Study on Design Parameters of Non－contact Porous Air－floating Tables

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ABSTRACT

In this study present a non-contact carriage table by air-floating. Those are discuses relation of air flow rate, gap and transformation. The air-floating output uniform air through porous. It can let glass plane float by air, and will be replace by traditional transfer system. Because the air-floating system can move in zero-friction, zero-wastage and move materials stable. The air-floating carriage table can output uniform air by compress air through porous. Glasses can float by the strength of porous. In this paper use experiments to know porous features, and use commercial software, ANSYS CFX to simulation features of porous. When we know the features of porous, it can set bound condition in ANSYS CFX to simulation glasses high and pressure in different flow rate. The ANSYS Workbench Mechanical can be simulation transformation analysis in glasses by pressure, and put the result in mechanical calculation system by fluid-structure coupling. We can get different relationship with gap, stress and transformation. At last, compare with porous carriage system and traditional pin carriage system. It can offer some advantage and disadvantage in the future.

Keywords : Non-contact ; Porous Air-floating Tables ; Fluid-Structure Coupling

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