STUDY OF VARIABILITY IN SCREEN-PRINTING MACHINE PRECISION

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During the screen-printing operation, slight variations occur in the pattern line positions as a result of differences in the precision of screen-printing machines, tile position, movements, etc.

Screen-printing is currently the most widespread technique for in-line ceramic tile decoration. The appearance of what may be termed "printing" represents an innovation in decoration, which provides a series of advantages. However, from the viewpoint of precision it requires perfecting in order to become established as the truly definitive alternative

In the present work, the variability was studied of the screen-printing operation from the point of view of pattern line positioning. The variation in the position of the pattern lines amongst the tiles was studied during the industrial screen-printing operation. The study was conducted using statistical parameters.

The screen-printing operation (position of the pattern printed by the printing head) was set under optimum working conditions (controlled process), subsequently studying its capacity to keep within control limits. This study of the machine's capacity entailed a direct calculation of the printing head's capability to reproduce its position, i.e. its degree of precision and steadiness.

The study was conducted for different types of printing heads, including rotating ones, in different production lines, with different tile sizes and working environments.

The results are detailed together with the methodology used, which was considered satisfactory for the study, after establishing printing head data, machine capability, as well the degree of scatter or variability found in production. These data are presented and enable more suitable maintenance to be carried out on the printing heads as a basis for improvement of the screen-printing operation.

Graphs are included to determine the various screen-printing positions and bevelling design on the tile fair face.