

CLAIMS

1. A sterilisation apparatus comprising:
a microwave source arranged to generate microwave energy;
5 a mist generator arranged to generate a flow of water mist;
a gas supply;
a manifold connected to receive the flow of water mist from the mist generator; and
10 a plurality of plasma applicators connected to the manifold,
wherein each plasma applicator is connected to receive microwave energy from the microwave source and a flow of gas from the gas supply,
15 wherein each plasma applicator is configured to strike a plasma at a distal end thereof,
wherein the distal ends of the plurality of plasma applicators are disposed in a plasma generating region defined by the manifold, and
20 wherein the manifold is configured to direct the flow of water mist through the plasma generating region to an outlet thereof.
2. The sterilisation apparatus of claim 1, wherein a
25 flow direction of the water mist from an inlet of the manifold to the outlet thereof is aligned with the direction of the flow of water mist that is received into the manifold.
3. The sterilisation apparatus of claim 1 or 2, wherein
30 each plasma applicator extends transversely to the flow of water mist through the plasma generating region.
4. The sterilisation apparatus of any preceding claim,
wherein the plurality of plasma applicators comprise one or
35 more pairs of plasma applicators that face one another on opposing sides of the plasma generating region.
5. The sterilisation apparatus of any preceding claim,
wherein each plasma applicator comprises:
40 a conductive tube; and

an elongate conductive member extending along a longitudinal axis of the conductive tube,

wherein the conductive tube and elongate conductive member provide a first coaxial transmission line at a proximal end of the plasma applicator, and a second coaxial transmission line at a distal end of the plasma applicator, and

wherein the first coaxial transmission line is configured as a quarter wavelength impedance transformer.

6. The sterilisation apparatus of claim 5, wherein the second coaxial transmission line is configured with a higher impedance than the first coaxial transmission line.

7. The sterilisation apparatus of claim 5 or 6, wherein the flow of gas received by each plasma applicator passes between the conductive tube and elongate conductive member.

8. The sterilisation apparatus of claim 7, wherein each plasma applicator comprises a gas inlet tube configured to deliver the flow of gas to a space between the conductive tube and the elongate conductive member, wherein the gas inlet tube extends transversely to the longitudinal axis of the conductive tube.

9. The sterilisation apparatus of any one of claims 5 to 8, wherein each plasma applicator comprises a proximal connector configured to connect to a coaxial cable conveying the microwave energy from the microwave source, wherein the proximal connector is configured to electrically connect an inner conductor of the coaxial cable to the elongate conductive member, and to electrically connect an outer conductor of the coaxial cable to the conductive tube.

10. The sterilisation apparatus of any preceding claim, wherein the microwave source comprises a magnetron.

11. The sterilisation apparatus of any preceding claim, wherein the mist generator comprises an ultrasonic fogging device.

12. The sterilisation apparatus of any preceding claim comprising a plurality of mist generators, wherein the manifold comprises a plurality of inlet ports, each inlet port being connectable to a respective mist generator.

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13. The sterilisation apparatus of any preceding claim, wherein the gas supply is connected to deliver a gas flow to the mist generator, wherein the gas flow entrains water mist formed by the mist generator to create the flow of water mist.

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14. The sterilisation apparatus of any preceding claim, wherein the gas is argon, nitrogen or carbon dioxide.

15. The sterilisation apparatus of any preceding claim, wherein the outlet of the manifold is couplable to an enclosure that defines a space to be sterilised.

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