CARD HAVING METALLIC CORE LAYER AND SYSTEMS AND METHODS FOR CARD MANUFACTURING

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Application Serial No. 62/541,909, filed on August 7, 2017, entitled "SYSTEMS AND METHODS FOR CARD MANUFACTURING," U.S. Provisional Application Serial No. 62/568,517, filed October 5, 2017, entitled "SYSTEMS AND METHODS FOR CARD MANUFACTURING," and U.S. Provisional Application Serial No. 62/617,863, filed on January 16, 2018, entitled "CARD HAVING METALLIC CORE LAYER AND SYSTEMS AND METHODS FOR CARD MANUFACTURING," each of which is incorporated herein in its respective entirety.

BACKGROUND

[0002] Information carrying cards provide identification, authentication, data storage and application processing. Such cards or parts include key cards, identification cards, telephone cards, credit cards, bankcards, tags, bar code strips, other smart cards and the like.

[0003] Current information carrying cards use plastic or other polymer material cores. Current materials fail to provide a desired tactile response and strength. For example, information carrying cards need to withstand flexing to protect identifying components from damage as well as offer good durability during use. In addition, information carrying cards should be appealing, in terms of appearance and feel, to the end user, in order to facilitate use and adoption of the information carrying card.

SUMMARY

[0003a] In a first aspect, the present disclosure provides a card manufacturing system, comprising: a locating device configured to identify a position of one or more information carrying cards formed integrally with a laminate sheet, wherein the locating device is configured to generate information corresponding to the position of the one or more information carrying cards; and a separation device comprising at least one singulation mechanism configured to separate each of the one or more information carrying cards from the laminate sheet, wherein the

singulation mechanism separates the one or more information cards based on the information corresponding to the position of the one or more information carrying cards.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] Aspects of the present disclosure are best understood from the following detailed description when read with the accompanying figures. It is noted that, in accordance with the standard practice in the industry, various features are not drawn to scale. In fact, the dimensions of the various features may be arbitrarily increased or reduced for clarity of discussion.

[0005] FIG. 1 illustrates a cross-sectional view of a layer structure of an information carrying card, in accordance with some embodiments.

CLAIMS

What is claimed is:

1. A card manufacturing system, comprising:

a locating device configured to identify a position of one or more information carrying cards formed integrally with a laminate sheet, wherein the locating device is configured to generate information corresponding to the position of the one or more information carrying cards; and

a separation device comprising at least one singulation mechanism configured to separate each of the one or more information carrying cards from the laminate sheet, wherein the singulation mechanism separates the one or more information cards based on the information corresponding to the position of the one or more information carrying cards.

2. The card manufacturing system of claim 1, wherein the locating device includes an imaging modality configured to generate an image of the position of the one or more information carrying cards within the laminate sheet.

3. The card manufacturing system of claim 2, wherein the imaging modality comprises a non-visible spectrum imaging modality.

4. The card manufacturing system of claim 3, wherein the imaging modality is selected from the group consisting of: an x-ray imager, an ultrasonic imager, a nuclear imager, an ultraviolet imager, and a sonogram imager.

5. The card manufacturing system of claim 1, wherein the locating device comprises a marking mechanism configured to generate one or more markings on the laminate sheet, and wherein the information corresponding to the position of the one or more information carrying cards comprises at least one marking formed on the laminate sheet.

6. The card manufacturing system of claim 5, wherein the at least one marking comprises one of a visible marking, a non-visible marking, and/or a reactive marking.

7. The card manufacturing system of claim 1, wherein the locating device comprises a computer configured to generate a digital mapping file, wherein the digital mapping file

comprises the information corresponding to the position of the one or more information carrying cards.

8. The card manufacturing system of claim 7, wherein the separation device comprises a computer configured to receive the digital mapping file, and wherein the separation device positions the singulation mechanism based on the digital mapping file.

9. The card manufacturing system of claim 1, comprising a transfer arm configured to transfer the laminate sheet from the locating device to the separation device.

10. The card manufacturing system of claim 9, wherein the transfer arm comprises a plurality of vacuum cups configured to engage a surface of the laminate sheet.

11. The card manufacturing system of claim 10, wherein the plurality vacuum cups comprises a first set of vacuum cups configured to engage a portion of the laminate sheet containing at least a portion of the one or more the information carrying cards and a second set of vacuum cups configured to engage a portion of the laminate sheet absent the one or more information carrying cards.

12. The card manufacturing system of claim 1, comprising a worktable configured to receive the laminate sheet.

13. The card manufacturing system of claim 12, wherein the worktable comprises a vacuum system configured to maintain the laminate sheet in a fixed position with respect to the worktable during locating and card singulation.

14. The card manufacturing system of claim 1, wherein the at least one singulation mechanism is selected from the group consisting of a rotating bit, a cutting edge, a laser cutter, a water jet, and an ultrasonic wire cutter.