COMPONENT PICK-AND-PLACE SYSTEM, DEVICE AND METHOD THEREOF

ABSTRACT

There is a component pick-and-place system having a control unit, at least one transport line for transporting a plurality of component trays; and at least one transfer line for transferring a plurality of pick-and-place (PnP) devices. Each of the plurality of PnP devices has a control and valve unit, an automatic pitch conversion unit having at least one column and at least one row of pickup tips positional at a parking area and an active area. The automatic pitch conversion unit has a X-pitch conversion mechanism and a Y-pitch conversion mechanism. The X-pitch conversion mechanism has a first drive motor, a plurality of movement transfer elements for transferring rotary motions of the first drive motor to cause a pair of X-pitch bands to move in a linear direction, and a pair of engagement arms that are slidably engaged to the pair of X-pitch bands for sequentially engaging a column of pickup tips to move to a desired X-pitch position. The Y-pitch conversion mechanism has a second drive motor, a plurality of movement transfer elements for transferring rotary movements of the second drive motor to a pair of Y-pitch arms to cause a pair of Y-pitch rods to move in a linear direction, and a pair of carrier blocks slidably engaged to the pair of Y-pitch rods for simultaneously moving the plurality of rows of pickup tips to a desired Y-pitch position.

FIG. 4