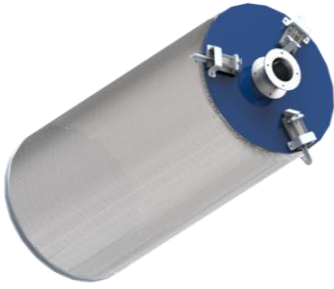


“Modular system, can be designed to meet your specs!”

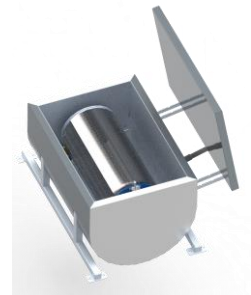


The BioRinse system is designed for liquid treatment protocols such as hot water treatment, rinsing protocols and even “drum priming” like protocols. The system can be configured from manual up to fully automatic with container-container setup.

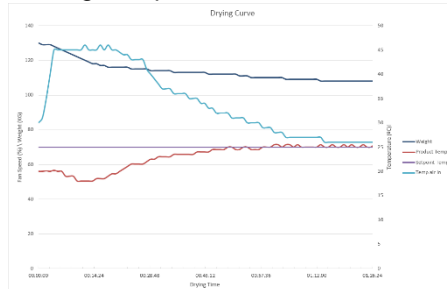
The “base” of the system is a 200L drum. The seeds will stay in this drum during the complete process, the drum travels from the “rinsing” station, to the optional centrifuge and then into the dryer. The seeds will go dry into the system and will come out dry again.

The modular system contains several different “parts / locations” the first location is the **Empty / Fill** location for the drums. When the drum is placed into this location the drum can be emptied / filled with seeds. The rotation will be done by an linear motor to make this more easy. The cover of the drum can be made in 2 different ways, one to be adapted on an “automatic” system and a more manual version for manual emptying / filling of the drum.

The second station is the **Rinse** station. In this station the actual process takes place, the station can be filled with pre-heated water and optionally equipped with cooling / heating system to change the temperature during the process. It is even possible to change the liquids and/or add additives. During the complete process the drum can be rotated to have a more homogeneous exposure of liquid on the seeds.

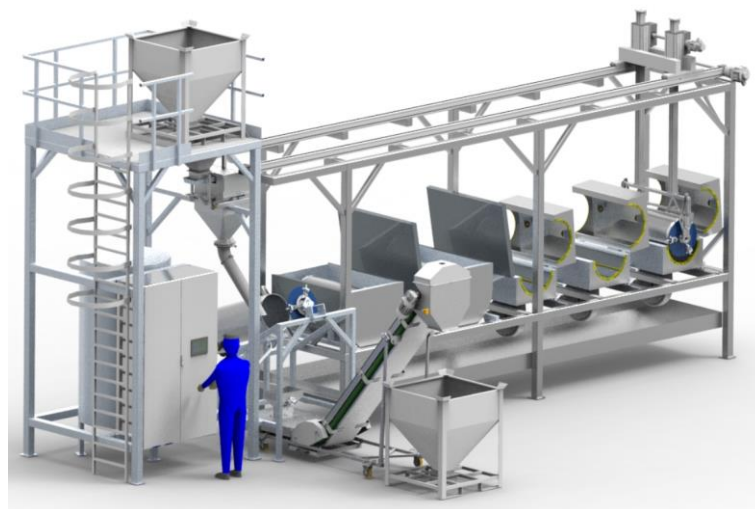


After the **Rinsing / Treatment** step the drum can be put into an optional **Centrifuge station**. The centrifuge station is similar to the **Rinsing / Treatment** station but the drum will be rotated at a higher speed. This will shake of the easy moisture and makes the drying time shorter.



When the centrifuging is done, the drum can be placed in the **Rotary Drying System**. The rotary drying system is based on our already proven RFBD drying procedure. Due to the special Fluid-Bed pattern and the rotation we can guarantee a homogeneous drying process. The complete dryer is placed on load-cells to have an actual read-out of the moisture decrease in the seeds. This way the protocol will stop when the end amount of moisture is reached. It is even thinkable that a “based on weight loss” protocol is possible.

The control / automisation of the complete process can be configured as you like, this means we can make it from very simple basic up to completely automatic process control and logging.



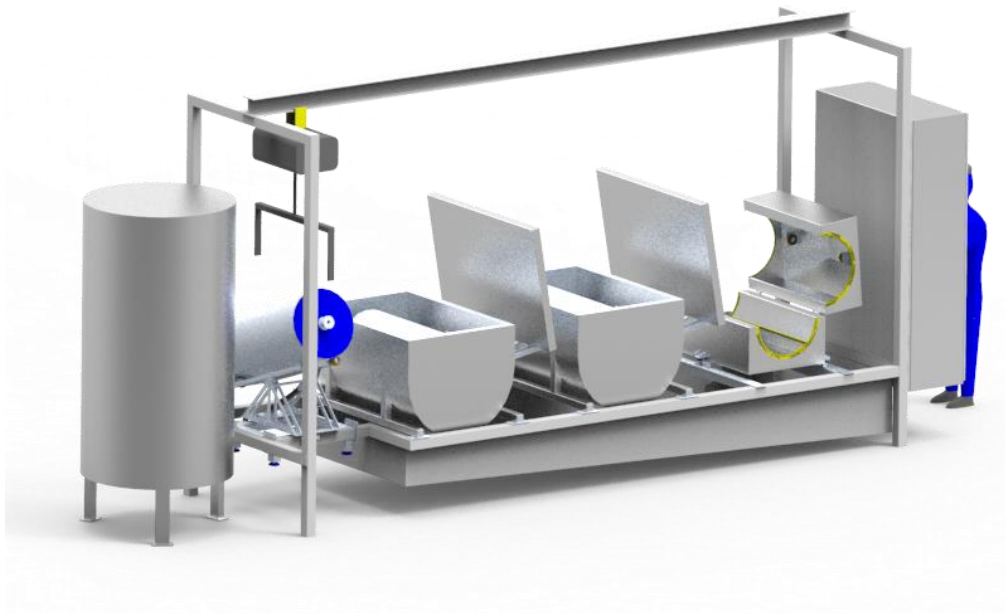
Modular Treatment System



Basic System, completely manual operated

The “most basic” version of the BioRinse is a manual system only containing 1 empty/filling station, 1 rinsing/treatment station and 1 dryer. The movement between these stations is completely manual. This means that the drum can be picked up with an manual hoist and moved between the different stations. The control is done by a central PLC with HMI but each station is manual operated.

This unit is specifically designed to run the 50 minutes / 50°C protocols. Where the drying time is more or less the time required for the protocol.



Specifications:

- 1x Empty/Filling unit (manually)
- 1x Rinse / Treatment unit
- 1x Centrifuge
- 1x Drying unit
- 1x heating unit for dryer (not in picture)
- 1x Hot water boiler / supply system
- 1x Manual hoist-jack with electrical lift
- 1x Control box (mainly manual operated)
- Capacity, 100L bruto per batch

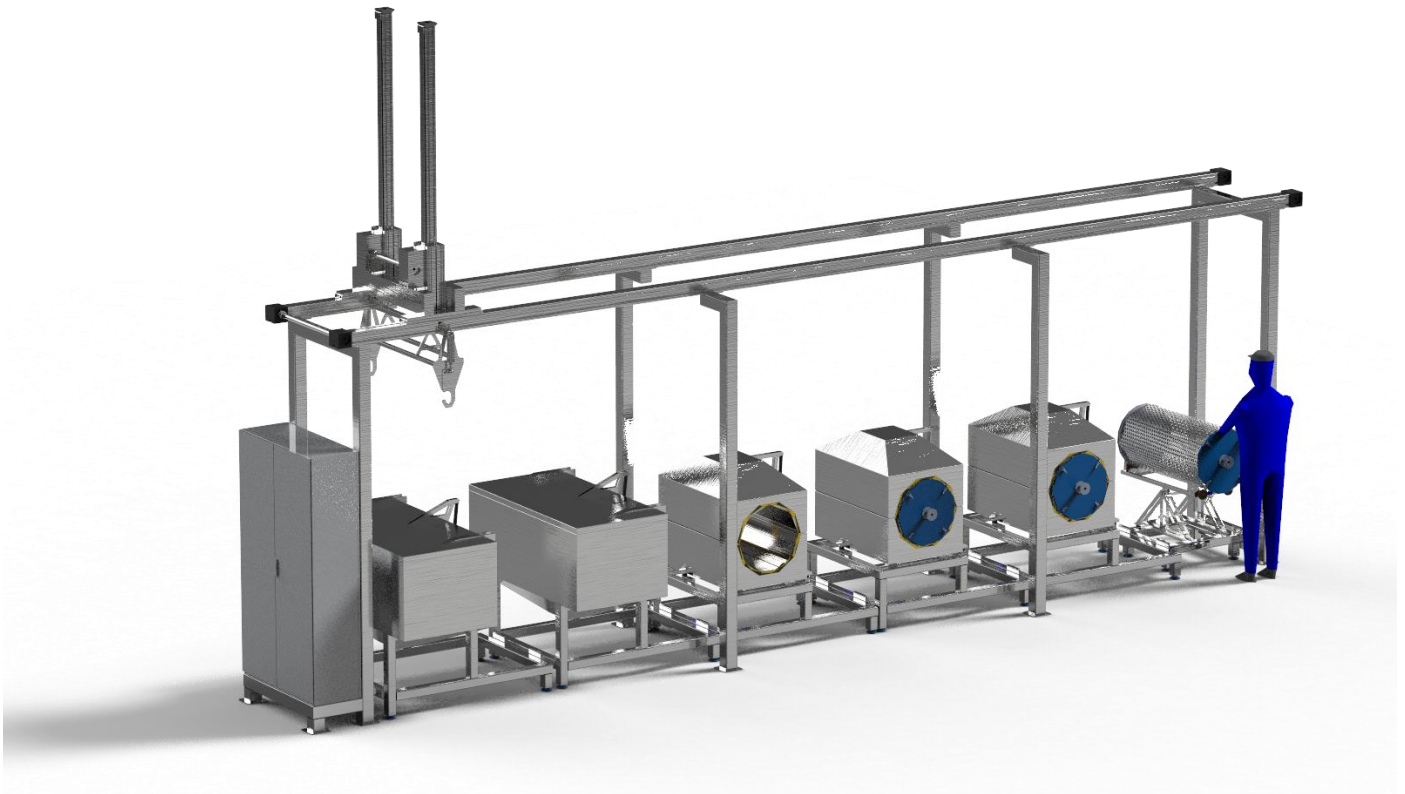
Modular Treatment System



Semi-Automated batch system, manual filling

This system is "semi" automatic. The seed filling / emptying goes by hand, however the complete process is automatic. After the operator places the seed in the bin and closes the cover the automated system will pick up the drum and move it between the several units. When the process is completely finished the drum can be moved towards the emptying station for manual emptying.

With this unit you can run more automatic without manual movement of the drum



Specifications:

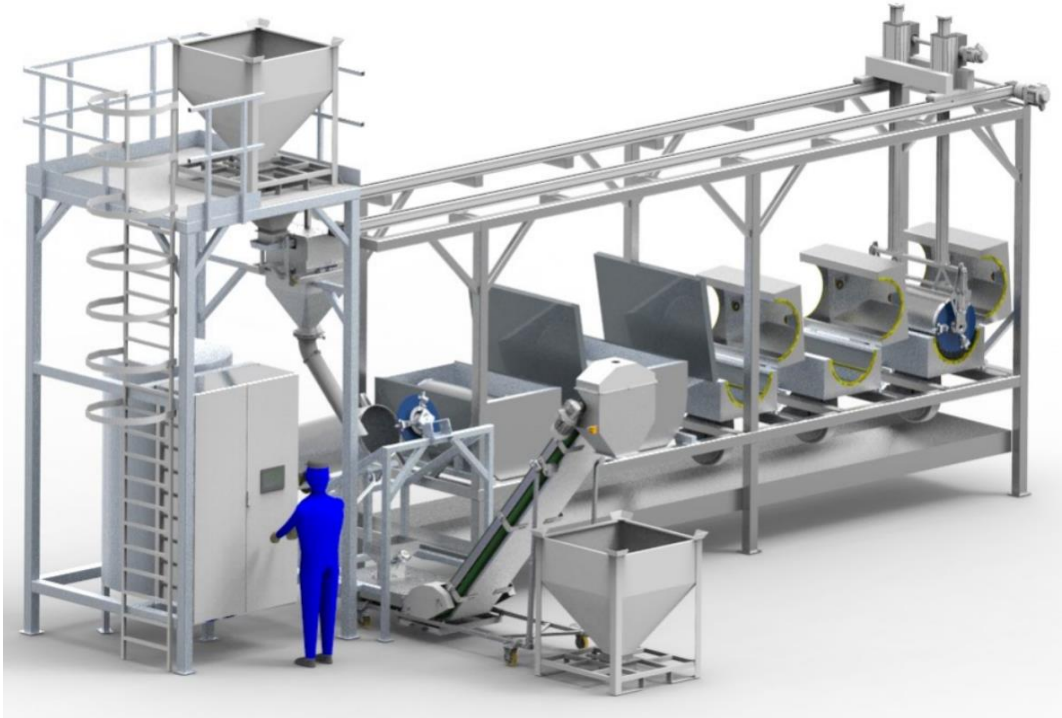
- 1x Empty/Filling unit (manually)
- 1x Rinse / Treatment unit
- 1x Centrifuge
- 3x Drying unit
- 3x heating unit for dryer (not in picture)
- 1x Hot water boiler / supply system
- 1x Automated linear system for automatic protocol operation
- 1x Control box
- Capacity, 100L seeds per batch
 - o At 20minut protocols, capacity approx. 300l / hr

Modular Treatment System



Fully Automated system with seed filling / emptying

This is the most advanced version of the BioRinse, by using special covers for the drums we can automatically empty and fill the drums. This system gives you the opportunity to run 24/7 with bigger seed lots. Optionally the system can send a signal towards a mobile phone when some kind of problem did occur. This makes the process mainly automatic without any labor.



Just place a container full of seeds on top of the installation and place a collecting bin underneath the belt. Then press start and run completely automatic. The complete system has good accessibility for check during switch between several seed lots. This makes the unit easy to operate and easy to run.

Specifications:

- 1x Empty/Filling unit (automatic)
- 1x Drum Cover opening / closing system
- 1x Rinse / Treatment unit
- 1x Centrifuge
- 3x Drying unit
- 3x heating unit for dryer (not in picture)
- 1x Hot water boiler / supply system
- 1x Automated linear system for automatic protocol operation
- 1x Seed Feed system
- 1x Seed belt system (outlet)
- 1x Control box (advanced)
- Capacity, 100L seeds per batch
 - o At 20minut protocols, capacity approx. 7200l / 24hr