CLAIMS

1. A scrubber burner comprising:

a mixed burner module comprising:

a mixed spray ring on which multiple spray holes penetrate from an outer circumference of the mixed spray ring to an inner circumference of the mixed spray ring and that sprays mixed fuel gas in a mixed combustion space formed within the inner circumference of the mixed spray ring;

a mixed guide ring positioned radially outward from the mixed spray ring and separated from the outer circumference of the mixed spray ring, the mixed guide ring equipped with multiple guide holes that penetrate from an outer circumference of the mixed guide ring to an inner circumference of the guide ring; and

a mixed housing that is separated from the outer circumference of the mixed guide ring to form a mixed gas channel between the mixed housing and the mixed guide ring through which the mixed fuel gas flows;

a preheat burner module located directly above or directly below the mixed burner module, the preheat burner module comprising:

a preheating spray ring that is formed with a porous material comprising one of metal fibers, metal foams, packed beads, ceramic foams, nano-sized porous media and porous sintered metals and that preheats a fuel gas before providing the fuel gas to a preheating combustion space formed inside the preheating spray ring;

a preheating guide ring around the outer circumference of the preheating spray ring and equipped with multiple preheating guide holes that penetrate from an outer circumference of the preheating guide ring to an inner circumference of the guide ring; and

a preheating housing that forms a ring shaped gas channel that is separated from the outer circumference of the preheating guide ring and through which the fuel gas flows.

wherein the mixed combustion space is connected to the preheating combustion space; and

a lower spray module that is located directly below the preheating burner module of directly below the mixed burner module, the lower spray module comprising:

a lower spray ring comprising a lower spray hole that sprays lower fuel gas into a lower combustion space that is connected with the preheating combustion space or the mixed combustion space;

a lower housing that wraps the outer circumference of the lower spray ring to form a lower gas channel in the shape of a ring through which the lower fuel gas flows and that is equipped with a lower outer wall hole that penetrates from the outer circumference to the lower gas channel, and wherein the lower spray hole sprays lower fuel gas from the lower gas channel.

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 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.

4. A scrubber burner according to Claim 1, wherein there are at least two mixed burner modules that are layered.

5. A scrubber burner according to Claim 1, 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.

6. 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.

7. A scrubber burner according to Claim 6, 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 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.