



PRODUCTION SYSTEMS FOR HORTICULTURE



OTTE Metallbau GmbH & Co. KG
Kuhlenstrasse 42 · D-26655 Westerstede
Phone + 49 (0) 4488-8309-0
Fax + 49 (0) 4488-8309-35
E-mail info@otte-metallbau.de
Web www.otte-metallbau.de

· Engineering · Construction · Sales · Installation · Service



Welding robot in operation



Crane systems



Greenhouse facilities with a system

For more than 60 years, we have been working out solutions for production horticulture together with our customers. What began with the introduction of roller benches now involves the most modern automatically-controlled bench systems. Optimum work processes help you to save energy, space and time.

We at OTTE offer you a wide range of modern production and transport systems, trade counters and concrete parts which we develop, design and produce in our factory in Westerstede. Subsequent installation and later on-site servicing is carried out by our own teams.

Products made by OTTE are distinguished by their high quality and continue to function reliably even after years of use. Our technical advisors work out individual problem solutions according to your wishes – for the optimum production process.



Mobile & rolling mobile benches



Mechanical engineering



Roller benches



Monorail systems



Concrete parts



Mobile-/Rolling mobile bench systems: Automation and efficiency in production horticulture

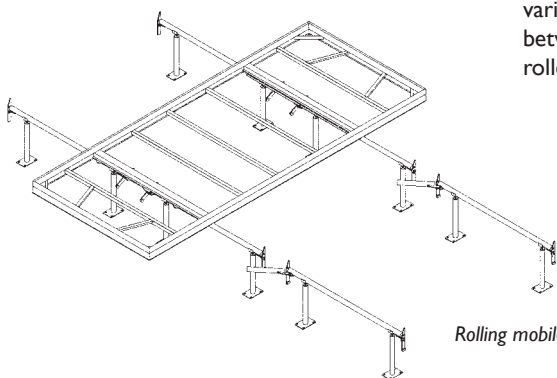
Bench systems from OTTE provide optimum work processes in production horticulture. The system was developed specially due to the demand from customers for more extensive automation. In order to increase the efficiency of a bench system, the greenhouse is divided into working, cultivation and dispatching areas. Folding stanchion tracks provide access to the plants from all sides in all the work areas. Vari-

ous units (crane, washing machines, transport units, etc.) and programmes (potting, moving, sorting, etc.) prepare the benches for the work process.

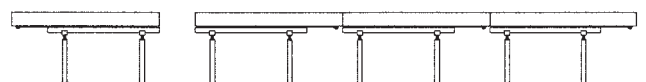
For this, OTTE offers the mobile and rolling mobile bench systems. The framework constructions with braced corners are produced according to the requirements of specific customers, in different sizes and for the most varied of linings. The technical differences between the two types lie essentially in their roller systems and their chassis.

Mobile bench systems create a commercially rational foundation, especially for large quantities of the same type of plant. Constant growing conditions guarantee a high throughput with high quality.

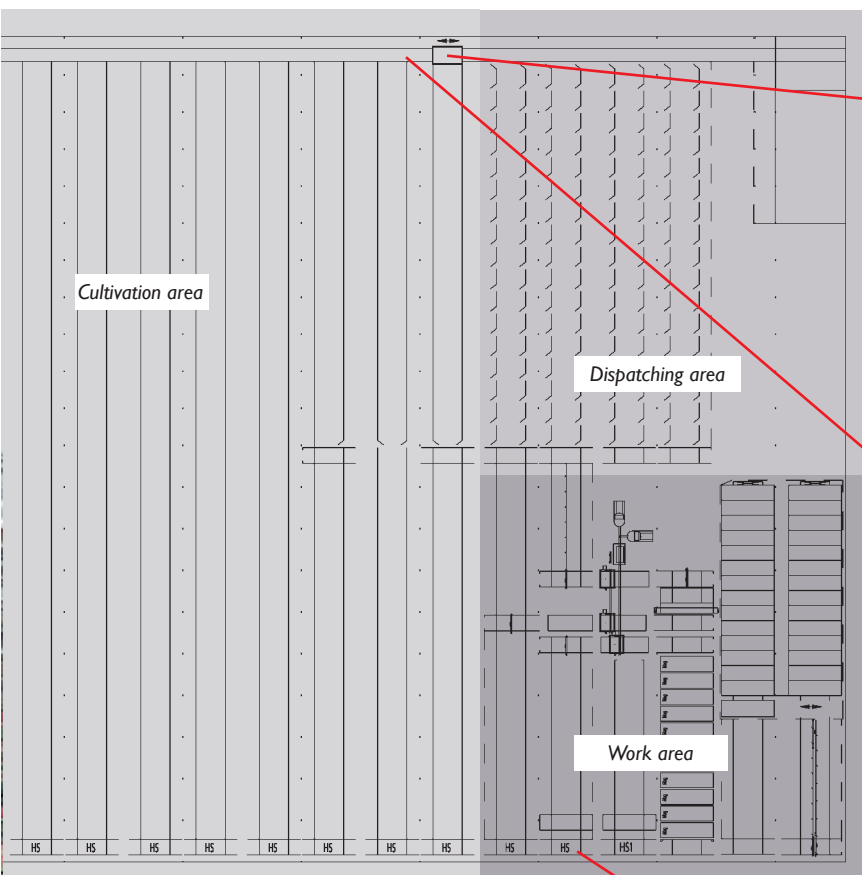
The **mobile bench** from OTTE consists of a welded aluminium framework system with braced corners, into which the most varied of linings can be integrated according to the customer's requirements. The roller system is composed of two pairs of smooth track rolls and leading rolls, upon which the bench is



Rolling mobile bench with chassis



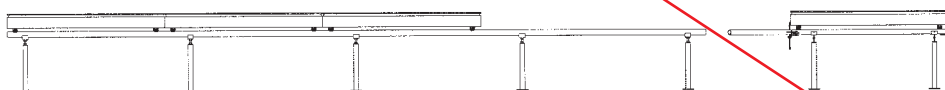
Mobile and rolling mobile bench systems enable maximum utilisation of greenhouse surface space without the loss of working routes.



Automatic single or multi-layer transport robots for the loading and with drawal of benches



Track-guided, manual transport trolley with interlocking system



Mobile support with working position

moved through the cultivation areas on continuous, galvanised runways. The benches are moved into the work or cultivation halls upon tracks as required.

The **rolling mobile bench system** was developed from the mobile bench system at special request. It offers more flexibility in the simultaneous cultivation of different types of plants, as care and marketing can take place directly within the cultivation areas. The rolling system on the benches consists of four pairs of track rolls and leading rolls. There

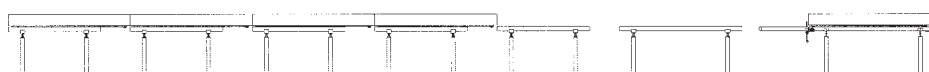
are two different support designs (see picture), which enable access to the plants on all sides in the cultivation hall. Short supports offer the possibility of making a passageway without using a track. Long supports create up to four routes on the respective track. For this purpose, a bench is pushed into the transport track.



Stationary transport track with or without pneumatic lifting elements



Long rolling mobile support with working position



Short rolling mobile support with working position



Two-layer transport cart



Seven-layer lift for germination chamber



Overhead-gantry



Semi-automatic shifting device



Fully automatic transport cart

Mechanical engineering: Individual optimisation of your work process

OTTE mechanical engineering supplements your mobile and rolling mobile bench systems and rounds them off into fully automatic functioning facilities for plant production.

The rail-guided **transport cart** from OTTE transport your benches entirely automatically and continually to exactly where you want them. Each transport cart is designed according to your requirements. Single and multi-layer designs with integrated collection and / or pushing equipment are already successfully in operation. Transport carts from OTTE can push and pick up containers from one or both sides. The power supply takes place via a bus bar. It is also possible to have digital bus connections to a central computer.

Various mobile or stationary **lift systems** (transport units, etc) allow the handling of your containers in the cultivation areas or at particular set points.

Semi-automatic **shifting devices** allow the moving of plants directly inside the cultivation areas. The picking up and setting down of plants in the work halls is thus dispensed with.

Stationary **storeroom stackers** from OTTE can be used as an alternative to the ceiling crane. Their function is the stacking and un-stacking of empty containers.

The fully automatic **ceiling crane** carries out all work hall programmes. It organises the transportation of containers from the storeroom to all the work and storeroom positions as well as to the washing plant. The ceiling crane is designed for the transportation of empty containers. Another version for the transportation of plants can also be supplied.





Ceiling crane



Storeroom stacker

The **washing plant** from OTTE is a high-pressure cleaning plant for the thorough cleaning of the container linings (plastic trays/plates). As an option, the washing machine can also be supplied with a sieve conveyor belt for trouble-free removal of substrate. OTTE offers a brush cleaning device especially for the cleaning of linings made from non-woven fabrics.

After potting, the containers pass through a **pouring station** which moistens the substrate as required.



Automatic loading of a high pressure washing plant for thorough cleaning of your containers



High-pressure washing plant





Model "B": galvanised steel posts with or without a traverse for heating pipes, for mounting into concrete (in the ground)



Aluminium support for mounting on a concrete surface



Concrete posts with recesses for traverse for heating pipes to be mounted in the ground (into concrete)



securing against shifting and losing balance



OTTE-Rolling benches: Logical use of space

With rolling benches from OTTE, paths can be created where they are most needed. It is thereby ensured that the best possible use is made of the available space. The aluminium construction is welded and thus guarantees a long operational life. The table formats correspond to the available tray formats (standard widths: 1.61m; 1.81m; 1.91m; 2.01m) in almost any length. Special sizes are available upon enquiry.

The sturdy table support consists of concrete, galvanised steel posts or from aluminium, depending on the structural conditions. All

supports are fitted with variable height adjustment. Two rolling tubes between the support and rolling bench provide the bench tub with mobility. The rolling movements are between 40cm and 60cm depending on the width of the bench. Safety elements ensure danger-free use (securing against shifting and losing balance).



Optimal lining for every culture



Aluminium trough lining in use

a sheeting overlay this lining offers optimal air circulation.

Wave grid lining

The wave grid lining allows optimal circulation of heat. Wave grids are available with different mesh sizes and wire thicknesses, depending on the size of the pots, in both galvanised and non-rust steel designs.

Aluminium trough lining

The trough lining promotes a microclimate very conducive to growth because the air can flow past the plants from underneath. The even warming-up of the aluminium trough ensures swift drying of the root area.

Thermal lining with curing bag and aluminium foil lining

The thermal lining is particularly suitable for young plant cultures, because the warmth is radiated exclusively upwards because of the heating tubes embedded in polystyrene.

Plastic plate lining

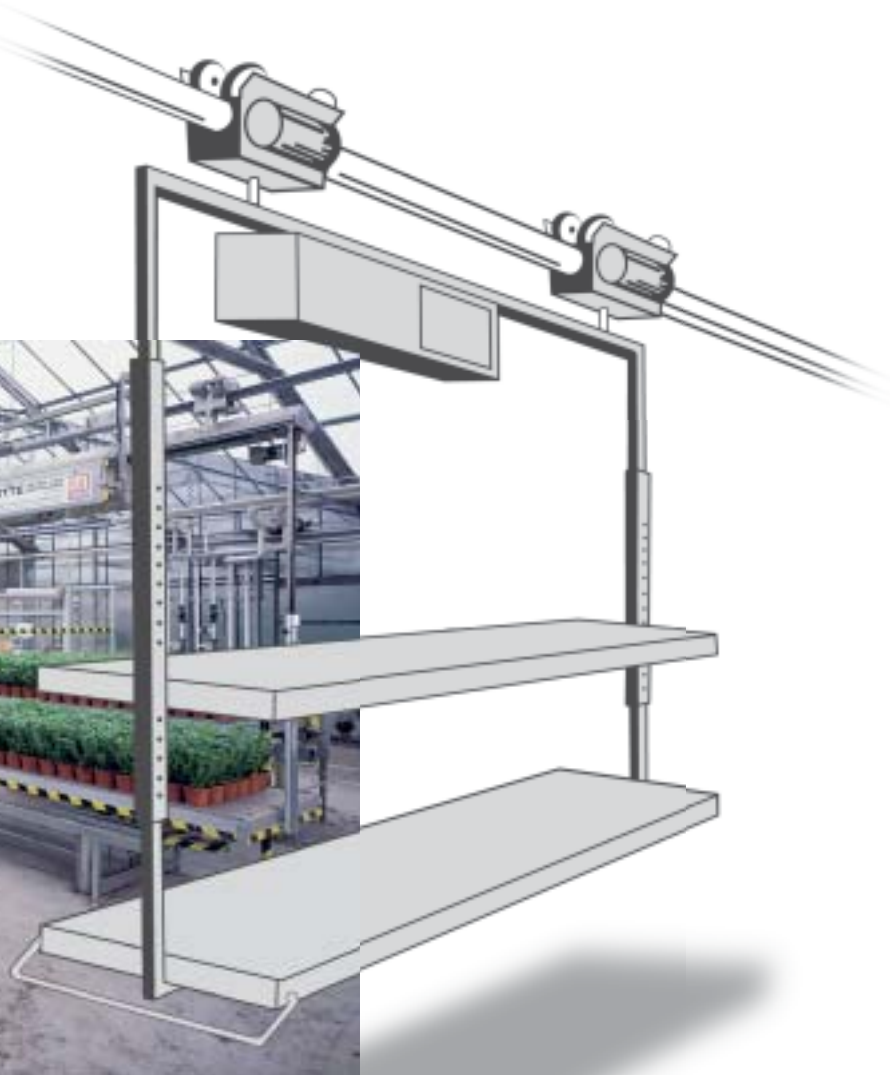
The plastic plate lining offers the ideal solution for irrigation processes. The tray can be irrigated with water or a nutrient solution in accordance with the ebb and flood principle and is thus part of a closed system. With its slight consumption of water and fertiliser, a fully automatic irrigation or fertilisation is achieved with short irrigation times and large savings on energy.

Perforated polystyrene lining

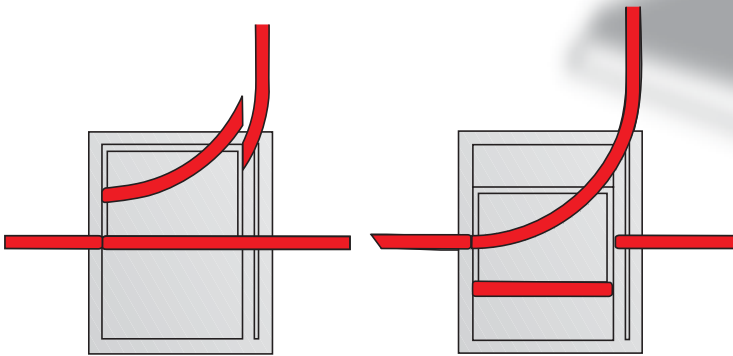
As a lower-price alternative to plastic plate lining, the polystyrene linings with irrigation mats also provide a closed water circulation (as flow table with polyethylene, fleece and pin sheeting). In this way, the cistern and also the pump facilities can be of smaller dimensions. This not only reduces the consumption of water and the air humidity, but also the investment costs. Without



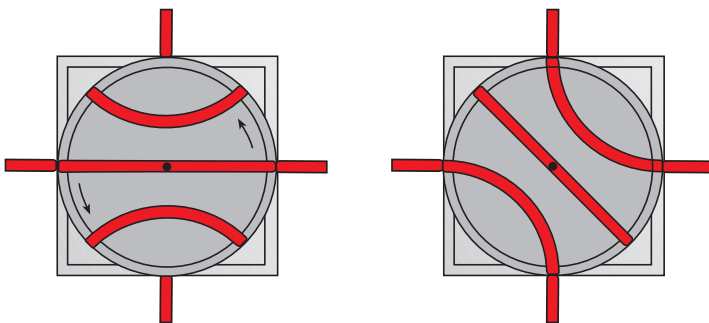
OTTE trays can be flooded through 2-way table valves. The valves and plastfilter for the valve sumps consist of hardwearing, UV-resistant plastic. The water is enriched with air-oxygen through the valve principle.



Work area with monorail system



Slide switch

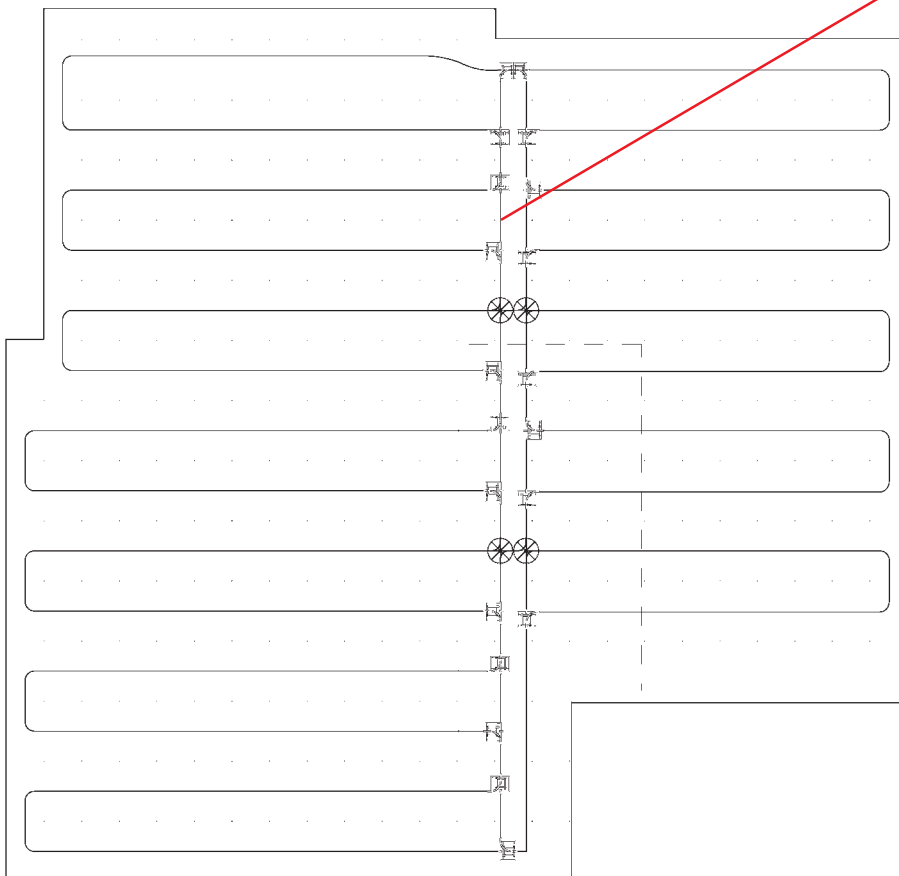


Turnstile switch

Monorail systems by OTTE: The right decision

The OTTE monorail system offers a cost-effective alternative to the use of conveyor belts (transport units). The biggest advantage of the system lies in the rational loading of the rolling bench equipment and cultures indoors and outdoors. In order to guarantee a long operational life, the monorail system is produced from hot-galvanised steel and aluminium, including switches, track rails and suspension parts. All guidance functions are carried out by an on-board logic unit. The supply voltage for the guidance and drives is provided by a maintenance-free battery on each vehicle, meaning that they can be used self-sufficiently (load capacity max. 100 kg). An automatic battery-charger reloads the batteries.

Two switch systems are available: the slide switch allows travel straight forward and turning to the left or right. The turnstile switch allows further travel in three directions. Both systems are available with manual or automatic control.



Sensors and barrier switches offer protection against damage to people and property.

The following upgrades are possible as options:

- Suspension operation
(curve radius > 1 m/
load capacity max. 100 kg)
- Additional transport cable racks
- Automatic height adjustment
- Optic-electronic coding
- Radio remote operation
- Automatic loading station

The most varied sections can be operated with the monorail system.





On the right track: OTTE-concrete parts

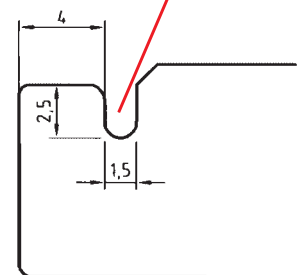
A large selection of concrete parts is available from OTTE for the most varied requirements in the fields of horticulture and agriculture. As well as carriageway slabs, paving slabs and U-plates, our selection also includes enclosure posts.

By applying modern and automatically controlled production machines, we produce parts of consistently high quality at our factory in Westerstede.

Get in touch with us.



High quality U-plates as concrete parts



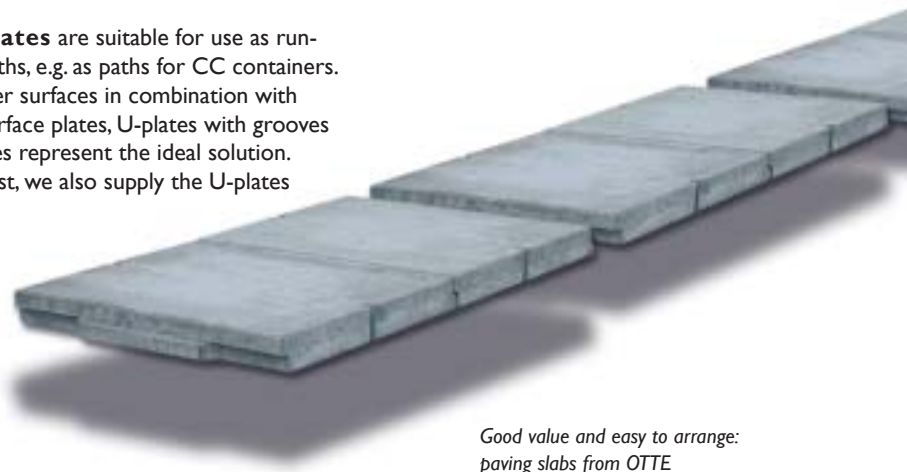
Edge of a carriageway slab with groove for rubber clamps for the attachment of sheeting



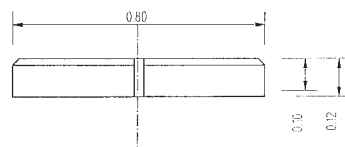
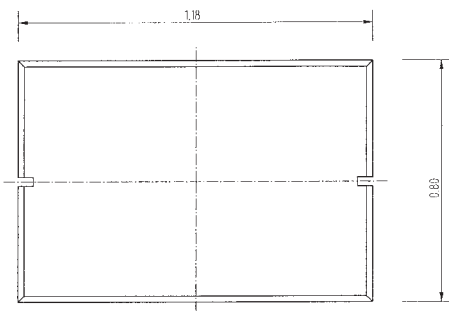
OTTE-concrete parts for tree nurseries and gardening businesses

OTTE **carriageway slabs** for horticulture and agriculture are versatile and easy to handle, and can also be put to good use on even surfaces. For our **paving slabs** for paths on container surfaces, in addition to plates without a groove, we offer – upon request – plates with a groove on one or both sides for the fastening of sheeting or mats.

OTTE-**U-plates** are suitable for use as runways and paths, e.g. as paths for CC containers. For container surfaces in combination with our large surface plates, U-plates with grooves on both sides represent the ideal solution. Upon request, we also supply the U-plates with clamps.



*Good value and easy to arrange:
paving slabs from OTTE*





OTTE-Service: We have the solution.



We attach particular importance to service and competent customer care. Of course, we are happy to visit you on-site and to advise you on our wide range and to work out the most profitable solution together with you. Challenge us!

Technical sales:

Mr. Jan-Bernd Brunken

Phone: + 49 (0) 44 88 83 09- 33

Fax: + 49 (0) 44 88 83 09- 35

E-mail: jan-bernd.brunken@otte-metallbau.de

Mrs. Anna Tugowa

Phone: + 49 (0) 44 88 83 09- 53

Fax: + 49 (0) 44 88 83 09- 35

E-mail: anna.tugowa@otte-metallbau.de





The program at a glance:

- **Rolling mobile bench systems**
- **Mobile bench systems**
- **Roller benches**
- **Transport carts, crane systems**
- **Bench washing machines**
- **Special machines**
- **Monorail systems**
- **Concrete parts**



OTTE Metallbau GmbH & Co. KG
Kuhlenstrasse 42 · D-26655 Westerstede
Phone + 49 (0) 4488-8309-0
Fax + 49 (0) 4488-8309-35
E-mail info@otte-metallbau.de
Web www.otte-metallbau.de