

PROCESS OPTIMIZATION FOR LENS COATING MACHINE

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Abstract:

Photochromic lenses are also called adaptive lenses. They are clear indoors and at night and automatically darken outdoors as the light conditions changed. They block 100% of UV rays and help to enhance contrast and reduce glare. Photochromic molecules adapted by exposure to specific wavelengths of light. The lenses are activated by UV light - a bond within the photochromic molecules is broken and the molecules instantaneously open, darkening the lens. When exposed to heat, the open bond within the photochromic molecules close, returning to a clear lens. The darkness of the lens is dependent on the numbers of photochromic molecules open at the any given time. Trans-Bonding provides outstanding photochromic performance, adhesion, scratch resistance, and optical purity. Design of experiment (DOE) is a primary tool this research for determining and analyzing which factors affect to the problem. Design of experiment (DOE) is a powerful technique to determine the optimal settings of the process factors and determine at what level of the factor should be set to optimize the process response. The process response is a coating thickness which the target value 19.75 microns (specification is 18.5 to 21.0 microns) that means the result setting are appropriate with coating thickness on spin coating process and all confirmation runs are satisfied. In addition to the process capability, the C_{pk} is improved from 0.35 (poorly performed) to 2.68 (Six Sigma level).

Keywords: process optimization, design of experiment, trans-bonding, adaptive lenses