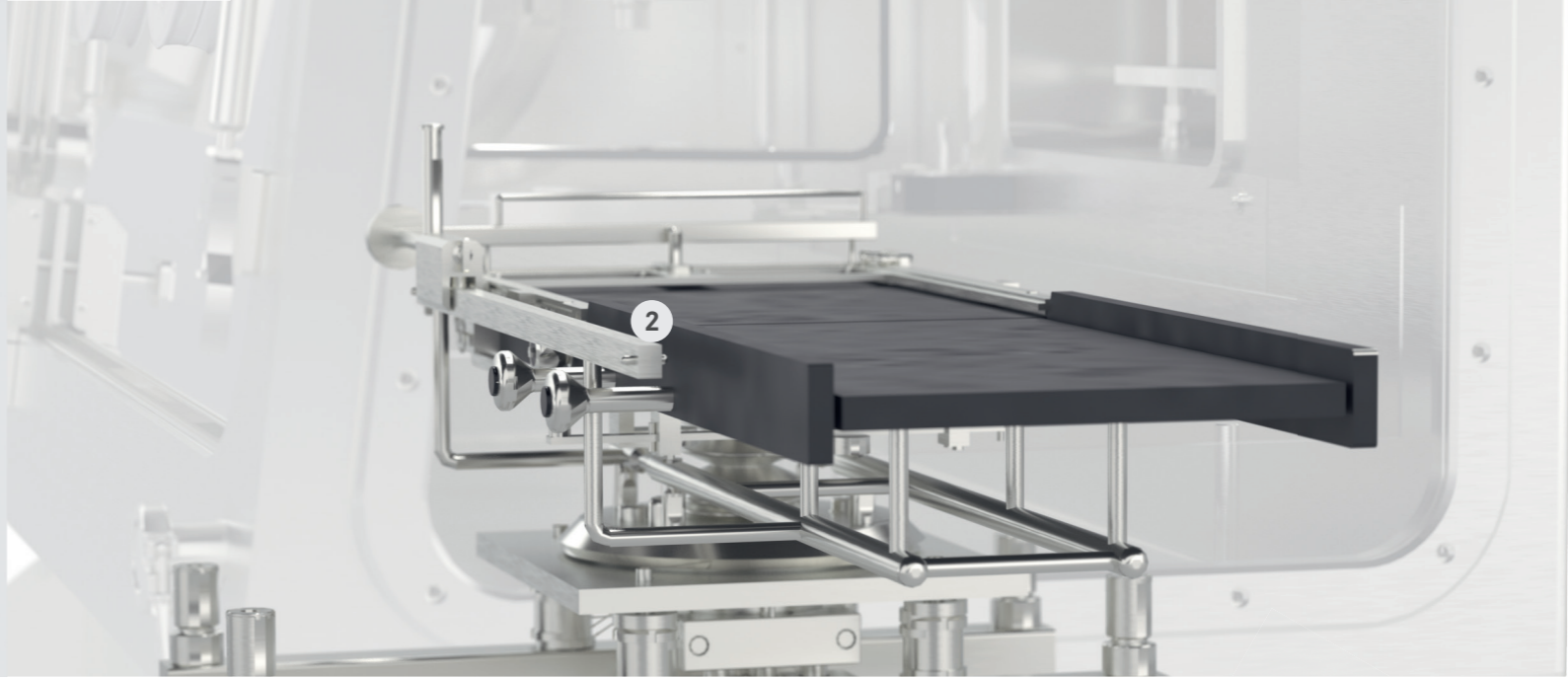
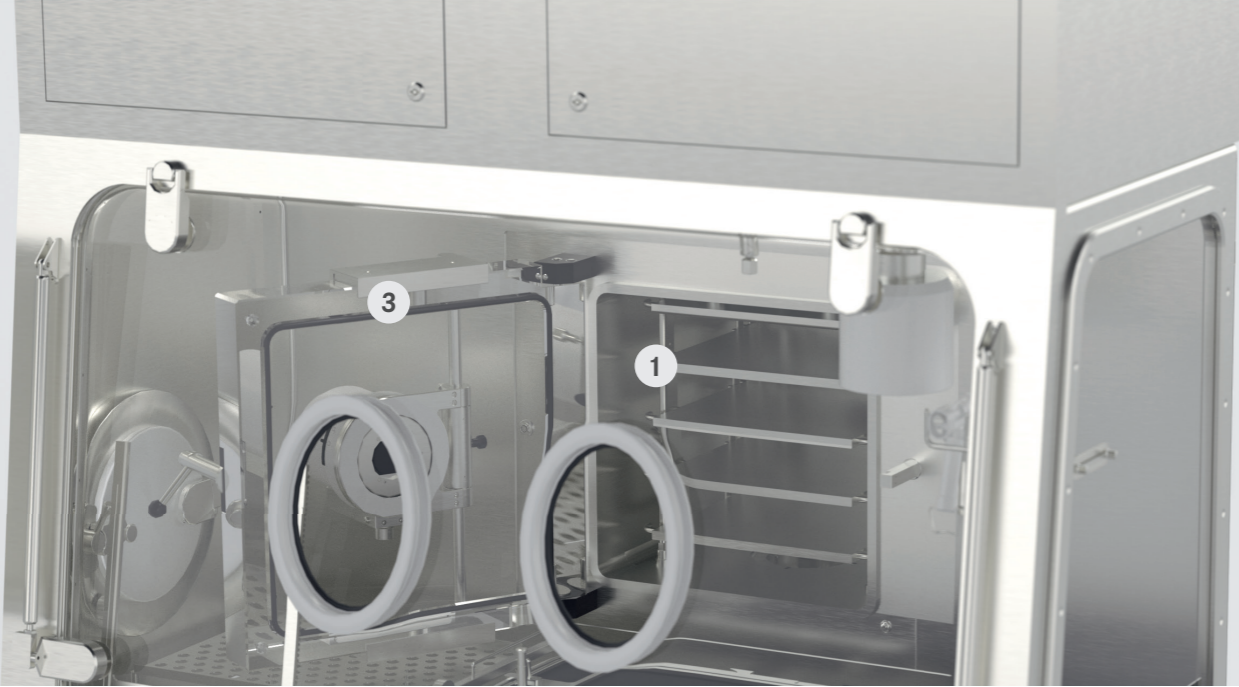


# COMFORT FREEZE DRYING WITH ISOLATOR

Epsilon 2-10D LyoLift



# Triple power for efficient and safe freeze drying



1

## Epsilon 2-10D LSCplus – for process optimisation or small batch production

High-performance pilot freeze dryer featuring stainless steel shelves with internal heat transfer media channels for heating and cooling, meeting even the most stringent demands of the pharmaceutical and biotechnology industries.



Freeze dryers and automated loading and unloading systems for highest demands of the pharmaceutical industry.

Martin Christ Gefriertrocknungsanlagen GmbH  
[www.martinchrist.de](http://www.martinchrist.de)

2

## LyoLift – for easy manual loading and unloading

Manual system for easy and product safe loading and unloading of a freeze dryer while the gloves stay on. The transfer table is automatically lifted or lowered to the shelves. All operations are assisted for safe handling.



Automated loading and unloading systems especially for freeze dryers.

MOTUS Engineering GmbH & Co KG  
[www.motus-engineering.de](http://www.motus-engineering.de)

3

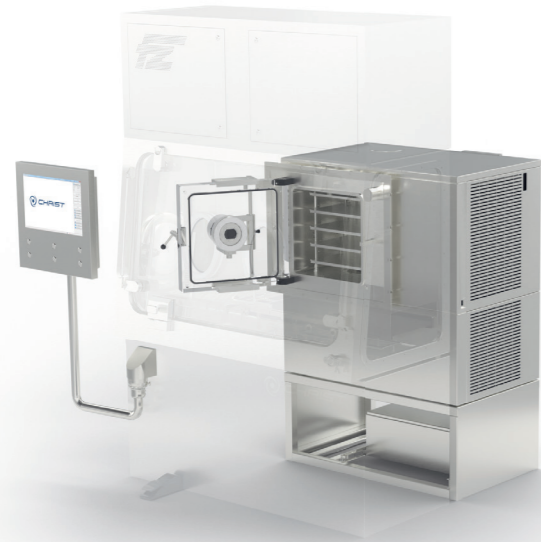
## PPI – Isolator for operator protection when handling potent substances

PPI Personal Protection Isolators provide protection for high containment applications. Personal protection is achieved through a barrier (Isolator housing with gloves) between the operator and the potent substance.



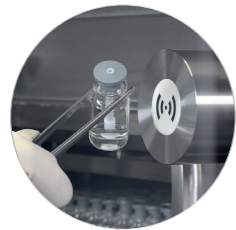
GMP compliant solutions for barrier technologies and environmental control of pharmaceutical processes.

Franz Ziel GmbH  
[www.ziel-gmbh.com](http://www.ziel-gmbh.com)



## Epsilon 2-10D LSCplus

- Ideal for product development and small-scale production
- Stainless steel shelves with a synthetic heat transfer fluid
- 4 shelves for freeze drying up to 1016 10R-vials
- Control system LSCplus complies with highest GMP-standards
- Double-chamber system with a separate ice condenser enables even more PAT-tools for process optimization and development
- SCADA-system LPCplus
- Uniform user interface from small to commercial production



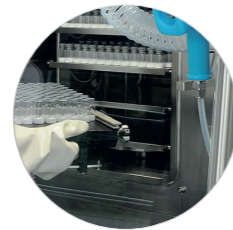
Wireless temperature measurement WTMplus 2.0 with RFID reader

Camera system LyoCam supports monitoring of the freeze drying cycle from start to end



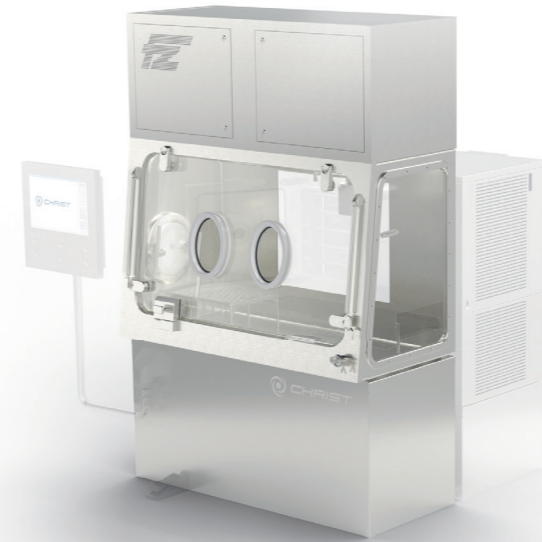
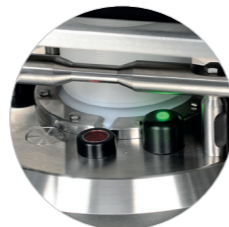
## LyoLift

- Easy loading and unloading on different shelf levels
- All movements are guided and assisted – safe for production
- Easy cleaning due to hygienic design – suitable for WIP
- Safe handling of vials to avoid product losses
- Mechanical and electrical safeguards to ensure correct loading or unloading operations
- Flexible interfaces to filling lines
- Patent pending



Guided and assisted movements

Mechanical and electrical safeguards prevent incorrect loading or unloading operations



## Personal Protection Isolator

- Stainless steel housing with rounded edges in working area for easy cleaning and prevention of cross-contamination
- On-board air handling and filter system and thus no connection to air handling system at site necessary
- Leak rate < 3 % Vol./h (measured at twice the normal operating pressure)
- Front door made of safety glass with 7° slope for optimized ergonomics (door opens and closes vertically)
- Glove ports for an optimal accessibility of the working chamber – for integrity testing of the gloves a separate GTS Glove Testing System can be offered
- An adapter flange plate at the left side provides highest flexibility for customer-specific installations (e.g. RTP port)
- Flange frame with static sealing at the backside for integration of different Martin Christ freeze dryers
- LED lighting of working area



Glove ports for an optimal accessibility to the working chamber



On-board air handling and filter system



Epsilon 2-10D LyoLift Product video

# Additional equipment features

PAT-tools for optimal process observation



LyoCoN – controlled nucleation, ensures the simultaneous freezing of all vials



LyoApp – stay connected with your freeze dryer anytime and everywhere



Innovative Glove Testing System for integrity testing

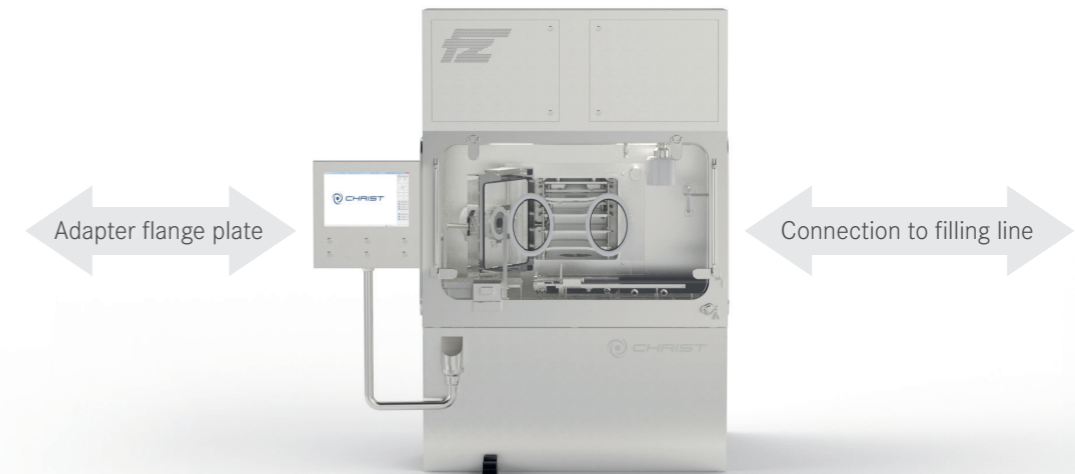


Wireless testing of gloves with different software packages (e.g. in standalone or customer server integration version)

# Scale up your possibilities

From the first trials to final production – Christ, Motus and Ziel support you in your process and project requirements

All three components are designed to be expanded into a filling line:



We are your partners for the highest demands of pharmaceutical industry. Martin Christ manufactures pilot and production freeze dryer and offers automated loading systems in cooperation with Motus (e.g. LyoShuttle). Ziel manufactures GMP-compliant Isolator for product and personal protection for aseptic/toxic applications.



Example: Filling line with production freeze dryer by Christ – loading system LyoShuttle by Christ and Motus – Isolator by Ziel.



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