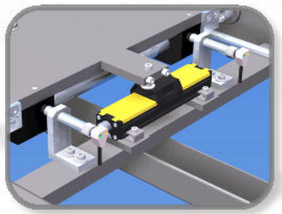
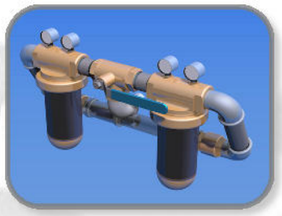
Equipment / options / additional equipment:

The following is a selection of different options/information/additional equipment for calibration tables:

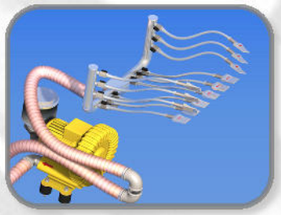
Path measurement systems for all travel axes
Upon request, path measuring systems may be attached to determine the positions of the axes for all of the machine's travel axes. These support repeatability for settings involving specific production applications and enable more exact positioning of the respective axis during production in case of corrective measures.



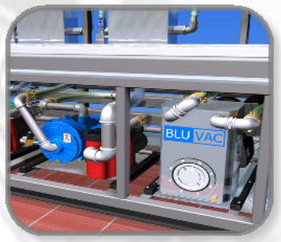
Filter systems
Filter systems are used in the calibration table for additional filtering of the feed water and/or in case of further use of collected water in the main water tank. Simple cartridge filters, cartridge filters with a return flushing function (manual), switching double filter systems, or self-cleaning filter systems with adjustable cleaning intervals or input/output pressure compensation may be used.



Fan system for air drying
Special side channel compressor are used in multiple power levels for air drying the profile extrudate while leaving the calibration table. To transfer the blowing air to the profile extrudate, special distributors are attached at the end of the calibration table, which feature connection options for all available variations of bending hose systems.
Upon request, the system may also be designed for frequency controls to reduce power consumption as required.



Vacuum generator
To generate a vacuum at the various areas of the calibration table, there is a diverse range of vacuum generators available from different manufacturers. The selection includes uncontrolled standard vacuum pumps, controlled vacuum pumps, and sophisticated systems with air/water separation and additional controller options. Often, low vacuum requirements but high air throughput quantity utilise side channel compressor for generation.
The goal during selection is of course to achieve the required vacuum quantity with the lowest possible energy consumption, which necessarily leads to the controlled variation of the vacuum generator.



Cyclone units
Due to the high water quantity that is required to supply vacuum tanks, cyclone technology is usually utilised for a low-level vacuum. In this case, a separate water output pump and vacuum generator combined with an air/water separation container separate the air-water mixture and return it separately from the units. Variable options include individual cyclone units for specific areas or a central cyclone system with a connection option for multiple consumers.
Even with cyclone units, the variation with regard to vacuum producers is diverse, depending on the required performance, application, and energy efficiency.

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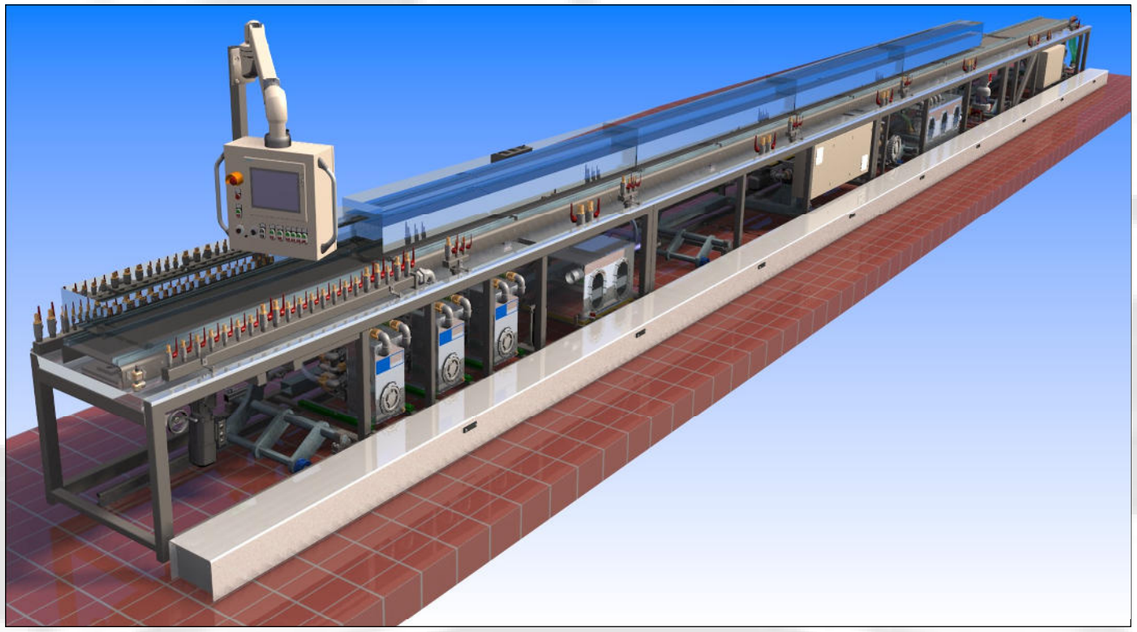
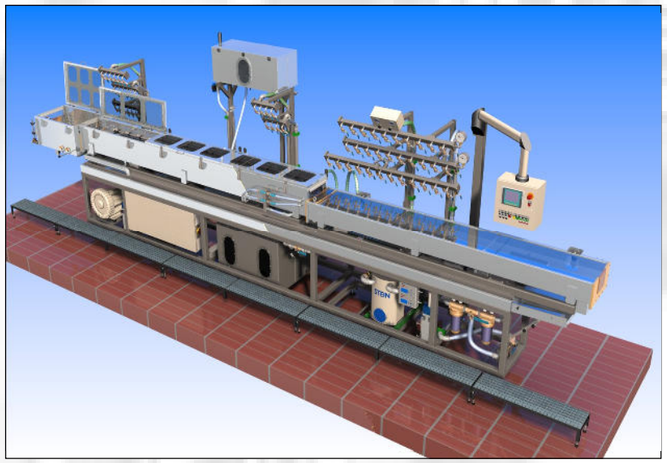
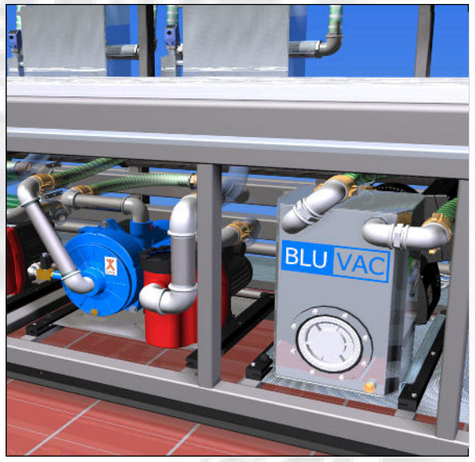
STEIN BLUE-LINE for a sustainable future
STEIN Mechanical engineering
KT calibration table



Calibration table for dry calibration tools, vacuum tanks, and additional attachments



Calibration table with cooling water bath



Vacuum supply

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KT calibration table

Basic information about STEIN Maschinenbau calibration tables

STEIN Maschinenbau builds calibration tables adjusted especially to customer needs based on several of our own standard versions. This means:

- The calibration table may be designed and produced in the desired length.
- The working height may be adjusted according to the tools used and the tool mounts.
- The type and number of vacuum generators is coordinated and installed with the customer.
- Positions, quantity, connection sizes, connection type (e.g.: coupling, ball valve, etc.) of the distributor for the tool supply may also be specified.
- The water/vacuum system is generally specified with the customer using a flow diagram created especially for this purpose.
- Technical controller functions and the layout of the control panel may be specified.

For each of these customisation options, please note that these must remain within the scope of design, technical fluid, and technical electronic possibilities.

Basic structure

- Main frame consisting of welded hollow stainless steel profiles.
- All components that are in contact with water comprising stainless steel or suitable plastics.
- Motors that come into contact with water feature corresponding splash-proof paint and sealing in the corresponding protection class.
- In case of bearing supports, maintenance-free bearings are used if available.
- Functional screw-connections consisting of stainless steel, brass, or nickel-plated brass. Ball valves are mainly designed as a full throughput version.

Electrical technology (in general)

- The switching cabinets are integrated in the main frames of the calibration tables as far as possible. In case space is lacking, the switching cabinets must be attached externally.
- The control panel and additional control elements are integrated in a separate control box. This is usually fastened hanging on a swivelling support arm system in the inlet area (may also be lifted in case of larger control boxes).
- For control/regulation, we use components from Siemens, and for motor regulation, we use SEW frequency inverters.

Basic mechanical structure of all calibration tables

- Height adjustment (vertical travel): There are different systems for height adjustment of the calibration tables that are selected by us depending on the calibration table and adjusted as required.
- Longitudinal adjustment The longitudinal adjustment of a calibration table takes place either by moving the complete machine or by moving the tool carrier. Both variations are essentially possible, but they both have their advantages and disadvantages.
- Traverse movement (moving perpendicular to the extrusion axis). Traverse movement normally takes place by moving the tool carrier. In part, additional ability to tilt the tool carrier is also required in this case. There are a variety of solutions for both movements that are selected according to the requirements.
- Vacuum generator: All vacuum generators are mounted for speedy exchange or repair or maintenance work using sliding rails. Hose connections feature couplings. Electrical connection are designed as snap-in or screw connections.
- Every calibration table requires a main water container. Depending on the water/vacuum system, the tasks of this tank are diverse. One task is the collection of the return feed water from all consumers of the calibration table, the disposal of the air extracted via the vacuum generators, and the return of return feed water to the operating water system. To minimise noise, the return feed lines of the vacuum generator are built into the tank in suppressing pipes. A ventilation tunnel is used to dispose of excess air, which simultaneously functions as a collective return feed. In order to clean the tank, a sufficient number of viewing windows are built in, which also serve as cleaning openings.
- All attachments on the calibration table are laid out so that splashing water is caught and guided away as best as possible. The catching tray feature sufficient drains with large dimensioning. Multiple perforated metal inserts in the drains enable the draining water to be pre-filtered.
- Additional customer-specific attachments may be included in the design of the calibration table upon request.

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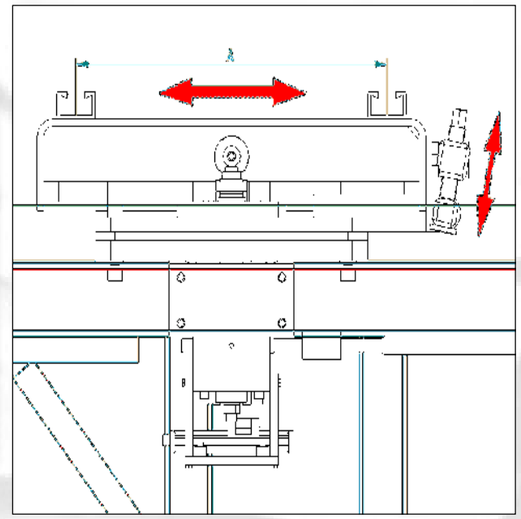
KT calibration table

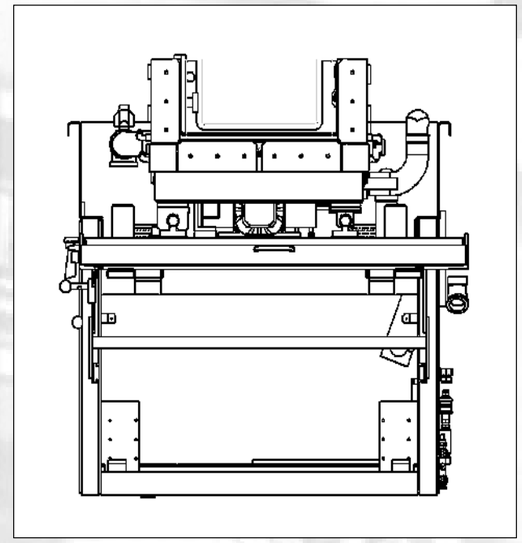
Calibration tables for dry calibration

A significant property of these calibration tables is the clamping frame, which acts as a support for the calibration tools and the subsequent vacuum tanks and any possible water baths. Our preferred variation in this case is an angled C-rail with high wall thickness. This is advantageous thanks to geometrical properties like: High rigidity, low elasticity, high supporting capacity, and more. The actual fastener for the tool and the subsequent structures are naturally dependent on this and the options are therefore accordingly diverse. For this reason, we are flexible in terms of dimensions and fastening variables and design these as required.
The clamping frame may be combined with the machine's height adjustment to align the position of the calibration tool to the extruder nozzle. For this reason, a traverse movement axis and sometimes also a tilting option along the longitudinal axis are required as well. Both are integrated in the clamping frame, although the tilting offset is designed optionally.



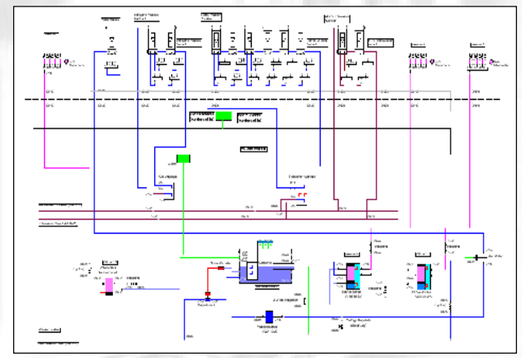
Calibration tables with cooling water bath

For this variation of the calibration tables, the water bath and its installations and attachments forms the main characteristic. In this case, the calibration tools are usually fastened to the tray on the inlet side and, depending on the size and resulting weight, they are often supported on the inside of the tray as well. In this case, diverse variations for fastening the tools to the tray are available, depending on the tool manufacturer or the company's own systems. Important criteria for installation are of course rigidity, sealing, accessibility (connections), and the option for speedy exchange of the tools if production is changed. An additional criterion is optimal distribution of the cooling water according to the temperature conditions in the water bath, and the ability to fill the tray and empty it quickly as required.
Often, additional devices are also built in, and holders need to be planned for this. In this way, a flexible design for the water baths and exact coordination with the later operator of the machine are required. Of course, every alignment option for the extruder nozzle is also available in this case.



Temperature regulation for calibration tables

In order to keep the water consumption of calibration tables as low and as energy-efficient as possible, the main water tank of the machine may be designed so that return feed water, provided it is still usable in terms of temperature conditions, is able to be fed back into the circuits of specific consumers. In this case, temperature regulation is usually completed by feeding in fresh water from the company's own system. Additional temperature regulation (cooling or heating) is usually only possible by installing (partially external) tempering and/or cooling devices.
The installation options and the functionality in the system must be check case-by-case.



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