WHAT IS CLAIMED IS:

1. An end effector (300) for performing laser ablation, the end effector (300) comprising:

an effector housing (304) having a body (306) extending lengthwise between a proximal end (308) and a distal end (310) opposite thereof, wherein the body (306) defines an aperture (312), and wherein the proximal end (308) defines a beam entry port (316) to receive a laser beam (302) into the effector housing (304);

a dynamic beam diverter (318) contained within the effector housing (304) downstream of the proximal end (308);

a focal lens (320) coupled to a focal adjustment mechanism (322) and contained within the effector housing (304) downstream of the dynamic beam diverter (318); and

a mirror (324) contained within the effector housing (304) downstream of the focal lens (320), wherein the beam entry port (316), the dynamic beam diverter, the focal lens (320) , and the mirror (324) define a beam path within the effector housing (304), and wherein the mirror (324) is angled to direct the laser beam (302) from the focal lens (320) through the aperture (312)~~.~~,

wherein the dynamic beam diverter (318) comprises:

a prism (326) held in a rotational bearing (328);

a rotor (330) coupled to the rotation bearing (328), wherein the rotor (330) includes a plurality of vanes (332).

~~2. The end effector (300) at in claim 1, wherein the dynamic beam diverter (318) comprises:~~

~~a prism (326) held in a rotational bearing (328); and~~

~~a rotor (330) coupled to the rotational bearing (328), wherein the rotor (330) includes a plurality of vanes (322).~~

~~3~~2. The end effector (300) ~~at~~as in claim ~~2~~1, wherein the plurality of vanes (~~322~~332) are oriented to convert an energy from a portion of a pressurized gas into a rotational speed of 9,000 rotations per minute to 20,000 rotations per minute

~~4~~3. The end effector (300) as in any preceding claim, further comprising:

a plurality of gas jet ports (336) contained within the effector housing (304), coupled to a gas line (248), and aligned with the aperture (312), wherein at least one gas jet port of the plurality of gas jet ports (336) is oriented to shield the mirror (324) with a gas jet.

~~5~~4. The end effector (300) as in claim 3, further comprising:

a port actuator (338) coupled to at least one gas jet port of the plurality of gas jet ports (336), wherein the port actuator (338) directs the flow of the gas jet.

~~6~~5. The end effector (300) as in any preceding claim, wherein:

the effector housing (304) has a maximal width (Mw) of 10 mm to 21 mm and a length (L) of 25 mm to 75 mm.

~~7~~6. The end effector (300) as in any preceding claim, wherein the mirror (324) is movably coupled to the effector housing (304), and wherein the end effector (300) further

comprises a mirror actuator (342) coupled to the mirror (324) to move the mirror (324) between a first position and at least a second position.

~~8~~7. The end effector (300) as in any preceding claim, further comprising:

a distance measuring apparatus (344) operable to determine a working distance (Wd) between the effector housing (304) and a workpiece (202).

~~9~~8. A repair system (200) for performing laser ablation on a workpiece (202), the system (200) comprising:

an automated machine (206) having a first controller (208) and an end effector (300) of ~~any preceding claim~~ any one of claims 1 to 7;

a laser system (232) having a second controller (238) and being operably coupled to the end effector (300) at a beam entry port (316) via a fiber-optic cable (244);

a pressurized gas source coupled to the end effector (300) via a gas line (248) and coupled to the first controller (208).

~~10~~9. The repair system (200) as in claim ~~9~~8, wherein the laser beam (302) has a peak power range of 500 kW to 2 MW.

~~11~~10. The repair system (200) as in any of claims ~~9~~8 or ~~10~~9, further comprising:

a suction apparatus coupled to the end effector (300) via a suction apparatus (246) and coupled to the first controller (208); and

an intake (356) operably coupled to the aperture (312) and the suction apparatus (246).

~~12~~11. The repair system (200) as in any one of claims ~~9-11~~8-10, wherein the end effector (300) further comprises a distance measuring apparatus (344) coupled to the end effector (300) and orientated to determine a distance (Wd) between the effector housing (304) and the workpiece (202).

~~13~~12. The repair system (200) as in any one of claims ~~9-12~~8-11, wherein the end effector (300) is a first end effector (300), the system (200) further comprising a second end effector (300) configured to operate in tandem with the first end effector (300).

~~14~~13. The repair system (200) as in any one of claims ~~9-13~~8-12, sized and configured for repairing, in use, ~~wherein~~ the workpiece (202) ~~is a component of a gas turbine engine (100) accessible~~ through an orifice (164) having a diameter of 11 mm to 22 mm, wherein the end effector (300) is suitable for being inserted through the orifice (164).

~~15~~14. A method (500) for performing laser ablation on a workpiece (202) at a location with restricted access, the method (500) comprising:

positioning an end effector (300) a working distance (Wd) from the workpiece (202), the end effector (300) being coupled to an automated machine (206) having a first controller (208), the end effector (300) being in accordance with any one of claims 1 to 7 ~~comprising:~~

~~an effector housing (304) having a body (306) extending lengthwise between a proximal end (308) and a distal end (310) opposite thereof, wherein the body (306) defines an aperture (312), wherein the proximal end (308) defines a beam entry port (316),~~

~~a dynamic beam diverter (318) contained within the effector housing (304) downstream of the proximal end (308),~~

~~a focal lens (320) coupled to a focal adjustment mechanism (322) contained within the effector housing (304) downstream of the dynamic beam diverter, and~~

~~a mirror (324) contained within the effector housing (304) downstream of the focal lens (320), wherein the beam entry port (316), the dynamic beam diverter, the focal lens (320) , and the mirror (324) define a beam path within the effector housing (304);~~

activating a laser system (232) to transmit a laser beam (302) to the beam entry port (316) of the end effector (300) via a fiber-optic cable;

diverting the laser beam (302) from an axial path by employing the dynamic beam diverter;

focusing the laser beam (302) on the mirror (324); and

directing the laser beam (302) through the aperture (312) onto the workpiece (202) with the mirror (324).