be configured to produce a point focus.

[0089] Also, it should be observed that the system is optionally configured to focus the laser beam onto a target area but that is not required.

List of reference signs

[0090]

2.	Beam delivery system
4.	Shield
6.	Beam passage
8.	Laser beam
10.	Optics assembly
12.	Means for providing a fluid flow through the at least one beam passage
14.	First space
16.	Second space
18.	Fluid connection from the first space to the second space
20.	Object to be treated
22.	Laser
24.	Constriction in a fluid flow path through the beam passage
26.	Convergent-divergent nozzle
28.	First optical unit
30.	Second optical unit
32.	Vent
34.	Running surface
35	Cover
36.	Rail
38.	Railway track
40.	Train
42.	Head section of the rail
44.	Transport system
46.	Air inlet
48.	Housing
50.	Protective gas-tight transparent shield
A.	Treatment area
B.	Main beam direction of the laser beam
BW1.	$1/e^2$ beam width
BW2.	99.99% intensity beam width
D1.	First spatial direction
D2.	Second spatial direction
F.	Fluid flow
L.	Length of the at least one beam passage
M.	Direction in which, during operation, an object to be treated moves with respect to the system
P1.	First focal plane
P2.	Second focal plane
S1.	Distance between the first optical unit and a treatment area
S2.	Distance between the second optical unit and the respective beam passage
W.	Width of the at least one beam passage

Claims

1. Beam delivery system (2), comprising:

- a shield (4) which includes at least one beam passage (6) for transmission of at least one laser beam (8);
- an optics assembly (10) configured to at least partly focus the at least one laser beam (8) on the at least one beam passage (6); and
- means (12) for providing a fluid flow (F) through the at least one beam passage (6),

wherein the system is preferably configured for performing laser ablation using the at least one laser beam.

2. System according to claim 1, wherein the optics assembly (10) is further configured to at least partly focus the at least one laser beam (8) on a second focal plane (P2) which extends at a distance from the first focal plane (P1) and which is in particular spaced away from the at least one beam passage (6), wherein the second focal plane (P2) is preferably at an opposite side of the first focal plane (P1) from the optics assembly (10). wherein the optics assembly (10) is configured to at least partly focus the at least one laser beam (8) on a first focal plane (P1) which has an intersection with the at least one beam passage (6),

3. System according to any of the preceding claims, including a first inner space (14) and a separate second inner space (16), wherein the optics assembly is located in the first inner space (14), wherein the beam passage (6) bounds the second inner space (16).

4. System according to any of the preceding claims, wherein:

- the system (2) is configured to emit gas, e.g. a jet of gas, preferably towards a treatment area (A); and/or
- during operation, a fluid flow of fluid flowing through the beam passage (6) is at least partially, and preferably controllably, directed towards a by-product target area so that beam delivery by-products are at least partially urged towards the by-product target area by the fluid flow, wherein preferably, a direction from the beam passage to the by-product target area substantially corresponds to a movement direction (M) of an object to be treated with respect to the system (2), in case of such a movement.

5. System according to any of the preceding claims, wherein: