

SIMULTANEOUS OFFSET DUAL SIDED LASER SHOCK PEENING WITH OBLIQUE ANGLE LASER BEAMS

ABSTRACT

A method to laser shock peen articles such as a gas turbine engine rotor blade (108) with first and second oblique laser beams (102, 104) to form pairs (157) of longitudinally spaced apart (LD) first and second laser shock peened elliptical spots (60, 63) that are on opposite sides of the article or blade (108) and transversely offset (OS) from each other. The oblique laser beams (102, 104) are fired at a portion of the leading or trailing edges (LE, TE) of the blade (108) at first and second oblique angles (110, 111) with respect to opposite surfaces of the edge. Another method laser shock peens the leading and trailing edges (LE, TE) of gas turbine engine integrally bladed rotors and disks that are blocked by other rows of blades by firing the laser beams at compound angles such that the beams are aimed at the first and second oblique angles (110, 111) with respect to the surfaces of the edge and at a third oblique angle (114) with respect to a rotor axis (9).

Fig. 1



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