Claims

What is claimed is:

1. A machining method of a hybrid computer numerical control (CNC) machining center, comprising steps of:

providing a hybrid CNC machining center including at least a cutting tool head, a laser cladding tool head, a laser surface heat treatment tool head, and a computer numerical control unit, wherein the cutting tool head, the laser cladding tool head and the laser surface heat treatment tool head are alternately installed in a tool holder of the hybrid CNC machining center, wherein the laser cladding tool head further includes a temperature sensor and a camera;

processing a first cutting operation, wherein the cutting tool head is configured to cut at least a machined surface of a work-piece;

processing a cladding operation, wherein the laser cladding tool head is configured to clad the machined surface, and at the same time, firstly detecting a temperature of a molten pool of the machined surface by the temperature sensor, and providing the detected temperature of the molten pool to the computer numerical control unit, wherein if the temperature of the molten pool is under a default temperature, a power of the laser cladding tool head is increased; and if the temperature of the molten pool is over the default temperature, the power of the laser cladding tool head is decreased; and then detecting a lightness and profile of the molten pool of the machined surface by the camera, and providing the detected lightness and profile of the molten pool to the computer numerical control unit, wherein if the lightness and profile of the molten pool is under a default condition, the power of the laser cladding tool head is increased; and if the lightness and profile of the molten pool is over the default condition, the power of the laser cladding tool head is decreased;

processing a second cutting operation, wherein the cutting tool head is configured to cut the cladded machined surface; and

processing a surface heat treatment operation, wherein the laser surface heat treatment tool head is configured to heat treat the machined surface.

2. The machining method according to Claim 1, wherein the hybrid CNC machining center further comprises a contact or non-contact type detecting tool head, which is configured to detect a completeness of the cladded machined surface, wherein if the completeness of the cladded machined surface is achieved, a following step is processed; and if the completeness of the cladded machined surface is not achieved, the cladding operation is processed again.

3. A machining method of a hybrid CNC machining center, comprising steps of:

providing a hybrid CNC machining center including at least a cutting tool head, a laser cladding tool head, and a computer numerical control unit, wherein the cutting tool head and the laser cladding tool head are alternately installed in a tool holder of the hybrid CNC machining center, wherein the laser cladding tool head further includes a temperature sensor and a camera;

processing a cutting operation, wherein the cutting tool head is configured to cut at least a machined surface of a work-piece; and

processing a cladding operation, wherein the laser cladding tool head is configured to clad the machined surface, and at the same time, firstly detecting a temperature of a molten pool of the machined surface by the temperature sensor, and providing the detected temperature of the molten pool to the computer numerical control unit, wherein if the temperature of the molten pool is under a default temperature, a power of the laser cladding tool head is increased; and if the temperature of the molten pool is over the default temperature, the power of the laser cladding tool head is decreased; and then detecting a lightness and profile of the molten pool of the machined surface by the camera, and providing the detected lightness and profile of the molten pool to the computer numerical control unit, wherein if the lightness and profile of the molten pool is under a default condition, the power of the laser cladding tool head is increased; and if the lightness and profile of the molten pool is over the default condition, the power of the laser cladding tool head is decreased.

4. The machining method according to Claim 3, wherein the hybrid CNC machining center further comprises a contact or non-contact type detecting tool head, which is configured to detect a completeness of the cladded machined surface, wherein if the completeness of the cladded machined surface is achieved, a following step is processed; and if the completeness of the cladded machined surface is not achieved, the cladding operation is processed again.

5. The machining method according to Claim 3, wherein the hybrid CNC machining center further comprises a laser surface heat treatment tool head, which is configured to process a surface heat treatment operation to the cladded machined surface after the cladding operation.

6. A hybrid CNC machining center, comprising: at least a cutting tool head, a laser cladding tool head, a laser surface heat treatment tool head, and a computer numerical control unit, wherein the cutting tool head, the laser cladding tool head and the laser surface heat treatment tool head are alternately installed in a tool holder of the hybrid CNC machining center; and

   wherein the cutting tool head is configured to cut at least a machined surface of a work-piece; the laser cladding tool head is configured to clad the machined surface; and the laser surface heat treatment tool head is configured to heat treat the machined surface;

   wherein the laser cladding tool head further includes a temperature sensor and a camera; and during processing a cladding operation, the temperature sensor firstly detects a temperature of a molten pool of the machined surface, and the camera detects a lightness and profile of the molten pool of the machined surface, and the detected temperature, the detected lightness and profile of the molten pool are provided to the computer numerical control unit, so as to adjust the power of the laser cladding tool head.

7. The hybrid CNC machining center according to Claim 6, wherein during processing a cladding operation,
the temperature sensor firstly detects a temperature of a molten pool of the machined surface, and if the temperature of the molten pool is under a default temperature, a power of the laser cladding tool head is increased; and if the temperature of the molten pool is over the default temperature, the power of the laser cladding tool head is decreased; and
the camera then detects a lightness and profile of the molten pool of the machined surface, and if the lightness and profile of the molten pool is under a default condition, a power of the laser cladding tool head is increased; and if the lightness and profile of the molten pool is over the default condition, the power of the laser cladding tool head is decreased.

8. The hybrid CNC machining center according to Claim 6, wherein the hybrid CNC machining center further comprises a contact or non-contact type detecting tool head, which is configured to detect a completeness of the cladded machined surface, wherein if the completeness of the cladded machined surface is achieved, a following step is processed; and if the completeness of the cladded machined surface is not achieved, a cladding operation is processed again.