LASER CLADDING TOOL HEAD AND MACHINED SURFACE SENSING METHOD THEREOF

FIELD OF THE INVENTION

[0001] The present invention relates to a laser cladding tool head and a machined surface sensing method thereof, and more particularly to a laser cladding tool head and a machined surface sensing method thereof with a temperature sensor and a camera.

BACKGROUND OF THE INVENTION

[0002] A traditional computer numerical control (CNC) machining center can process various cutting operations by changing different cutting tool heads, but only the cutting operations are processed. When a welding (repair welding) or heat treatment operation is necessary to be pressed therewith, it must use other machine tools, so that the steps and the process time of the machining operations are substantially increased.

[0003] Especially, for a machining method using laser, such as a laser cladding operation, it must use special laser machine tools to work. Therefore, if the laser machine tool is necessary to be used in entire of the machining processes, a work-piece is moved, fixed, and machined in different machine tools, so that a dismount–move–fix-machining process is repeated. Thus, if a laser cladding tool head is used in a hybrid CNC machining center, users can accomplish cutting and laser cladding operations for a work-piece just in one single machine, so that the work-piece is unnecessary to be moved between different machines. Therefore, the steps and the process time of the machining operations are substantially simplified.

[0004] However, a common laser cladding tool head does not have a machined surface sensing function, so that a laser power thereof cannot be adjusted according to an actual machined surface situation, or only a single sensing function is provided, so that a comprehensive feedback and adjustment for the machined surface cannot be made.

[0005] For improving the above-mentioned defects, it is necessary to provide