Assembly comprising a building with vertical external wall and an inlet/outlet pipe system with mouthpiece of the horizontal type

Bauanordnung mit vertikaler Aussenwand und Einlass/Auslass-Rohrsystem mit horizontalem Mundstück

Ensemble comportant un bâtiment avec une paroi externe verticale et une système d’admission/d’évacuation avec embouchure horizontale

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Description

[0001] The invention in broad terms relates to an assembly of a building with a vertical wall and an inlet/outlet pipe system with an inlet/outlet mouthpiece of the horizontal type. The pipe system extends through the vertical wall, and the mouthpiece lies on the outside of the wall. Inside the building the pipe system is connected to a combustion plant, such as a heating plant for heating a building and/or supplying hot water to a building.

[0002] Inlet/outlet pipe systems for such assemblies are known and can be divided into pipe systems of the vertical type and pipe systems of the horizontal type. In the vertical type the pipe system leaves the building in the vertical direction through a roof of the building, and in the horizontal type the pipe system leaves the building in the horizontal direction through a generally substantially vertically extending external wall of the building. For the rest, in the case of both types the inlet/outlet pipe system inside the building can be routed vertically and/or horizontally and/or obliquely, depending on the place where the combustion plant is set up.

[0003] More particularly, the invention relates to an assembly comprising:

- a building with an external wall;
- an inlet/outlet pipe system for supplying air to a combustion plant set up inside the building and for discharging flue gases coming from said combustion plant respectively;

in which the inlet/outlet pipe system at one end projects through the external wall to the outside, and on that one end comprises an inlet/outlet mouthpiece situated substantially on the outside of the external wall;

in which the inlet/outlet mouthpiece comprises:

- a horizontally extending inlet pipe part with an inflow end for allowing air to flow in from the environment;
- a horizontally extending outlet pipe part with an outflow part for allowing flue gases to flow out to the environment;

in which the outlet pipe part extends through and substantially parallel to the inlet pipe part and projects from the inflow end of the inlet pipe part in such a way that the outflow part of the outlet pipe part lies outside the inlet pipe part, and in which the bottom of the outlet pipe part extends with a slope in order to return water of condensation to the inlet/outlet pipe system, characterized in that

the outflow part comprises an internal diameter which diverges in the longitudinal direction of the outlet pipe part to reduce the velocity of flue gases flowing through the outflow part; and

in which the free end of the outflow part is provided with a cap extending transversely to the longitudinal direction of the outflow part; and

in which the outflow part has an underside, an upper side and sides extending between the underside and upper side, the underside and upper side of the outflow part being closed, and the sides being provided with windows for allowing flue gases to flow out laterally.

[0004] The flue gases discharged through the pipe system contain a large amount of moisture which, particularly in the case of high-efficiency boilers, on leaving the pipe system very readily settles as condensate as a result of the low temperature of the flue gases and as a result of the low ambient temperature outside the building.

If nothing is done about discharge of this condensate, the following will occur:

- in winter weather icicles will form, which can result in the inlet pipe part being obstructed or blocked - thus resulting in disruption to the supply of air to the combustion plant - and can constitute a danger when the icicles break off;
- when outside temperatures are above zero the condensate can reach the outside of the external wall, which is undesirable because this can lead to problems with damp in the outside wall.

[0005] In order to tackle the abovementioned problems, it is generally known (see, for example, EP 190,394, DE-295.15.326-U and EP 979,973) to route the outlet pipe part obliquely upwards, so that condensate which has settled along the bottom of the outlet pipe part is fed back into the building. The aim is to ensure in this way that the condensate which has settled is kept away from the outflow orifice of the outflow part. An assembly having the features specified in the preamble of claim 1 is known from NL 1028165.

[0006] Routing the outlet pipe part obliquely upwards does not, however, completely solve the problems. It is found that condensate droplets still come out of the outlet pipe part to the outside.

[0007] The object of the present invention is to provide an assembly according to the preamble of Claim 1, in which the condensate droplets are prevented from coming out of the outlet pipe part to the outside.

[0008] The outflow part is in the form of a diffuser, which reduces the velocity of flue gases flowing through the outflow part or, put differently and in more general terms, in that the outflow part comprises means for reducing flow velocity. The outflow of condensate droplets from the outlet pipe part to the outside is caused - or at least partially caused - by the fact that they are entrained by the flue gases along the bottom of the outlet pipe part. The flue gases here entrain the condensate droplets up along the slope. This phenomenon occurs particularly in the case of heavily loaded combustion boilers. The ability of the flue gases to entrain condensate droplets is reduced by reducing the velocity of the flue gases in the outflow part. The bottom or underside of the outlet pipe part, and thus also that of the diffuser forming part of it,
According to the invention, the outflow part diverges in the longitudinal direction of the outlet pipe part. A diffuser is thus achieved in a simple manner. It is furthermore advantageous here if the divergence of the diverging outflow part extends substantially along a continuous line. This prevents abrupt transitions along the internal surface of the outlet pipe and prevents the flow behaviour of the flue gases from being influenced as a result of such abrupt transitions.

It is furthermore advantageous here according to the invention if the divergence is such that over an axial length of 5 to 10 cm the internal diameter of the outflow part increases by at least 15%. The applicant found that with such a divergence the velocity of the flue gases decreases to such an extent that the escape of condensate droplets from the outlet pipe part is largely prevented. The applicant also found that if the divergence is such that over an axial length of 5 to 10 cm the internal diameter of the outflow part increases by at least 25%, even in very heavily loaded combustion plants condensate droplets are largely prevented from escaping from the outlet pipe part.

In order to ensure that the flue gases still retain sufficient velocity to be able to leave the outlet pipe part effectively, it is advantageous according to the invention if the divergence is such that over an axial length of 5 to 10 cm the internal diameter of the outflow part increases by a maximum of 50%.

The applicant found that good results were obtained particularly if the divergence was designed in such a way that over an axial length of approximately 7 to 10 cm the internal diameter of the outflow part increases by 25 to 40%, such as approximately 33%.

According to the invention, the free end of the outflow part is provided with a cap extending transversely to the longitudinal direction of the outflow part. Such a cap prevents a wind blowing against the external wall from being able to blow directly into the outlet pipe part, which is undesirable with the reduced flow velocity in the outflow part achieved according to the invention. In order to prevent flue gases from the outlet pipe part from building up against the cap, it is advantageous here according to the invention if the side of the cap facing the inside of the outflow part is in the form of a conical surface with the tip of the conical surface facing the inside of the outflow part. The conical surface on the cap then guides the flue gases outside.

In order to ensure good ejection of flue gases from the mouthpiece where a cap is used and there is reduced flow velocity in the outflow part, according to the invention, the outflow part has an underside, an upper side, and sides extending between the underside and upper side, and the underside and upper side of the outflow part are closed, and the sides are provided with windows for allowing flue gases to flow out laterally. The closed underside of the outflow part ensures that condensate droplets can be conveyed along said outflow part back into the building. The closed upper side of the outflow part at least partially prevents condensation and prevents an air flow in the downward direction - for example, a wind flow guided vertically downwards along the external wall - from striking against the closed underside of the outflow part and being guided by said closed underside into the outlet pipe part, which would disrupt the discharge of flue gases. Providing both sides with windows means that an air flow directed along the external wall can blow into the outflow part from one side, but it will produce a draught on the other side, so that adequate ejection of flue gases remains ensured.

With a view to simple production and assembly, it is advantageous here according to the invention if the cap is connected to the outflow part by a film hinge and also a snap connection, and if the cap is manufactured by injection moulding from plastic in one piece with the outlet pipe part, in particular with the inlet/outlet mouthpiece. During the injection moulding the cap can then lie in an extended position relative to the outlet pipe part which is suitable for releasing from the injection mould, or it can lie in another position which is suitable for releasing from the injection mould, while after releasing from the mould the cap can be fixed simply by swinging about its hinge and snapping into the correct position.

According to a further embodiment, it is advantageous, in particular in combination with the use of a cap on the outlet pipe part, if the outflow end of the pipe part comprises an inflow aperture which opens in the longitudinal direction of said inlet pipe part. Such an inflow aperture of the inlet pipe part opening in the horizontal direction is susceptible to air blowing in, which ensures a good feed to the combustion plant when the wind is blowing against the external wall. In combination with a cap for the outflow end of the outlet pipe part, this has the advantage that the wind blowing against the external wall also assists the discharge of flue gases, since an inward - or a greater inward - thrust in the air supply towards the combustion plant results in a greater outward thrust in the flue gas discharge away from the combustion plant.

In order to improve the return of condensate from the outflow part into the building, it is advantageous according to the invention if the bottom of the part of the outlet pipe part projecting beyond the inlet pipe part extends at a steeper angle relative to the horizontal than the part of the outlet pipe part situated inside the inlet pipe part. The degree of slope is thus increased in the outflow part. The steeper angle is possible in particular by the fact that the outflow part of the outlet pipe part is situated outside the inlet pipe part.

According to a further aspect, the invention relates to an inlet/outlet mouthpiece which is suitable for, in particular is intended for, the assembly according to the invention. Such an inlet/outlet mouthpiece is characterized in particular by an inlet/outlet mouthpiece com-
According to yet a further aspect, the invention comprises:

- an inlet pipe part extending horizontally, at least in the assembled state, and having an inflow end for allowing air to flow in from the environment;
- an outlet pipe part extending horizontally, at least in the assembled state, and having an outflow part for allowing flue gases to flow out to the environment;

in which the outlet pipe part extends through and substantially parallel to the inlet pipe part and projects from the inflow end of the inlet pipe part in such a way that the outflow part of the outlet pipe part lies outside the inlet pipe part;

in which the bottom of the outlet pipe part, at least in the assembled state, extends with a slope in order, at least in the assembled state, to return water of condensation through the outflow part.

Claims 2 - 11, without Claim 1, substantially form further embodiments of this inlet/outlet mouthpiece according to the invention.

[0019] According to yet a further aspect, the invention relates to a method for manufacturing an inlet and/or outlet mouthpiece, in particular, but not exclusively, an inlet/outlet mouthpiece for an assembly according to the invention, in which a pipe part and cap for overlapping with a free end of said pipe part are formed by injection moulding from plastic in one piece with a connection to each other by a film hinge; and in which it is only after being released from the injection mould that the cap is taken into the position overlapping the free end of the pipe part by swinging the cap about the film hinge.

[0020] Forming a pipe part and cap by injection moulding from plastic as an integral element in which said pipe part and cap are connected to each other by a film hinge means that one mould can suffice and the subsequent fitting of the cap is easier. Said cap need only be swung about the hinge into the correct position and then fixed. This fixing can be by means of adhesives or a screw, or it can be in another way. According to the invention, it is, however, a further advantage if furthermore during the injection moulding from plastic snap means are formed on the pipe part, on the one hand, and the cap, on the other hand, so that the cap can be locked in the position overlapping the free end of the pipe part.

[0021] The invention will be explained in greater detail below with reference to an example illustrated diagrammatically in the drawing, in which:

Figure 1 is a diagrammatic illustration of an assembly according to the invention;
Figure 2 is a view in longitudinal section of an inlet/outlet mouthpiece according to the invention;
Figure 3 is a top view in accordance with arrow III in Figure 2 of the mouthpiece of Figure 2; and

Figure 4 is a front view in accordance with arrow IV in Figure 2 of the mouthpiece of Figures 2 and 3.

[0022] Figure 1 shows very diagrammatically an assembly 9 according to the invention. Said assembly comprises a building with an external wall 3 and an inlet/outlet pipe system 2 with an inlet/outlet mouthpiece 1 (hereinafter called mouthpiece). The inlet/outlet pipe system supplies combustion air from outside the building to a combustion plant 4 set up inside the building and discharges flue gases coming from the combustion plant 4 to the outside of the building. Although the inlet/outlet pipe system can also comprise channels which are routed partially or largely outside each other, the system is shown in Figure 1 with an outlet channel 6 situated inside the inlet channel 5. The air is then supplied through passage 7, and the flue gases are then discharged through passage 8. The mouthpiece 1 is provided substantially on the outside of the external wall 3 on the free end 10 of inlet channel 5 and outlet channel 6 facing away from the combustion plant 4. As can be seen in Figure 1, the connection of the mouthpiece 1 to inlet channel 5 and outlet channel 6 can lie in the external wall, but said connection can also lie fully on the inside or outside of the external wall.

[0023] Figure 1 furthermore shows by means of reference numerals that the mouthpiece 1 comprises an inlet pipe part 11 and an outlet pipe part 12. Said mouthpiece 1 will be discussed further below with reference to Figures 2, 3 and 4.

[0024] The mouthpiece 1 comprises an inlet pipe part 11 with - on the right in Figures 2 and 3 - an inflow end 13 by means of which air can flow by way of inflow aperture 28 (Figure 4) into the inlet pipe part 11, as indicated by arrow 14. The inlet pipe part can be inserted by the left end in Figures 2 and 3 into the free end of inlet channel 5 (Figure 1). The annular projection 31 here provides a stop which prevents the inlet pipe part from being inserted too far into the inlet channel 5.

[0025] The mouthpiece 1 furthermore comprises an outlet pipe part 12 whose end which is on the left in Figures 2 and 3 can be connected to the outlet channel 6 (Figure 1). For this purpose, the outlet pipe part 12 has a horizontal annular accommodation slot 32, in which the free end of the outlet channel 6 can be accommodated, an annular sealing projection 33 for sealing on the outside of the outlet channel 6, and a plurality of clamping lips 34 distributed all the way round for clamping action upon the outside of the outlet channel 6.

[0026] The outlet pipe part 12 extends through the inlet pipe part 11 and projects (on the right-hand side in Figures 2 and 3) from the inlet pipe part 11 with an outflow part 15 situated outside said inlet pipe part 11. Although in particular the outflow part 15 of the outlet pipe part 12 is clearly positioned obliquely relative to the inlet pipe part 11, inlet pipe part 11 and outlet pipe part 12 are routed substantially parallel relative to each other and relative to the horizontal. The bottom/underside 20 of the
part of the outlet pipe part 12 situated in the inlet pipe part 11 is preferably routed at a slight slope, such as approximately 1° or more, in order to be able to return condensate to the outlet channel 6, which likewise is preferably routed at a slight slope. The bottom/underside 17 of the outflow part 15 extends at a slope of 3° to 4° or more. If the slope of bottom/underside 20 in the inlet pipe part 11 is already sufficiently large, bottom part 17 and bottom part 20 can be routed at the same slope.

[0027] The outflow part 15 is in the form of a diffuser 21. In the exemplary embodiment illustrated this is, as it were, achieved by starting from a first part of the outlet pipe part 12 with constant diameter situated in the inlet pipe part 11, say 60 mm, which is routed horizontally or at a slight slope, such as approximately 1°, relative to the horizontal. A second part of the outlet pipe part 12 is fitted, as it were, on said first part (on the right in Figures 2 and 3). Said second part consists, as it were, of a pipe part whose internal diameter B diverges from a diameter of 60 mm to a diameter of 80 mm over an axial length A of approximately 10 cm. This second part is fitted at a relatively larger slope β of approximately 3 - 4° (a slope of approximately 1° would, however, be possible) than the first part. It goes without saying that the first part and second part are preferably manufactured as a single-part injection-moulded product, instead of each being a separate part. The diffuser can also be designed in a different way, but it is important for the underside/bottom of the diffuser to extend at a slope in order to drain back into the inlet/outlet pipe system 2.

[0028] Owing to the fact that the velocity of the flue gases decreases in the diffuser, the flue gases will less readily entrain condensate droplets.

[0029] A cap 22 is provided on the end of the outlet pipe part 12 which is shown on the left in Figures 2 and 3. As can be seen in Figure 4, said cap 22 does not shield the outlet pipe part 12 completely on the sides 19. If desired, the cap 22 may be made broader, in order to shield the end of the outlet pipe part 12 fully from the wind blowing against the outside wall.

[0030] In order to prevent flue gases from building up against the cap 22, the inwardly facing surface 23 of said cap is of a conical design with the tip 24 of the cone pointing into the outlet pipe part 12. Flue gases arriving at the cap are guided out better in this way.

[0031] In order to improve the outflow, or the ejection, of flue gases from the outlet pipe part to the environment, while maintaining the return of condensate, the outflow part 15 on each side 19 is provided with windows 25 (in this case 3 windows per side, but there can also be more or fewer). The underside/bottom 17 of the outflow part 15 is of a closed design here, in order to return condensate. The upper side 18 of the outflow part 15 is of a closed design here, in order to prevent wind from blowing downwards on the bottom 17 of the outflow part 15 and in this way being able to blow flue gases back into the system. As can be seen in Figure 4 in particular, the bottom 17 of the outflow part is, as it were, trough-shaped owing to the fact that the sides go up slightly as a result of the round shape. Said trough shape can, if desired, be reinforced by providing vertical ribs or walls in the longitudinal direction L of the mouthpiece. The advantage of the trough shape is that wind from the side, i.e. perpendicular to the plane of drawing according to Figure 2, has little or no grip on condensate flowing back through the 'trough'. This ensures that condensate is not blown laterally out of the mouthpiece.

[0032] It can furthermore be seen in Figures 2, 3 and 4 that the inflow aperture 28 through which air flows into the inflow end 13 of the inlet pipe part 11 opens in the longitudinal direction of the inlet pipe part 11. A wind on the outside wall, i.e. a wind blowing against the outside wall, will therefore be able to blow directly into the inlet pipe part. In the assembled state of the system this wind blowing in via the combustion plant has an expelling effect on flue gases in the outlet part of the pipe system 2.

[0033] The conically designed cap 22, the windows 25 in the sides 19 of the outflow part 15, the divergence of the outflow part 15 and the inflow aperture 28 opening in the longitudinal direction of the inlet pipe part 11 produce various advantageous effects, particularly in mutual combination, but also individually. These advantageous effects are, inter alia:

- when the wind is blowing against the outside wall the conically designed cap prevents said wind from pushing flue gases back into the outlet pipe part 12 and guides outflowing flue gases during their flow out of the outflow part 15 to the outside;
- the windows 25 in the sides 19 of the outflow part 15 ensure that a wind with a horizontal direction component blowing along the outside wall can blow into the outflow part 15 on the windward side and then leave the outflow part 15 again on the leeside. This produces draught in the outlet pipe part 12, so that flue gases can be discharged better from said outlet pipe part. In the inlet pipe part this works its way through via the combustion plant as a suction effect which assists the supply of air to the combustion plant.
- the divergence of the outflow part 15 results in deceleration of the flue gases there, so that the flue gases there do not entrain condensate droplets so readily and the latter can more easily flow back to the outlet pipe part 12; furthermore, the deceleration of the flue gases results in a better ejection under the influence of draught caused by wind, in particular in combination with other measures such as those described in this application;
- the inflow aperture 28 opening in the longitudinal direction of the inlet pipe part 11 has the effect that wind blowing against the outside wall causes a build-up effect which assists the supply of air to the combustion plant and discharge of flue gases from the combustion plant via the outflow part 15 to the outside;
• the conically designed cap 22 and the inflow aperture 28 opening in the longitudinal direction of the inlet pipe part 11 assist each other’s effect as regards supply of air and discharge of flue gases through the inlet/outlet pipe system 2. The conical shape of the cap furthermore results in an improved ejection of the flue gases at the cap here, so that said flue gases are ejected further and are dispersed better - which prevents recirculation of flue gases via the inlet pipe part;
• the divergence of the outflow part 15 and the windows 25 in the outflow part assist each other by the fact that, as a result of the divergence, the flue gases acquire a lower velocity and are consequently better entrained by wind blowing in from the windward side and blowing out on the lee side.
• the cap assists the effect of the windows when the wind is blowing obliquely against the outside wall by the fact that the cap holds back the axial component of said oblique wind and bends it in a direction parallel to the outside wall, which assists the drawing effect (towards the outside) in the outlet pipe system; the deceleration of the flue gases by the divergence yet further improves the discharge of the flue gases here;
• etc.

[0034] The abovementioned advantageous effects, both individually and in combination, furthermore also assist the discharge of residual flue gases from the combustion plant and the outlet pipe system when the combustion plant is switched off because there is, for example, temporarily no need for heat. This makes the assembly according to the invention also very suitable for use in combustion plants which are susceptible to returning flue gases. A drawing throughput is therefore obtained.

[0035] The improved ejection and feedback of settled condensate which are achieved with the assembly according to the invention are important particularly because in this way in wintry conditions ice formation on the inlet/outlet pipe mouthpiece is prevented and because in this way generally flue gases and condensate are prevented from coming into contact with parts of the inlet system. The latter is advantageous because the inlet systems generally contain parts which are susceptible to corrosion and these parts must be prevented from corroding in order to prevent breakdowns.

[0036] From the point of view of production, it is advantageous according to the invention to injection mould a cap 22 and pipe part 15 in one piece from plastic and in the process connect the cap and the pipe part to each other by means of a film hinge 23. The cap can then assume any desired position relative to the pipe part in the mould during the injection moulding, so that the mould can be made of a releasing design. The cap 22 can then be fixed on the pipe part 15 by means of adhesives or a screw or in some other way after the cap 22 has been swung transversely over the pipe part 15. It is advanta-

Claims

1. Assembly (9) comprising:

a building with an external wall (3);
an inlet/outlet pipe system (2) for supplying air to a combustion plant (4) set up inside the building and for discharging flue gases coming from said combustion plant (4) respectively;

in which the inlet/outlet pipe system (2) at one end (10) projects through the external wall (3) to the outside, and on that one end comprises an inlet/outlet mouthpiece (1) situated substantially on the outside of the external wall (3); in which the inlet/outlet mouthpiece (1) comprises:

a horizontally extending inlet pipe part (11) with an inflow end (13) for allowing air (14) to flow in from the environment;
a horizontally extending outlet pipe part (12) with an outflow part (15) for allowing flue gases (16) to flow out to the environment;
in which the outlet pipe part (12) extends through and substantially parallel to the inlet pipe part (11) and projects from the inflow end (13) of the inlet pipe part (11) in such a way that the outflow part (15) of the outlet pipe part (12) lies outside the inlet pipe part (11); and in which the bottom (17, 20) of the outlet pipe part (12) extends upwards at a slope (β), characterized in that the outflow part (15) comprises an internal diameter which diverges in the longitudinal direction (L) of the outlet pipe part (12) to reduce the velocity of flue gases flowing through the outflow part (15); in which the free end of the outflow part (15) is provided with a cap (22) extending transversely to the longitudinal direction of the outflow part (15); and in which the outflow part (15) has an underside (17), an upper side (18) and sides (19) extending between the underside (17) and upper side (18), the underside (17) and upper side (18) of the outflow part (15) being closed, and the sides (19) being provided with windows (25) for allowing flue gases to flow out laterally.

2. Assembly (9) according to Claim 1, in which the divergence extends along a continuous line.

3. Assembly (9) according to Claim 1, in which the inlet/outlet mouthpiece (1) comprises a horizontally extending inlet pipe part (11) with an inflow end (13) for allowing air (14) to flow in from the environment; a horizontally extending outlet pipe part (12) with an outflow part (15) for allowing flue gases (16) to flow out to the environment; in which the outlet pipe part (12) extends through and substantially parallel to the inlet pipe part (11) and projects from the inflow end (13) of the inlet pipe part (11) in such a way that the outflow part (15) of the outlet pipe part (12) lies outside the inlet pipe part (11); and in which the bottom (17, 20) of the outlet pipe part (12) extends upwards at a slope (β), characterized in that the outflow part (15) comprises an internal diameter which diverges in the longitudinal direction (L) of the outlet pipe part (12) to reduce the velocity of flue gases flowing through the outflow part (15); in which the free end of the outflow part (15) is provided with a cap (22) extending transversely to the longitudinal direction of the outflow part (15); and in which the outflow part (15) has an underside (17), an upper side (18) and sides (19) extending between the underside (17) and upper side (18), the underside (17) and upper side (18) of the outflow part (15) being closed, and the sides (19) being provided with windows (25) for allowing flue gases to flow out laterally.

4. Assembly (9) according to Claim 1, in which the inlet/outlet mouthpiece (1) comprises:

a horizontally extending inlet pipe part (11) with an inflow end (13) for allowing air (14) to flow in from the environment;
a horizontally extending outlet pipe part (12) with an outflow part (15) for allowing flue gases (16) to flow out to the environment;
in which the outlet pipe part (12) extends through and substantially parallel to the inlet pipe part (11) and projects from the inflow end (13) of the inlet pipe part (11) in such a way that the outflow part (15) of the outlet pipe part (12) lies outside the inlet pipe part (11); and in which the bottom (17, 20) of the outlet pipe part (12) extends upwards at a slope (β), characterized in that the outflow part (15) comprises an internal diameter which diverges in the longitudinal direction (L) of the outlet pipe part (12) to reduce the velocity of flue gases flowing through the outflow part (15); in which the free end of the outflow part (15) is provided with a cap (22) extending transversely to the longitudinal direction of the outflow part (15); and in which the outflow part (15) has an underside (17), an upper side (18) and sides (19) extending between the underside (17) and upper side (18), the underside (17) and upper side (18) of the outflow part (15) being closed, and the sides (19) being provided with windows (25) for allowing flue gases to flow out laterally.

5. Assembly (9) according to Claim 1, in which the divergence extends along a continuous line.
3. Assembly (9) according to Claim 1 or 2, in which the divergence is such that over an axial length (A) of 5 to 10 cm the internal diameter (B) of the outflow part (15) increases by at least 15%.

4. Assembly (9) according to Claim 3, in which the divergence is such that over an axial length of 5 to 10 cm the internal diameter of the outflow part (15) increases by at least 25%.

5. Assembly (9) according to Claim 3 or 5, in which the divergence is such that over an axial length of 5 to 10 cm the internal diameter of the outflow part (15) increases by a maximum of 50%.

6. Assembly (9) according to one of Claims 3 - 5, in which the divergence is designed in such a way that over an axial length of approximately 7 to 10 cm the internal diameter of the outflow part (15) increases by 25% to 40%, such as approximately 33%.

7. Assembly (9) according to one of Claims 1-6, in which the side (23) of the cap (22), which side faces the inside of the outflow part (15), is in the form of a conical surface with the tip (24) of the conical surface (23) facing the inside of the outflow part (15).

8. Assembly (9) according to one of Claims 1-7, in which the windows are slits (25) extending substantially vertically.

9. Assembly (9) according to one of Claims 1 - 8, in which the cap (22) is connected to the outflow part (15) by a film hinge (26) and also a snap connection (27), and in which the cap (22) is manufactured from plastic by injection moulding in one piece with the outflow part (15), in particular with the inlet/outlet mouthpiece (1).

10. Assembly (9) according to one of the preceding claims, in which the inflow end (13) of the inlet pipe part (11) comprises an inflow aperture (28) opening in the longitudinal direction of said inlet pipe part (11).

11. Assembly (9) according to one of the preceding claims, in which the bottom of the part of the outlet pipe part (12) projecting beyond the inlet pipe part (11) extends at an angle relative to the part of the outlet pipe part (12) situated inside the inlet pipe part (11).

12. Inlet/outlet mouthpiece (1) comprising all features of an inlet/outlet mouthpiece (1) according to one of the preceding claims.

13. Method for manufacturing an inlet and/or outlet mouthpiece (1) comprising features of a mouthpiece (1) according to one of the preceding Claims 1 - 12, in which a pipe part and cap for overlapping with a free end of said pipe part are formed by injection moulding from plastic in one piece with a connection to each other by a film hinge; and it is only after being released from the injection mould that the cap is taken into the position overlapping the free end of the pipe part by swinging the cap about the film hinge.

14. Method according to Claim 13, in which furthermore during the injection moulding from plastic snap means are formed on the pipe part, on the one hand, and the cap, on the other hand, so that the cap can be locked in the position overlapping the free end of the pipe part.

Patentansprüche

1. Anordnung (9) mit:

   einem Gebäude mit einer Außenwand (3),
   einem Einlass/Auslass-Leitungssystem (2), um
   einer in dem Gebäude installierten Feuerungs-
   anlage (4) Luft zuzuführen und Verbrennungs-
   gase aus der Feuerungsanlage (4) abzuführen,
   wobei das Einlass/Auslass-Leitungssystem (2) an einem Ende (10) durch die Außenwand (3) in den Außenraum vorsteht und an diesem Ende ein Einlass/Auslass-Mundstück (1) aufweist, das im Wesentlichen im Außenraum der Außen-
   wand (3) liegt, wobei das Einlass/Auslass-Mundstück (1) auf-
   weist:

   ein horizontal verlaufendes Einlasslei-
   tungsstück (11) mit einem Einströmende
   (13), um zu ermöglichen, dass Luft (14) aus
   der Umgebung hineinfließt,

   ein horizontal verlaufendes Auslasslei-
   tungsstück (12) mit einem Ausströmteil
   (15), um zu ermöglichen, dass Verbren-
   nungsgase (16) hinaus in die Umgebung abfließen,

   wobei das Auslassleitungsstück (12) durch
das Einlassleitungsstück (11) hindurch und
im Wesentlichen parallel dazu verläuft und
ein horizontal verlaufendes Einlasslei-
tungsstück (12) mit einem Einströmende
(13), um zu ermöglichen, dass Luft (14) aus
der Umgebung hineinfließt,

wobei das Einlass/Auslass-Leitungssystem (2) unter
dem Gebäude installierte Feuerungs-
anlage (4) Luft zuzuführen und Verbrennungs-
gase aus der Feuerungsanlage (4) abzuführen,

wobei das Auslassleitungsstück (12) durch
das Einlassleitungsstück (11) hindurch und
im Wesentlichen parallel dazu verläuft und
ein horizontal verlaufendes Einlasslei-
tungsstück (12) mit einem Einströmende
(13), um zu ermöglichen, dass Luft (14) aus

das Auslassleitungsstück (12) durch
das Einlassleitungsstück (11) hindurch und
im Wesentlichen parallel dazu verläuft und
ein horizontal verlaufendes Einlasslei-
tungsstück (12) mit einem Einströmende
(13), um zu ermöglichen, dass Luft (14) aus

des Auslassleitungsstück (12) unter 

wobei eine Neigung (β) nach oben verläuft, dadurch gekennzeichnet, dass

das Ausströmteil (15) einen Innendurch-
messer hat, der sich in Längsrichtung (L) des Auslassleitungsstückes (12) aufweitet,
um die Geschwindigkeit der Verbrennungsgase, die durch das Ausströmteil (15) fließen, zu reduzieren, wobei das freie Ende des Ausströmteils (15) mit einer Kappe (22) versehen ist, die quer zur Längsrichtung des Ausströmteils (15) ausgedehnt ist, und wobei das Ausströmteil (15) eine Unterseite (17), eine Oberseite (18) und Seiten (19) hat, die zwischen der Unterseite (17) und der Oberseite (18) verlaufen, wobei die Unterseite (17) und die Oberseite (18) des Ausflussteils (15) geschlossen sind und die Seiten (19) mit Fenstern (25) versehen sind, um zu ermöglichen, dass Verbrennungsgase seitlich herausströmen.

2. Anordnung (9) nach Anspruch 1, wobei die Aufweitung entlang einer kontinuierlichen Linie verläuft.

3. Anordnung (9) nach Anspruch 1 oder 2, bei der die Aufweitung derart ist, dass über eine axiale Länge (A) von 5 bis 10 cm der Innendurchmesser (B) des Ausströmteils (15) um wenigstens 15% zunimmt.

4. Anordnung (9) nach Anspruch 3, bei der die Aufweitung derart ist, dass über eine axiale Länge von 5 bis 10 cm der Innendurchmesser des Ausströmteils (15) um wenigstens 25% zunimmt.

5. Anordnung (9) nach Anspruch 3 oder 4, bei der die Aufweitung derart ist, dass über eine axiale Länge von 5 bis 10 cm der Innendurchmesser des Ausströmteils (15) um maximal 50% zunimmt.

6. Anordnung (9) nach einem der Ansprüche 3 - 5, bei der die Aufweitung in der Weise gestaltet ist, dass über eine axiale Länge von etwa 7 bis 10 cm der Innendurchmesser des Ausströmteils (15) um 25% bis 40% zunimmt, wie etwa um ungefähr 33%.

7. Anordnung (9) nach einem der Ansprüche 1 - 6, bei der die Seite (23) der Kappe (22), die dem Innenraum des Ausströmteils (15) zugewandt ist, die Form einer konischen Oberfläche hat, wobei die Spitze (24) der konischen Oberfläche (23) dem Inneren des Ausströmteils (15) zugewandt ist.

8. Anordnung (9) nach einem der Ansprüche 1 - 7, bei der die Fenster im Wesentlichen vertikal verlaufende Schlitze (25) sind.

9. Anordnung (9) nach einem der Ansprüche 1 - 8, bei der die Kappe (22) durch ein Filmscharnier (26) und eine Schnappverbindung (27) mit dem Ausströmteil (15) verbunden ist und bei der die Kappe (22) durch Spritzguss in einem Stück mit dem Ausströmteil (15) hergestellt ist, insbesondere mit dem Einlass/Auslass-Mundstück (1).

10. Anordnung (9) nach einem der vorhergehenden Ansprüche, bei der das Einströmende (13) des Einlassleitungsstücks (11) eine Einstromöffnung (28) aufweist, die sich in Längsrichtung des Einlassleitungsteils (11) öffnet.


12. Einlass/Auslass-Mundstück (1) mit allen Merkmalen eines Einlass/Auslass-Mundstücks (1) gemäß einem der vorhergehenden Ansprüche.


Revendications

1. Ensemble (9), comprenant :
   un bâtiment ayant un mur extérieur (3) ;
   un système de tuyauterie d’entrée/de sortie (2) respectivement pour alimenter en air une installation de combustion (4) mis en place à l’intérieur du bâtiment et pour évacuer des gaz de combustion provenant de ladite plaque de combustion (4) ;
   dans lequel le système de tuyauterie d’entrée/de sortie (2), à une extrémité (10), fait saillie à travers le mur extérieur (3) vers l’extérieur, et en ce que l’une des extrémités comporte un embout d’entrée/sortie (1) situé sensiblement sur l’extérieur du mur extérieur (3) ;
   dans lequel l’embout d’entrée/sortie (1)
comprend :

une partie de tuyau d'entrée s'étendant horizontalement (11) ayant une extrémité d'écoulement d'entrée (13) pour permettre à de l'air (14) de circuler depuis l'environnement ;
une partie de tuyau de sortie s'étendant horizontalement (12) ayant une partie d'écoulement de sortie (15) pour permettre à des gaz de combustion (16) de s'écouler vers l'environnement ;
dans lequel la partie de tuyau de sortie (12) s'étend au travers de et sensiblement parallèle à la partie de tuyau d'entrée (11), et fait saillie depuis l'extrémité d'écoulement d'entrée (13) de la partie de tuyau d'entrée (11) de telle façon que la partie d'écoulement de sortie (15) de la partie de tuyau de sortie (12) se situe en dehors de la partie de tuyau d’entrée (11) ; et
dans lequel la partie inférieure (17, 20) de la partie de tuyau de sortie (12) s'étend vers le haut avec une pente (β), caractérisé en ce que
la partie d'écoulement de sortie (15) comporte un diamètre interne qui diverge dans la direction longitudinale (L) de la partie de tuyau de sortie (12) pour réduire la vitesse des gaz de combustion circulant à travers la partie d'écoulement de sortie (15) ; dans lequel l'extrémité libre de la partie d'écoulement de sortie (15) est munie d'un capuchon (22) s'étendant transversalement à la direction longitudinale de la partie d'écoulement de sortie (15) ; et dans lequel la partie d'écoulement de sortie (15) présente un côté inférieur (17), un côté supérieur (18) et des côtés (19) s'étendant entre le côté inférieur (17) et le côté supérieur (18), le côté inférieur (17) et le côté supérieur (18) de la partie d'écoulement de sortie (15) étant fermés, et les côtés (19) étant munis de fenêtres (25) pour permettre à des gaz de combustion de s'écouler latéralement vers l'extérieur.

5. Ensemble (9) selon la revendication 3 ou 5, dans laquelle la divergence est telle que sur une longueur axiale de 5 à 10 cm, le diamètre interne de la partie d'écoulement de sortie (15) augmente d'au moins 25%.

6. Ensemble (9) selon l'une quelconque des revendications 3 à 5, dans laquelle la divergence est conçue de telle sorte que sur une longueur axiale d'environ 7 à 10 cm, le diamètre interne de la partie d'écoulement de sortie (15) augmente de 25 % à 40 %, par exemple d'environ 33 %.

7. Ensemble (9) selon l'une quelconque des revendications 1 à 6, dans lequel le côté (23) du capuchon (22), qui est tourné vers l'intérieur de la partie d'écoulement de sortie (15), est sous la forme d'une surface conique, la pointe (24) de la surface conique (23) tournée vers l'intérieur de la partie d'écoulement de sortie (15).

8. Ensemble (9) selon l'une quelconque des revendications 1 à 7, dans lequel les fenêtres sont des fentes (25) s'étendant sensiblement verticalement.

9. Ensemble (9) selon l'une quelconque des revendications 1 à 8, dans lequel les fenêtres sont des fentes (25) s'étendant sensiblement verticalement.

10. Ensemble (9) selon l'une quelconque des revendications précédentes, dans lequel l'extrémité d'écoulement d'entrée (13) de la partie de tuyau d'entrée (11) comprend une ouverture d'écoulement d'entrée (28) s'ouvrant dans la direction longitudinale de ladite partie de tuyau d’entrée (11).

11. Ensemble (9) selon l'une quelconque des revendications précédentes, dans lequel une ouverture d'écoulement d'entrée (28) s'ouvrant dans la direction longitudinale de ladite partie de tuyau d’entrée (11) est en dehors de la partie de tuyau de sortie (12) faisant saillie au-delà de la partie de tuyau d'entrée (11) s'étend selon un angle par rapport à la partie de tuyau de sortie (12) situé à l'intérieur de la partie de tuyau d’entrée (11).

12. Embout d'entrée/sortie (1), comprenant toutes les caractéristiques d'un embout d'entrée/sortie (1) selon l'une quelconque des revendications précédentes.
13. Méthode de fabrication d’un embout d’entrée et/ou de sortie (1) comprenant des caractéristiques d’un embout (1) selon l’une quelconque des revendications précédentes 1 à 12, dans laquelle une partie de tuyau et un capuchon destiné au chevauchement d’une extrémité libre de ladite partie de tuyau sont formées par moulage par injection de matière plastique en une seule pièce avec une connexion l’une à l’autre par une charnière-film ; le capuchon étant amené dans la position de chevauchement de l’extrémité libre de la partie de tuyau seulement après avoir été libéré du moule d’injection, en faisant pivoter le capuchon autour de la charnière-film.

14. Méthode selon la revendication 13, dans lequel en outre, lors du moulage par injection de matière plastique, des moyens d’encliquetage sont formés sur la partie de tuyau, d’une part, et le capuchon, d’autre part, de sorte que le capuchon peut être verrouillé dans la position chevauchant l’extrémité libre de la partie de tuyau.
REFERENCES CITED IN THE DESCRIPTION

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