CLAIMS

1. A high-pressure electrolyser system comprising:

a rack-mount box assembly comprising a first rack-mount box (1") and a second rack-mount box (1"), each for a heat-emitting device, wherein each rack-mount box (1") comprises:

a housing (3') forming a heat-emitting device chamber, and

a heat-emitting device holding structure (77) arranged in the heat-emitting device chamber and configured to support a heat-emitting device, the heat-emitting device holding structure (77) comprising a tray and a rail assembly configured to support or suspend the tray, the tray being configured to slide along the rail assembly such that the tray can be slid out from the housing (3'), or a rail assembly onto which the heat-emitting device can be placed or suspended from directly,

a cool air inlet (71) arranged vertically below the heat-emitting device holding structure (77), configured to enable cool air to flow into the heat-emitting device chamber, the heat-emitting device holding structure (77) being configured to enable cool air to flow vertically past the heat-emitting device holding structure (77),

wherein the housing (3') has a wall (3a'; 3b'; 3c'; 3d') provided with a hot air outlet (73) arranged vertically above the heat-emitting device holding structure (77) to enable heated air received into the heat-emitting device chamber as cool air via the cool air inlet (71) to exit the heat-emitting device chamber,

wherein the housing (3') has a roof structure (79) extending inwards in the heat-emitting chamber, the roof structure (79) being configured to direct heated air in the heat-emitting device chamber towards the hot air outlet (73),

wherein the first and the second rack-mount box (1") are arranged side by side, and wherein side walls between the first rack-mount box and the second rack-mount box have been removed, wherein the heat-emitting device chamber of the first rack-mount box (1") and the heat-emitting device chamber of the second rack-mount box (1") are open towards each other to thereby form a common single heat-emitting device chamber; and

for each rack mount box (1"), a heat-emitting device supported by or suspended from the heat-emitting device holding structure (7), wherein the heat-emitting device is a high-pressure electrolyser stack (9).

2. The high-pressure electrolyser system as claimed in claim 1, wherein the roof structure (79) is pyramid shaped, V-shaped or has the shape of a right-angled triangle.

3. The high-pressure electrolyser system as claimed in claim 1 or 2, wherein the roof structure has an inclined surface configured to direct heated air towards the hot air outlet (73).

4. The high-pressure electrolyser system as claimed in any of the preceding claims, wherein the roof structure (79) is pyramid shaped, and wherein several non-parallel walls (3a'; 3b'; 3c'; 3d') of the housing (3') are provided with a hot air outlet, the pyramid shaped roof structure (79) being configured to direct heated air to the hot air outlets (73).

5. The high-pressure electrolyser system as claimed in any of the preceding claims, wherein only one wall (3a'; 3b'; 3c'; 3d') of the housing (3') is provided with a hot air outlet (73), and wherein the roof structure (79) has the shape of a right-angled triangle having its inclined surface (79a) in the form of a hypotenuse surface facing the hot air outlet (73).

6. The high-pressure electrolyser system as claimed in any of the preceding claims, wherein the cool air inlet (71) is arranged in an underside of the housing (3') or is provided in a wall of the housing.

7. The high-pressure electrolyser system as claimed in claim 6, wherein the cool air inlet (71) is provided in the wall (3a'; 3b'; 3c'; 3d'), and the wall (3a'; 3b'; 3c'; 3d') is a front wall (3c'), a rear wall (3d') or a side wall (3a', 3b').

8. The high-pressure electrolyser system as claimed in claim 6 or 7, wherein the cold air inlet (71), and the hot air outlet (73) are provided in opposite walls (3a', 3b'; 3c', 3d') of the housing (3').

9. The high-pressure electrolyser system as claimed in any of the preceding claims, wherein the housing (3') is made of a heat-insulating material comprising polymer or wood.

10. The high-pressure electrolyser system as claimed in any of the preceding claims, wherein the electrolyser stack (9) comprises a plurality of electrolytic cells, each electrolytic cell comprising two electrode plates (23) wherein each electrode plate (23) has a perimeter (41) provided with heat fins (43).

11. The high-pressure electrolyser system as claimed in any of the preceding claims, wherein the electrolyser stack (9) has an electrolyser cooling channel inlet (47a) and an electrolyser cooling channel outlet (47b).