Indirect tooling based on micromilling, electroforming and selective etching

The tool inserts used for injection moulding or hot-embossing of polymer micro-components, are the most important and expensive and crucial part of this important mass-production process. In this paper a new fabrication scheme is introduce, consisting of a combination of micro-milling, electroforming and selective etching. The basic concept is to exploit the benefit of true 3D-machining in a soft substrate such as aluminium with the excellent replication capabilities of nickel electroforming. The term indirect machining covers the fact that the master that is produced by machining a positive structure, i.e. the opposite of what is needed for the actual mould insert.

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