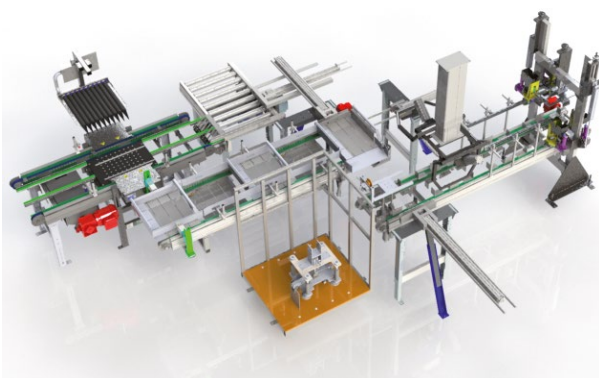


Products & Solutions

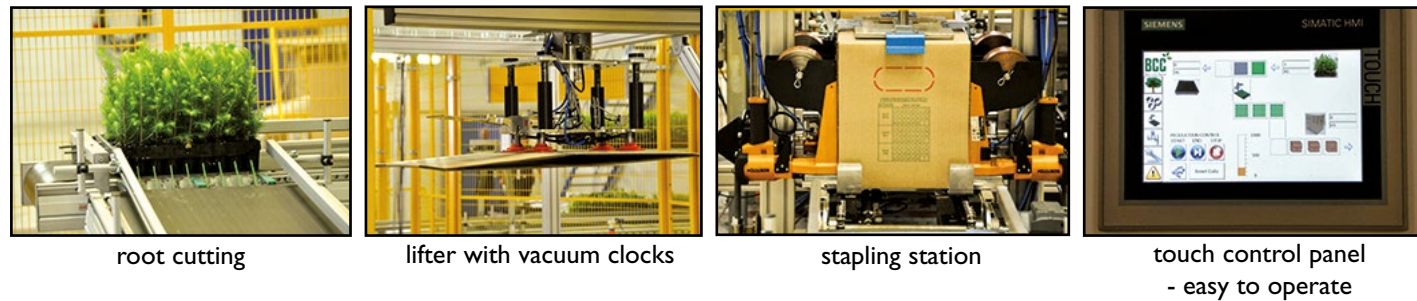
for forest nurseries



Plant the Planet



The BCC Automatic Plant Packer



BCC Automatic Plant Packer

After thorough and intensive research with forest nursery experts and growers BCC has developed a new Automatic Plant Packer customized for the modern forest nursery. There is a great need from our customers around the world to make the sorting and packing process more efficient saving both money and time. The major part of the sorting and the packing processes are still very labour intense in many forest nurseries around the world. With the new BCC plant packer the customer will be able to get a fully automatic sorting and packing function customized and optimized for the nursery operations.

Manual or automatic sorting process?

The customer will have the option to include manual or automatic sorting of seedlings in the BCC Plant Packer depending on the specific needs and of course the budget. The below process description shortly explains the function of both the manual and the automatic process. Some adjustments are necessary for each line, which means that BCC can present a more detailed packing line description and layout for each isolated project. Please contact BCC or your local BCC agent for further discussions.

Description of sorting and packing process

Manual sorting (only for customer choosing manual sorting)

- The unsorted trays are fed onto a two-level manual work station (MWS), which is placed before but yet integrated into the packing line. An inclined conveyor belt will allow for trays to be transported onto the upper conveyor belt of the manual workstation. This station consists of a pneumatic in feeding pusher, accumulating roller conveyor (upper level) and a belt conveyor (lower level). Steel tables are located right next to the conveyor belt for easy and ergonomic use. After sorting is completed and trays are 100 % full, the trays are re-placed on the lower conveyor belt and tray will be transported into the packing line.

- Tray by tray will be guided through the root cutting unit by the means of a pusher. The first root cutter will cut the roots of the seedlings on one side.
- The trays will be transported on a belt conveyor and a new pusher will guide the tray through the second root cutting unit – cutting the roots of seedlings from the opposite side.
- The tray will be guided into the right position of the de-plugging unit and a gripper with bellows will go in between the seedlings.

- The seedlings will be de-plugged from underneath and simultaneously the bellows will inflate and lift the seedlings upward.
- The gripper moves forward into a standby mode while the next tray will enter the de-plugging unit.
- The seedlings are placed on a chain conveyor equipped with ribs and hooks in several places (that is, when one is in “dropping position” the other is in the loading position)

Automatic sorting (optional for customer)

- If the packing line is equipped with an automatic sorting process, there will be a vision system counting the number of seedlings in the de-plugging unit. A signal will tell the completion unit to add the exact amount of seedlings into the “drop position – note (!) before the seedlings are compacted.

- Chain conveyor together with a compression cylinder moves forward and compresses the seedlings to box size. One transverse pusher will grip the seedlings, which then gently presses them into the box.
- When the seedlings are inside the box, the box will be partially closed, by the means of a pusher, to prevent the seedlings from tipping over and out of the box.
- A linear guide unit including a lifter with vacuum clocks is positioned above the boxes for continuous pickups. The box will automatically unfold and get into the right position. The stack of new unfolded boxes must be refilled manually from time to time.
- The linear guide places the box on a driven chain conveyor. The conveyor will take the box step by step towards the stapler. Position 1: loading station, position 2: middle station and position 3: stapling/gluing closing station.
- Empty trays will be transported to a knocking station (optional). The trays are fed into the knocking station automatically. When trays are in position, the unit equipped with adjustable pneu-cylinder will accelerate and turn the trays 180 degrees for efficient removal of substrate, roots, etc.
- After the removal of substrate, roots, etc, the trays will then proceed to the washing line and to further storage.



OPERATIONAL BENEFITS & KEY FEATURES

- High packing capacity
- Limited operators needed
- Compatible for different tray types and boxes
- Low maintenance
- Compact design to fit into production hall
- Manual/automatic sorting is optional
- Colour and touch panel for easy handling and manoeuvring
- Alarm handling inside control panel

TECHNICAL DATA - CAPACITY OF PACKING LINE

The capacity of the packing line is high due to the fact that several different processes are being done simultaneously throughout the packing process. The capacity of the line will depend on several factors; if manual or automatic sorting process is chosen, type of container used and also how many containers are being packed in the cardboard packing box.

Note that below estimation of capacity is based on trays (Hiko or Plantek) and not number of seedlings. Other containers may also be possible to use in the packing line. Please discuss directly with BCC for details. Note also that the calculated capacity of the packing line is separate and is not taking the speed of the sorting process into account.

The estimated capacity is calculated a cycle time of about 15 sec / box. The BCC Plant Packer allows for 1 or 2 containers to be handled at the same time provided that the above mentioned container types are used. This will consequently mean that it will take the same time to handle 1 or 2 containers.

Please find below estimations of capacity:

15 s/box

4 boxes/min

240 boxes/hour

1680 boxes/day (7 hours)

Again, please contact BCC or your local BCC agent to discuss detailed capacity based on your operations and your growing systems.

