

WHAT IS CLAIMED IS:

1. A laser-processing apparatus for forming features in a workpiece, the apparatus comprising:
 - a laser source operative to generate a beam of laser energy;
 - a scan lens arranged operative to focus the beam of laser energy such that the focused beam of laser energy is deliverable to the workpiece;
 - at least one beam positioner arranged between the laser source and the scan lens, the at least one beam positioner operative to scan the focused beam of laser energy relative to the workpiece within a scanning range projected onto the workpiece by the scan lens;
 - at least one stage operative to impart relative movement between the workpiece and at least one selected from the group consisting of the scan lens and the camera;
 - a camera having a field of view and operative to capture imagery of an object within the field of view; and
 - at least one sensor operative to generate process control data, the process control data representing at least one selected from the group consisting of: a) at least one characteristic of the apparatus either before, during or after the workpiece is processed to form a set of features, b) at least one characteristic of the workpiece either before, during or after the workpiece is processed to form a set of features, and c) at least one characteristic of an ambient environment in which the apparatus is located either before, during or after the workpiece is processed to form a set of features;
 - a controller communicatively coupled to the at least one stage, the camera and one or more databases in which process control data is stored in association with auxiliary information, wherein the auxiliary information represents a location of each feature to be formed in the workpiece, and
 - wherein the controller is operative to execute, or facilitate execution of, a candidate feature selection process whereby:
 - process control data is processed to estimate whether any of the features formed in the workpiece are defective; and
 - the location of any feature estimated to be defective is identified.

2. The apparatus of claim 1, wherein the controller is operative to execute at least a portion of the candidate selection process.
3. The apparatus of any of claims 1 to 2, further comprising a communications module communicatively coupled to the controller and operative to transmit data.
4. The apparatus of claim 3, wherein the controller is operative to transmit an output of the candidate selection process to a remote system through the communications module.
5. The apparatus of claim 4, wherein the remote system is a remote inspection system and wherein the output of the candidate selection process is in a format readable by the remote inspection system.
6. The apparatus of claim 3, wherein the controller is operative to facilitate execution of the candidate feature selection process by transmitting at least a portion of the process control data to a remote system through the communications module.
7. The apparatus of claim 6, wherein the remote system includes at least one computing system.
8. The apparatus of any of claims 3 to 4, 6 and 7, wherein the communications module is operative to receive data and wherein the controller is operative to receive an output of at least a portion of the candidate feature selection process from the remote system through the communications module.
9. The apparatus of any of claims 1 to 8, further comprising at least one of the one or more databases.
10. The apparatus of any of claims 3 to 9, wherein the controller is operative to transmit at least a portion of the process control data to at least one of the one or more databases through the communications module.

11. The apparatus of any of claims 1 to 10, wherein the field of view of the camera is within a scan field projectable by the scan lens onto the workpiece.
12. The apparatus of any of claims 1 to 11, wherein the field of view of the camera is at least partially outside a scan field projectable by the scan lens onto the workpiece.
13. The apparatus of any of claims 1 to 12, further comprising a frame arranged to support the scan lens relative to the workpiece, wherein the scan lens is coupled to the frame.
14. The apparatus of claim 13, further comprising a stage coupled between the frame and the scan lens, wherein the stage is operative to move the scan lens.
15. The apparatus of any of claims 13 to 14, wherein the camera is coupled to the scan lens.
16. The apparatus of claim 14, wherein the camera is coupled to the stage.
17. The apparatus of claim 13, wherein the camera is coupled to the frame.
18. The apparatus of any of claims 1 to 17, further comprising an inspection support arranged to support the camera relative to the workpiece, wherein the camera is coupled to the inspection support.
19. The apparatus of claim 17, further comprising a stage coupled to the inspection support and operative to move inspection support relative to the workpiece.
20. The apparatus of any of claims 18 to 19, further comprising a stage coupled between the inspection support and the camera, wherein the stage is operative to move the camera relative to the inspection support.

21. The apparatus of any of claims 1 to 20, wherein the controller is further operative to control an operation of the at least one stage and camera to effect an inspection operation of each identified location.
22. The apparatus of any of claims 1 to 21, wherein the controller is further operative control an operation of the at least one stage and the camera based on user input received at the user interface to effect an inspection operation of each identified location.
23. The apparatus of any of claims 1 to 22, wherein the controller is further operative control an operation of the at least one stage and the camera based data received from a remote system through the communications module to effect an inspection operation of each identified location.
24. The apparatus of any of claims 1 to 23, wherein the at least one sensor includes at least one selected from the group consisting of a laser power meter and a beam characterization tool.
25. The apparatus of any of claims 1 to 24, wherein the at least one sensor includes at least one selected from the group consisting of a temperature sensor and a humidity sensor.
26. The apparatus of any of claims 1 to 25, wherein the at least one sensor includes at least one selected from the group consisting of a camera, a laser displacement sensor, a confocal laser sensor, an interferometers, an inductive coating thickness gauge, a stylus profilometer and a touch probe.