

CLAIMS

1. A scrubber burner composed of a preheating spray ring that is formed with a porous material with certain thickness, and that preheats and sprays the fuel gas in the preheating combustion space formed inside; a preheating guide ring equipped with multiple preheating guide holes that wrap the outer circumference of the aforementioned preheating spray ring, and that penetrates from the outer circumference to the inner circumference; and a preheating burner module equipped with a housing that forms a ring shaped gas channel that is separated from the outer circumference of the aforementioned preheating guide ring and through which the aforementioned fuel gas flows.
2. A scrubber burner according to Claim 1, wherein the inner circumference of the aforementioned preheating guide ring comes into contact with the outer circumference of the aforementioned preheating spray ring.
3. A scrubber burner according to Claim 1, wherein the aforementioned preheating spray ring is a porous structure formed with a perforated plate, metal fibers, metal foams, packed beads, ceramic foams, nano-sized porous media, or porous sintered metals.
4. A scrubber burner according to Claim 1, wherein there are at least two preheating burner modules that are layered and wherein the aforementioned preheating burner modules spray different components or fuel gases with different mix ratios.
5. A scrubber burner of Claim 1 that further includes a mixed burner module that is equipped with a mixed spray ring that is located at the upper part or lower part of the aforementioned preheating burner module, on which multiple spray holes that penetrate from the outer circumference to the inner circumference are formed, and that sprays mixed fuel gas in the mixed combustion space formed at the inner side, a mixed guide ring that is separated from the outer circumference of the aforementioned preheating spray ring, and that is equipped with multiple guide holes that penetrate from the outer circumference to the inner circumference, and a mixed housing that is separated from the outer circumference of the

aforementioned mixed guide ring to form a mixed gas channel through which the aforementioned mixed fuel gas flows.

- 5 6. A scrubber burner according to Claim 5, wherein the aforementioned mixed combustion space is connected to the aforementioned preheating combustion space.
7. A scrubber burner according to Claim 5, wherein there are at least two mixed burner modules that are layered.
- 10 8. A scrubber burner of Claim 5 that further includes a lower spray module that is located at the lower part of the aforementioned preheating burner module or mixed burner module located at the relatively low part, and that is equipped inside with a lower spray ring that sprays lower fuel gas to the lower combustion space that is connected with the aforementioned preheating combustion space or mixed combustion space.
- 15 9. A scrubber burner according to Claim 7, wherein the aforementioned lower spray module further includes inside a lower housing that wraps the outer circumference of the aforementioned lower combustion space to form a lower gas channel in the shape of a ring through which the aforementioned lower fuel gas flows and that is equipped with a lower outer wall hole that penetrates from the outer circumference to the aforementioned lower gas channel, and wherein the aforementioned lower spray ring includes a lower spray hole that is located inside the aforementioned lower gas channel, and that sprays the aforementioned lower fuel gas or oxidizer.
- 20 10. A scrubber burner according to Claim 8, wherein the aforementioned lower spray module is equipped with a lower separation panel that separates the first lower gas channel and the second lower gas channel that are located vertically at the aforementioned lower gas channel, and wherein the aforementioned lower outer wall hole and the aforementioned lower spray hole are connected to the aforementioned first lower gas channel and the second lower gas channel, respectively.
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11. A scrubber burner of Claim 1 that further includes a super insulation burner that preheats fuel rich mixed gas and reforms it to hydrogen rich mixed gas to spray to the aforementioned preheating combustion space.
- 5 12. A scrubber burner according to Claim 11, wherein the aforementioned super insulation burner includes a super insulation housing formed in the shape of a tube that is opened at the upper part and the lower part, a preheating layer that is located at the upper side inside the aforementioned super insulation housing and that preheats the aforementioned fuel rich mixed gas, and a reforming layer that is formed with a porous material, and that is
10 located at the lower part of the aforementioned preheating layer to reform the aforementioned fuel rich mixed gas into the aforementioned hydrogen rich mixed gas.
13. A scrubber burner that includes the main burner module that sprays the main fuel gas to the main combustion gas that forms the inner side, the upper head module that is located at the
15 upper part of the aforementioned main burner module to supply waste gas to the aforementioned main combustion space, and that includes an upper head equipped with an upper fuel supply channel that supplies the upper fuel gas to the burner containing groove that is opened at the lower side and the aforementioned burner containing groove, and the
20 upper burner module that seals the lower part of the aforementioned burner containing groove to form the upper gas channel at the upper part and that is equipped with the upper spray panel that supplies the upper fuel gas to the aforementioned main combustion space.
14. A scrubber burner wherein the aforementioned upper spray panel is composed of a porous material with certain length and is equipped with multiple holes that penetrate from the
25 upper side to the lower side.
15. A scrubber burner according to Claim 13, wherein the aforementioned upper head is equipped with a reverse expansion containing head channel that penetrates from the outer side's upper side to the lower side, and that further includes a reverse expansion burner that
30 penetrates the aforementioned reverse expansion containing head channel to be exposed to the lower side of the aforementioned upper head.

16. A scrubber burner according to Claim 15, wherein the aforementioned upper spray panel is equipped with a reverse expansion containing spray channel that penetrates from the upper side to the lower side, and wherein the aforementioned reverse expansion burner penetrates the aforementioned reverse expansion containing spray channel to be exposed
5 below the lower side of the aforementioned upper head.
17. A scrubber burner according to Claim 15, wherein the aforementioned reverse expansion burner includes the first nozzle equipped the first main body in the shape of a pipe, the second nozzle equipped with the second main body in the shape of a pipe that is positioned
10 to wrap the outer circumference of the aforementioned first main body, and the third nozzle equipped with the third main body in the shape of a pipe that is positioned to wrap the outer circumference of the aforementioned second main body.
18. A scrubber burner according to Claim 17, wherein the aforementioned first nozzle sprays an
15 oxidizer, the aforementioned second nozzle sprays a mixed gas composed of fuel and an oxidizer, and the aforementioned third nozzle sprays an oxidizer or a mixed gas composed of fuel and an oxidizer.
19. A scrubber of Claim 17 that further includes the first separation component that is located
20 between the aforementioned first main body and the second main body to maintain the separation distance between the aforementioned first main body and the second main body, and the second separation component that is located between the aforementioned second main body and the third main body to maintain the separation distance between the aforementioned second main body and the aforementioned third main body.