

EARPIECE SPEAKER MESH ASSEMBLY



TASK

The earpiece speaker mesh is one of the more complex components of mobile phones. Placement of this mesh is a challenging application that requires absolute accuracy. In the following pages we present a variety of solutions provided.

Application Study

APAC BASED FULLY-AUTOMATIC MESH ASSEMBLY WITH DUAL TRAY SHUTTLE



SOLUTION

- APAC
- Robot Mode RM3065
- Customized tooling
- Vision system
- Dual tray shuttle
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FEATURES & BENEFITS

- A precision chuck, exactly corresponding to the areas of adhesive on the mesh, peels and places the mesh accurately into the target recessed area.
- The dual tray shuttle allows for semi-automated operation. The operator loads/unloads one tray shuttle while the APAC assembles on the other. The only other operator responsibility is changing rolls of adhesive. This solution ensures a fully-automatic operation for around 15 minutes. A future addition of a tray handling station will enable the customer to increase throughput in a cost-effective manner as market conditions warrant.
- The optional vision system ensures an accurate assembly by scanning both the mesh and the target part prior to placement.

CHALLENGES

- Earpiece speaker mesh is made of flexible material and often awkwardly shaped, making it difficult to peel.
- Earpiece speaker mesh can be picked up by vacuum only in certain defined, small areas where adhesive is applied.
- Mesh needs to be placed extremely accurately into a recessed area within tolerance of $\pm 0.002'' / 0.05 \text{ mm}$.



Application Study

SEMI-AUTOMATIC PLACEMENT OF VERY PARTICULAR ADHESIVE MESH WITH MODEL 3065



CHALLENGES

- The mesh shows high tolerances on the liner.
- Only a minuscule portion of the mesh is zoned with adhesive, thus chucking and peeling the mesh off the liner is difficult.
- Tight tolerances on the mobile phone housing require accurate placement.
- The manufacturing location is in a low-tech region with minimal automation expertise.

SOLUTION

- Model 3065
- Customized chuck
- Customized nest
- Benchtop configuration for semi-automatic operation
- X-axis detection option

FEATURES & BENEFITS

- The customized chuck along with AccuPlace's peeling technology allow for consistent peeling of the mesh.
- The bench top platform consisting of a base with feet, built-in power supply, and 2-hand control provides a simple cost-effective solution that captures the quality benefits of automation in a low-tech region.
- The optional x-axis detection corrects the cross-web tolerances of the adhesive component on the liner and allows accurate placement into the recessed area of the housing.



Application Study

3-DIMENSIONAL PLACEMENT INTO HOUSING



CHALLENGES

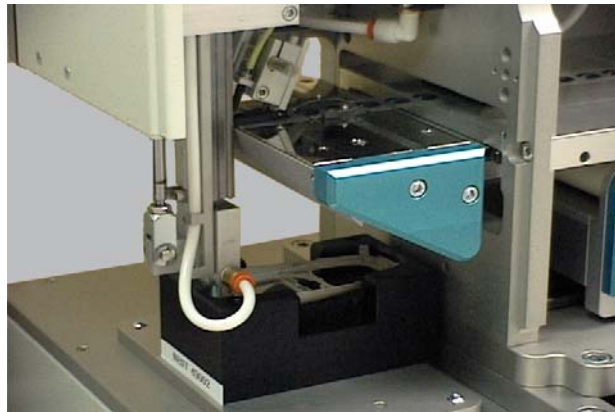
- The shape of earpiece speaker mesh is irregular and awkward to handle.
- The three-dimensional design of the target part housing requires complex, highly accurate placement of the mesh.

SOLUTION

- Model 3065
- Customized low durometer chuck
- Benchtop configuration for semi-automatic operation

FEATURES & BENEFITS

- AccuPlace's patented technology ensures a repeatable and accurate peeling.
- The low durometer chuck and the sophisticated matrix of pressure and vacuum settings warrant accurate placement 3-dimensional into the target part.
- The bench top platform consisting of a base with feet, built-in power supply, and 2-hand control provides a simple cost-effective solution that captures the benefits of automation



Application Study

AUTOMATED PLACEMENT OF 3-DIMENSIONAL COMBINED EARPIECE SPEAKER MESH AND CUSHION



CHALLENGES

- The part - a combined earpiece speaker mesh and cushion - has a three-dimensional shape that does not correspond to zoned glued areas of the component.
- Placement in very tight tolerances is required with little guidance in the target part housing.

SOLUTION

- APAC
- Robot Mode RM3065
- Customized tooling
- Integrated vision system
- Peel edge stripper assembly
- Rewind reel

FEATURES & BENEFITS

- AccuPlace's peeling technology along with customized tooling allow for consistent peeling of the adhesive component. The custom-designed chuck first places the component horizontally then incorporates air pressure for accurate placement of the die cut component in its three-dimensional form.
- By controlling both peel and place position the integrated vision system ensures accurate placement even onto reflective housings which have no concrete assembly reference.
- The peel edge stripper assembly prevents parts that are not seen (and therefore not picked up) from interfering with the liner drive mechanism and facilitates continued production without interruption.

