Claims

1. Nozzle (1) for blowing gas (2) into an incinerator (3), with a pipe (20, 31, 41) and a swirl generator (21), wherein the pipe (20, 31, 41) is cylindrical and the swirl generator (21) is attached to the inner side (22) of the pipe (20, 31, 41), wherein the swirl generator has swirl vanes with a straight inlet section ***characterized in that*** the swirl vanes (24) have a length of 20 to 60 mm, of which 30% to 70% and preferably approximately 50% is designed as a straight inlet section.

2. Nozzle according to Claim 1, ***characterized in that*** the pipe (20) is arranged inside an outer pipe (23).

3. Nozzle according to Claim 2, ***characterized in that*** the pipe (20) is welded into the outer pipe (23).

4. Nozzle according to Claims 2 or 3, ***characterized in that*** the pipe (20) has a wall thickness of 2 to 5 mm.

5. Nozzle according to any one of the preceding claims, ***characterized in that*** the inside diameter of the pipe (20, 31, 41) is 40 to 80 mm and preferably about 50 mm.

6. Nozzle according to any one of the preceding claims, ***characterized in that*** the swirl generator (21) has a swirl angle of 15° to 60° and preferably of 40° to 50°.

7. Nozzle according to any one of the preceding claims, ***characterized in that*** the swirl generator (21) is offset inwardly in the pipe (20, 31, 41) by at least 5 mm and preferably about 10 mm.

8. Nozzle according to any one of the preceding claims, ***characterized in that*** the swirl generator (21) has more than 4 and preferably 6 swirl vanes (24) distributed about the circumference.

9. Nozzle according to any one of the preceding claims, ***characterized in that*** the swirl generator (21) has swirl vanes (24) with an average thickness of the vane profile of between 1 and 6 mm and preferably between 2 and 4 mm.

10. Nozzle according to any one of the preceding claims, ***characterized in that*** the swirl vanes (24) form a free central passage (25) whose diameter is greater than 20% of the free inside diameter of the pipe (20, 31, 41).

11. Nozzle according to any one of the preceding claims, ***characterized in that*** the swirl generator (21) has movable swirl vanes (24).

12. Nozzle according to any one of the preceding claims, ***characterized in that*** the pipe (20, 31, 41) has at least one and preferably multiple tangential inlet channels (32, 33, 34) distributed about the circumference.

13. Nozzle according to any one of the preceding claims, ***characterized in that*** the pipe (20, 31, 41) has at least one and preferably multiple spiral gas feeds (42) distributed about the circumference.

14. Nozzle according to any one of the preceding claims, ***characterized in that*** the Mach number Ma of the nozzle is below 0.4.

15. Flue gas exhaust with a nozzle (1) according to any one of the preceding claims, ***characterized in that*** the nozzle is arranged in a wall of the flue gas exhaust (4).

16. Flue gas exhaust according to Claim 15, ***characterized in that*** the nozzle (1) is arranged on the front wall (6) of the flue gas exhaust (4).

17. Flue gas exhaust according to Claim 15 or 16, ***characterized in that*** two of the nozzles (1) are arranged side by side and produce swirls in opposite directions.

18. Flue gas exhaust according to any one of Claims 15 to 17, ***characterized in that*** a nozzle for blowing gas (2) without a swirl, also referred to as a blast nozzle, is arranged beside a nozzle for blowing gas (2) with a swirl according to any one of Claims 1 to 14, also referred to as a swirl nozzle.

19. Method for using a nozzle according to any one of the preceding Claims 1 to 14, ***characterized in that*** a volume flow made from air and/or flue gas, which is transported through the nozzle (1) is adjusted to 100 to 1500 Nm^3/h.