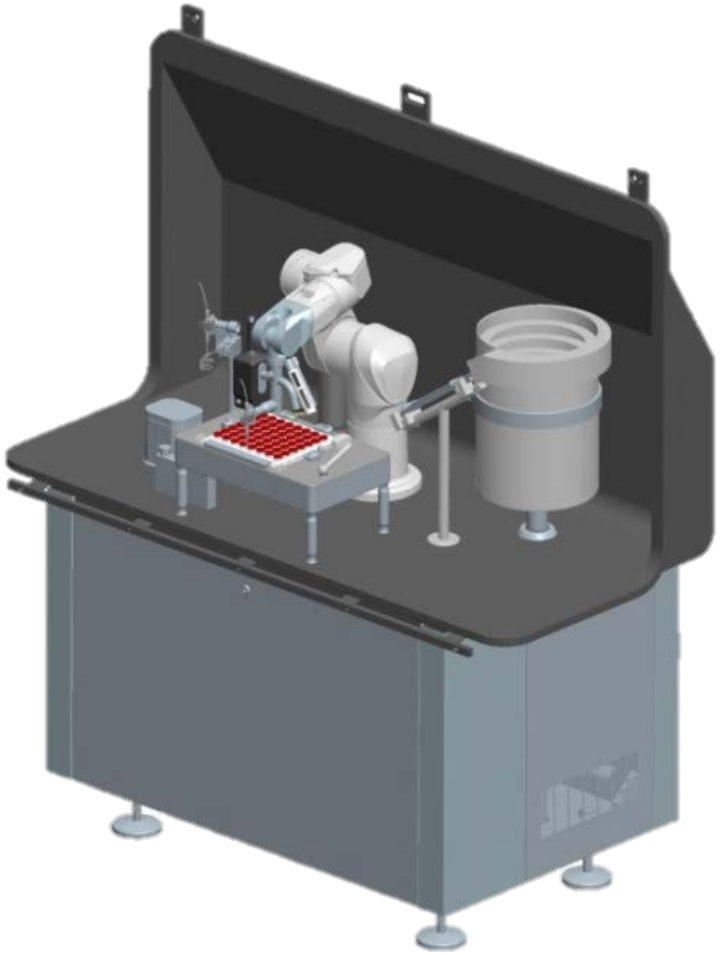
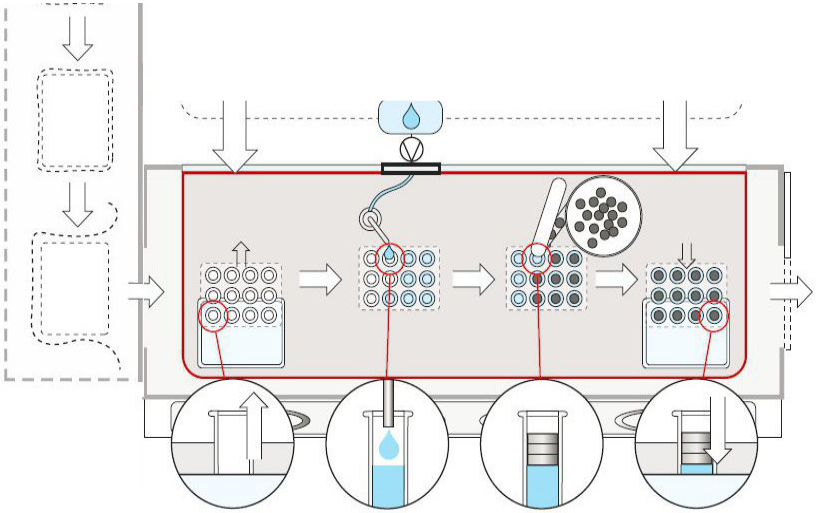
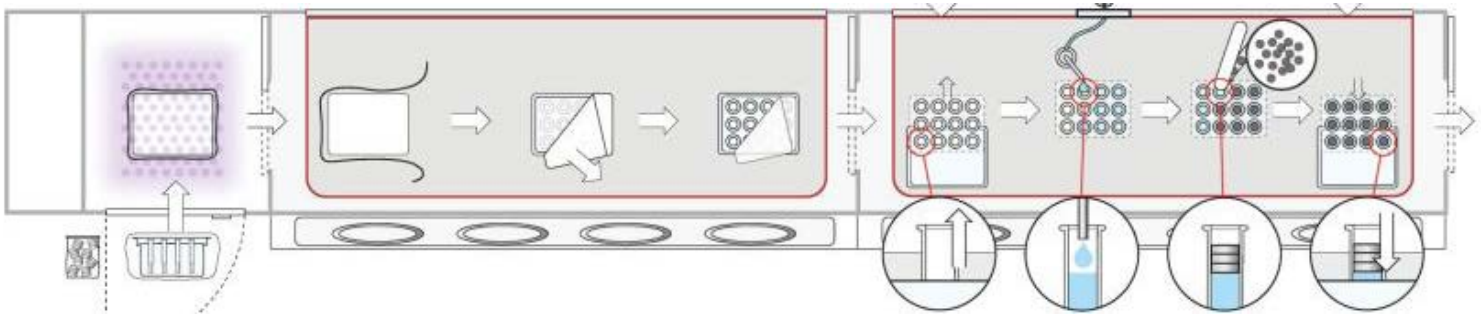


Foto: Aseptic Technologies

Small to Medium Scale
Up to 4000 nested syringes / hour





Medium Scale
Nested Syringe filling (4000 / h)

Foto: Bausch + Ströbel

Small Scale GMP Production
Nested Syringe Filling (front side)

Foto: Bausch + Ströbel

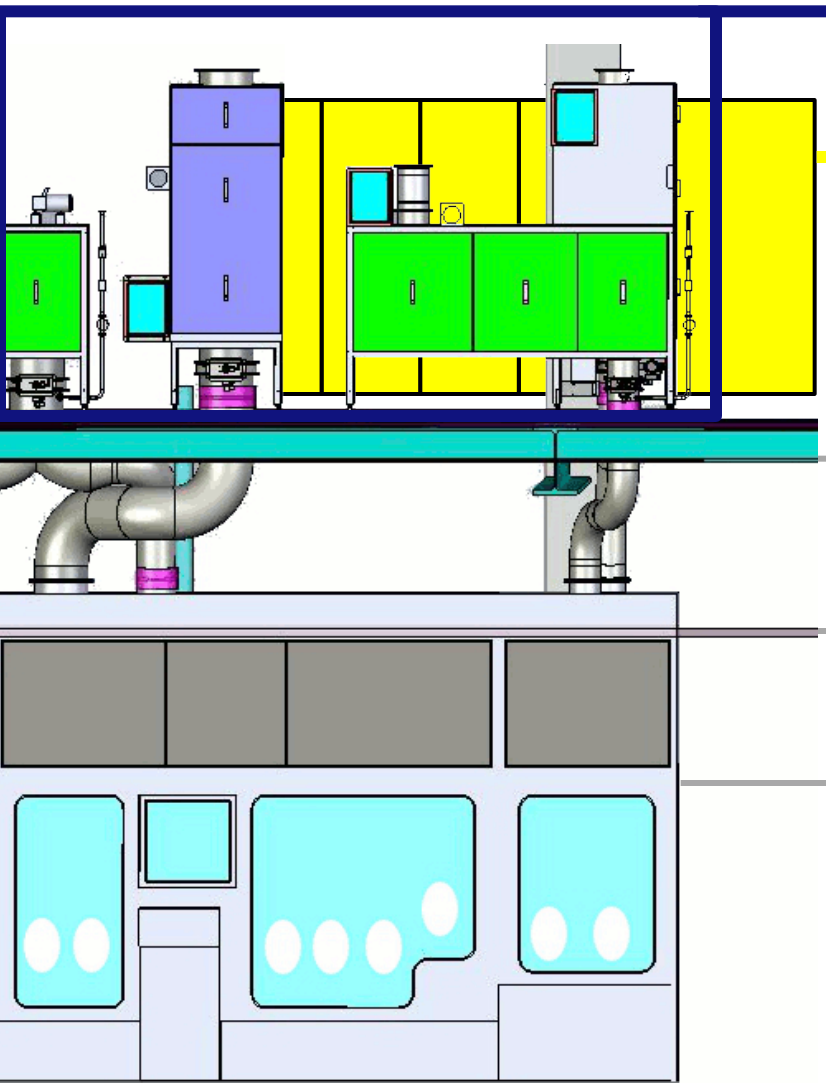
Small Scale GMP Production
Plasma TUB decontamination

Foto: Groninger

Manual TUB de-nesting, automatic filling, stoppering

Foto: Groninger

Conventional Line <> Fast Track Projects Small Scale Line



air handling units

switchboards

pneumatics

H_2O_2 system

building structure

piping, cableway

3m cleanroom ceiling

Isolator

filling machine

Conventional Line <> Fast Track Project Small Scale Line

- large technical area and cleanroom needed
- many interfaces to building structure, HVAC, media,
- more equipment's like WFI, steam

- long project time line
  - FAT after 14-20 months
  - Ready for media fill 23- 33 months

- extensive custom made design and qualification
- high investment cost

- everything inside the smaller cleanroom
- only power and compressed air needed
- air from the room, back to the room with catalytic converter
- short delivery time, quick setup
  - FAT after 9 months
  - Ready for media fill 12 months

- design docs and qualification follows standards
- low investment cost

Cost comparison (3000 2R vial per hour, 1.5m^2 lyo, isolator)

Conventional line

- glass vial 0,06 €
- WFI up to 0.32 € / vial
- tunnel el. power 0.01 € / vial

- cleanroom, building
- technical area needed

- > 6,0 Mio € equipment's
- engineering company's

- Requalification of add. equipment

Small Scale Line

- RTU vial ~0.35 – 1.50 €

- H_2O_2 <0.001 € / vial

- cleanroom, building -30% m^2
- NO technical area

- 2,5 Mio € equipment's
- low engineering effort

All data from customers, SCHOTT, Bausch+Ströbel, Stevanato group

Small Scale Filling Summary

With the modular isolator and the described filling equipment, a flexible solution for small scale filling under aseptic, toxic conditions can be realized.

The isolator also protects the operator and the environment from hazardous material, which is processed inside. The filling equipment allows with adequate handling by the operator an automated output of 300 up to 70’000 objects per day/batch, depending on the automation grade of the system.

For small batches and clinical trials, modular filling isolators are the best alternative to a traditional clean room concept.

One Isolator for different filling machines and all packaging Formats

Thank you very much for your attention

SKAN AG

We are happy to support you

Frank Lehmann, Head of Sales Engineering

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