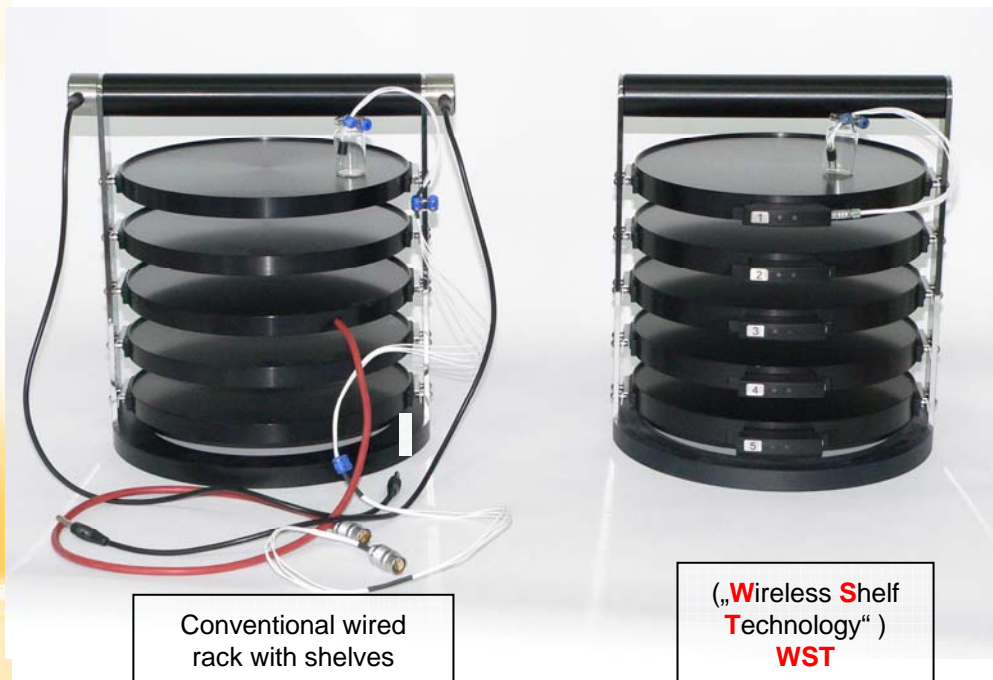


Innovation !

Wireless Shelf Technology WST – a milestone for easier daily work with laboratory freeze dryers

Initial situation:

Until now lab scale freeze dryers have often been equipped with electrically heated shelves with wires. Prefreezing of samples is carried out in separate freezers, often together with shelves and rack. After freezing, this complete assembly has to be placed rapidly in the freeze dryer to avoid melting of samples. Then the wires for the electric heating of the shelves and for the product probes must be connected to the machine.



The solution:

To overcome the disadvantages of the common wired shelf and probe configurations, Martin Christ has invented the unique Wireless Shelf Technology WST in combination with the new controller LSCplus.

WST removes the cables and plugs for shelves and other accessories used in lab scale models.

Functional principle:

A base connection plate with 2 electrical contacts is positioned between ice condenser chamber and external chamber. This is the central contact platform, where racks with shelves and other accessories are connected without wires. The energy supply and the information exchange between the various accessories and the freeze dryer control system LSCplus is based on the proven „Power-Line-Communication“ technology. PLC is known from computer communication using the standard electricity network.

Every electrical driven accessory is equipped with its own hermetically sealed bus module. Various parts can be combined and operated via this connection of bus modules. Furthermore, every shelf has its own built in Pt 100-temperature probe for accurate shelf temperature control. A product temperature probe and a Lyo-Rx-probe can be connected directly to each shelf.

Wireless Shelf Technology WST – a milestone for easier daily work with laboratory freeze dryers

Summary of features:

- WST avoids difficult handling of wired shelves and racks during prefreezing
- no freezing of cables on freezer wall or on ice condenser, when freezing directly in the lyophilizer
- the temperature of each shelf is controlled individually by means of the built-in-T-probe via the control system LSCplus corresponding to the real energy consumption of sublimation
- Every shelf has plugs for 1 product temperature probe and 1 Lyo-Rx probe

LyoCube® – unique frontloader with WST for ALPHA-units

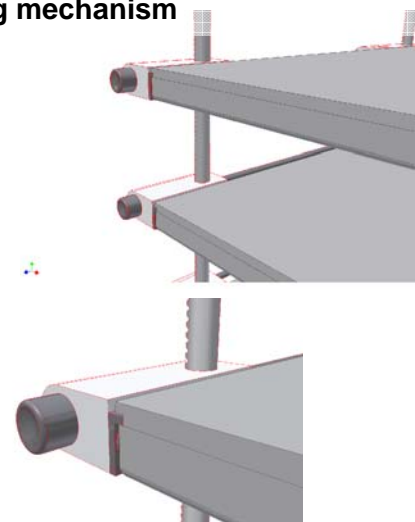


LyoCube® 4-8	
Shelf dimension	width x depth x height = 250 x 300 x 18 mm
Area of 1 shelf	0,075 m ²
Shelf area and interdistance	0,375 m ² with 5+1 shelves for example s=57 mm
chamber dimensions	w=336 x d=370 x h=426 mm
Chamber volume	53 l
weight [kg]	Appr. 49 kg

- Option: plus flask drying



- Option: manual adjustment of shelf interdistances in 3 mm steps with a latching mechanism



Facts and benefits:

- Rectangular frontloader instead of round acrylic chamber for easy handling
- electrical heated shelves for reduced cycle times and homogeneous results
- central vacuum fitting NS 45/40