



Factory acceptance test according to KRONES spe- cification

FAT (Factory Acceptance Test)
KRONES cleaning technology, product
treatment technology, recycling solutions



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1 Definition of factory acceptance test

A factory acceptance test is the acceptance test of a product at the manufacturer's location. The factory acceptance test is conducted jointly by the purchaser and contractor, or their authorised representatives.

The acceptance test includes the following procedures:

- The machine or line is checked to ensure all its components are complete. The test is based on the machine order document and, where appropriate, other changes agreed after the signing of the contract, if incorporated into the contract.
- A functional test is also conducted. The functional test determines if all of the agreed functions are provided and the final label decoration result conforms to the specified requirements. This is particularly important in order to detect damage occurred during transit and final assembly for example.
- The aim is to verify that the machine has been assembled correctly in accordance with the specifications and works properly.
- If the tests reveal no or only minor defects, the machine can be accepted. If, however, significant defects are detected, the factory acceptance test can be repeated after subsequent fulfilment (removal of defects).

Alternatively, the purchaser may, at his own discretion, accept the machine in spite of the defects identified.

2 Requirements and basic conditions

Purchaser and contractor

The purchaser defines the equipment to be tested in the test run at set-up speed when awarding the contract.

As a rule, the set-up speed does not correspond to the rated speed as no recirculation is intended.

The contractor specifies the quantity and quality of the test material required for the test run and requests the material from the purchaser in good time prior to testing. The purchaser is responsible for assuring the timely delivery of the material to the contractor. If the test material is not delivered on schedule, there is a chance that the FAT will not be performed.

Basic conditions

- Elements of the factory acceptance test
 - The elements of the overall contract to be included in the factory acceptance test must be defined.
- Standard scope of supply
 - In the standard scope of supply, the machine/line is accepted to an extent that can be defined by the customer. If the customer has not made an appropriate selection, standard equipment is used for the acceptance test.
 - The standard acceptance test includes one day of work. If this is possible during this time, a change-over to another type can also be performed.
- Time schedule
 - The factory acceptance test is usually conducted at an agreed time between 08:00 a.m. and 04:00 p.m.. Deviations from this time frame are possible based on an individual arrangement and in compliance with working time legislation.
- Taking your own pictures inside the assembly hall is only allowed if the contractor agrees to it.
- Insight into the risk analysis
 - The purchaser is generally entitled to access the machine's risk assessment. This will be made available for viewing in German upon request (no publication). To enable this, notification of any such request must be made in writing two weeks before the scheduled FAT date at the latest.

Photo/video recordings

Applies for all machine types (from SE201909)

- For the product treatment system, there is a picture documentation for the LINA FLEX and the LINA COOL.
- For all fully assembled lines such as LINA THERM, LINA FLEX COMPACT, the pictures are supplemented by a video which shows the operating conveyor and/or the container conveyor above the infeed and discharge finger.

Contents:

- Cleaning technology
 - Photo long shot from the drive side, from the pump side, from the infeed, from the discharge,
 - Close-up view from each module of the drive side and the pump side. One picture of the inside of each control cabinet and each integrated control panel and of the touch-screen.
 - Video of the operating chain, of the test bottle pockets and one rotating jetting system, of the operating infeed and of the operating discharge.
 - Crate washer



Requirements and basic conditions

- Pictures of the operator and non-operator side, picture of the integrated control panel touch-screen outside and one from the inside. Video of the crate passing through (water is not mandatory).
- Spraying system
 - Only pictures from all four sides.
- Dosing system
 - Pictures from the individual dosing stations and/or ClO_2 lance (if existing).
- Sedimentation system:
 - Pictures from integrated control panel (if existing) picture from pump.

3 Sequence of the factory acceptance test

- Inspection of the machine with a brief induction into its method of operation.
- Review of the machine layout drawing.
- Joint inspection and assessment of the test material (containers and labels) with regard to processability and possible manufacturing faults which might influence the test result.
- Check that the scope of supply agreed in the contract is complete.
- Checking of all components against the contractual specifications.
- Checking of the protective devices.
- Checking of the required certificates in accordance with national laws.
- Test run of the machine without production.
- Test run of the machine with production at set-up speed.
- Equipment change-over for machines with several label decorations, provided this is possible in one day.
- Functional verification by performing short test runs with the agreed equipment.
- If the factory acceptance tests last several days, each day must end with a final daily review meeting during which the test points covered are summarised.
- After testing all of the agreed equipment variants, a final review meeting is held.

4 Test contents/acceptance test stages

The following defines the scope/content of the customer acceptance test for the machines/modules in the areas of Cleaning Technology, Product Treatment Technology, BPE Products und Recycling Solutions.

Acceptance test stages

The following acceptance test stages are distinguished for the acceptance test in the Flensburg plant:

1. Acceptance test stage 1: Inspection of the current status
2. Acceptance test stage 2: Acceptance test after definition of the test run
3. Acceptance test stage 3: Acceptance test according to customer definition

If the acceptance test in the Flensburg plant takes place without the customer, a photo/video documentation will be created.

4.1 Acceptance test stage 1 - Inspection of the current status

This applies to all machine types.

Inspection of the machine/module in the current assembly condition.

4.2 Acceptance test stage 2 - Acceptance test after test run definition

4.2.1 Acceptance test stage 2 - Cleaning technology

- Checking the machine's interfaces with secondary machinery or with existing line components.
- Checking that the machine design complies with the order document, e.g. machine size, pitch, running direction, layout configuration, number of labelling stations and dimensions.
- Checking that the scope of supply agreed is complete.
- Checking the components with regard to the defined specifications such as manufacturers of purchased parts or special requirements (special customer requests) regarding the design of mechanical or electrical components.
- Checking the machine's safety devices. Machine guards, EMERGENCY STOP switches and marking of hazardous spots.

*For further tests, see the "Dynamic test" test item.

Single-end machine type E2

Mechanical system:

- Complete test run with sample bottles. All adjustments are made.
- The chain has been threaded and all bottle carriers are mounted.

Electrical components:

- Machine is completely wired and connected.
- Software and hardware check is performed on the machine.
- All functions are tested and the components are adjusted.

Remark:

- No water test run. The jetting system is pre-set with test prods.
- In addition to the mounted components (according to the scope of supply), a dosing pump, a fume/H₂ extraction system and a label press must be provided for the customer acceptance test.

Single-end washer type E3 and E4, one-piece

Mechanical system:

- Complete test run with sample bottles. All adjustments are made.
- The chain is installed and the test is carried out with a part of the bottle carriers

Electrical components:

- Machine is completely wired and connected.
- Software and hardware check is performed on the machine.
- All functions are tested and the components are adjusted.

Remark:

- No water test run. The jetting system is pre-set with test prods.
- In addition to the mounted components (according to the scope of supply), a dosing pump, a bottle carrier,
- a fume/H₂ extraction system and a label press must be provided for the customer acceptance test.

Single-end washer type E3 and E4, multi-part

Mechanical system:

- Complete test run with sample bottles. All adjustments are made.
- The chain is installed and the test is carried out with a part of the bottle carriers
- The chain is removed again for transport as it consists of several parts.

Electrical components:

- Machine is modularly wired.
- Software and hardware check is performed on the control cabinet.
- All functions are tested and the components are adjusted.
- For individual functions, the situations must be simulated.

Remark:

- No water test run. The jetting system is pre-set with test prods.
- In addition to the mounted components (according to the scope of supply), a dosing pump, a bottle carrier,
- a fume/H₂ extraction system and a label press must be provided for the customer acceptance test.

Double-end machines, all types

Mechanical system:

- Complete test run with sample bottles. All adjustments are made.
- The chain is installed and the test is carried out with a part of the bottle carriers
- The chain is removed again for transport as it consists of several parts.

Electrical components:

- Machine is pre-installed in the factory.
- Software and hardware check is performed on the control cabinet.
- All functions are tested and the components are adjusted.
- For individual functions, the situations must be simulated.

Remark:

- No water test run. The jetting system is pre-set with test prods.

- In addition to the mounted components (according to the scope of supply), a dosing pump, a bottle carrier,
- a fume//H₂ extraction system and a label press must be provided for the customer acceptance test.

R Lavatec rinser

Mechanical system:

- Complete test run with sample bottles. All adjustments are made.
- The chain is installed and the test is carried out with a part of the bottle carriers

Electrical components:

- Machine is completely wired and connected.
- Software and hardware check is performed on the machine.
- All functions are tested and the components are adjusted.

Remark:

- No water test run. The jetting system is pre-set with test prods.
- In addition to the mounted components (according to the scope of supply), a dosing pump, a bottle carrier,
- a fume//H₂ extraction system and a label press must be provided for the customer acceptance test.

KGW Linajet

Mechanical system:

- Complete test run with water and sample containers. All adjustments are made. Pumps are tested and jetting systems are adjusted.

Electrical components:

- Machine is completely wired and connected.
- Software and hardware check is performed on the machine.
- All functions are tested and the components are adjusted.

4.2.2 Acceptance test stage 2 - Product treatment technology

If the machine is completed ahead of schedule for operational reasons, the inspection takes place on the packaging service provider's premises and/or in Hub Hamburg. The machine parts and control cabinets are then already lashed down on wooden pallets, individual parts are packed in crates.

Always consult the relevant product specialist for details.

Lina Flex pasteuriser, multi-part

Mechanical system:

- Infeed and discharge fully equipped without electrical pre-installation. Modules fully equipped without electrical pre-installation. Add-on parts depending on the delivery of packaging status. The pasteuriser has not been not fully assembled, it is inspected in the ready-to-ship condition.

Electrical components:

- The machine is not wired.
- Software and hardware check is performed on the control cabinet.
- All functions are tested and the components are adjusted.
- For individual functions, the situations must be simulated.

LinaCool cooler, one-piece

Mechanical system:

- Fully equipped incl. full electrical installation (exception: stand-alone units, such as condensate tank or dosing units).

Electrical components:

- Electrical test run on the machine, setting of all electrical components.
- Remark: No water test run, machine is disconnected, control cabinet on the machine.
- If stand-alone control cabinets are used, there is no test run on the machine, connection lines are returned to the machine.

LinaCool cooler, multi-part

Mechanical system:

- Infeed and discharge fully equipped without electrical pre-installation. Modules fully equipped without electrical pre-installation. Add-on parts depending on the delivery of packaging status. The cooler has not been fully assembled, it is inspected in the ready-to-ship condition.

Electrical components:

- The machine is not wired.
- Software and hardware check is performed on the control cabinet.
- All functions are tested and the components are adjusted.
- For individual functions, the situations must be simulated.

LinaTherm heater, one-piece

Mechanical system:

- Fully equipped incl. full electrical installation (exception: stand-alone units, such as condensate tank or dosing units).

Electrical components:

- Electrical test run on the machine, setting of all electrical components.
- Remark: No water test run, machine is disconnected, control cabinet on the machine.
- If stand-alone control cabinets are used, there is no test run on the machine, connection lines are returned to the machine.

Lina Flex Compact pasteuriser, one-piece

Mechanical system:

- Fully equipped incl. full electrical installation (exception: stand-alone units, such as condensate tank or dosing units).

Electrical components:

- Electrical test run on the machine, setting of all electrical components.
- Remark: No water test run, machine is disconnected, control cabinet on the machine.
- If stand-alone control cabinets are used, there is no test run on the machine, connection lines are returned to the machine.

Vapo Chill, multi-part

Mechanical system:

- Components fully equipped without electrical pre-installation.
- Add-on parts depending on the delivery of packaging status. The cooling tower has not been fully assembled, it is inspected in the ready-to-ship condition.

Electrical components:

- No electrical installation is provided on the machine.
- Software and hardware check is performed on the control cabinet.
- All functions are tested and the components are adjusted.
- For individual functions, the situations must be simulated.

4.2.3 Acceptance test stage 2 - BPE products

Mechanical system:

- Machines are fully equipped, if necessary modularly equipped.

Electrical components:

- Machines are fully wired, if necessary modularly wired and tested.

Remark: Machines are not operable, function cannot be checked.

4.2.4 Acceptance test stage 2 - Recycling solutions

Modules of PET Recycling

The modules of the PET Recycling area are excepted here, as only acceptance stage 1 is possible here until further notice.

4.3 Acceptance test stage 3 - Acceptance test according to customer specification

The modules of the Recycling Solutions are excepted here, as only acceptance test stage 1 is possible here until further notice.

A specification of the customer acceptance test stage 3 must be defined for the order notification so that the throughput and planned times can be taken into account accordingly.

Additional time and effort is subject to a charge.

5 Handling of deviations from the factory acceptance test specification

- Deviations from the scheduled test sequence or the scope of testing are only permitted with the consent of both parties.
- Malfunctions do not result in the failure of the FAT.
- Equipment faults due to the test material not conforming to the specifications are not subject to assessment. It is generally permissible for the machine manufacturer to furnish proof of such faults by performing test runs with proper test material.
- Requested changes to the contractually specified scope of supply shall not result in the failure of the FAT. In such a case, the supplier reserves the right to check what additional costs would be incurred for the purchaser and to stipulate the time of the change would be made according to the effort and expense involved.
- All of the deviations must be documented with a description of the remedy for eliminating the deviation.
- All of the deviations must be released both by the operating company and by the supplier.