CLAIMS

1. A non-transferred plasma arc system comprising a non-transferred plasma arc torch and a power unit for supplying power and gas to the non-transferred plasma arc,

wherein

the plasma arc torch comprises a non-consumable electrode and an insert chip, wherein the insert chip is provided as an anode for emitting a plasma arc to the workpiece while the insert chip is cooled by circulation of coolant;

the plasma arc torch comprises

a TIG welding torch comprising the non-consumable electrode which generates an arc between a workpiece and the non-consumable electrode, and a torch nozzle which releases a shielding gas toward the molten pool of the workpiece caused by the arc, and

an attachment which functions as the insert chip and is provided so as to be freely attachable and detachable to and from the TIG welding torch in a state that the attachment surrounds the periphery of the torch nozzle; and

the power unit comprises a switching device for switching the supply of the electric power according to the case of using the TIG welding torch or using the plasma arc torch.

2. The non-transferred plasma arc system according to claim 1,

wherein the plasma arc torch further comprises a shield cap which releases shielding gas from the outside of the plasma arc and is provided so as to be attached to the attachment in a insulating state and in a state surrounding the periphery of the attachment.

3. The non-transferred plasma arc system according to claim 1 or 2,

wherein the attachment comprises a power supply nozzle surrounding the distal end of the torch nozzle, and

the plasma arc torch switchs between two states by moving the non-consumable electrode in the axial direction, wherein one state is a state that the the tip of the non-consumable electrode is withdrawn inside from the distal end of the power supply nozzle and another state is a state that the tip of the non-consumable electrode protrudes outside the distal end of the power supply nozzle.

4. The non-transferred plasma arc system according to claim 1 or 2,

wherein the attachment comprises a power supply nozzle which is movably supported in the axial direction in a state of surrounding the periphery of the distal end of the torch nozzle, and

the plasma arc torch switchs between two states by moving the non-consumable electrode in the axial direction, wherein one state is a state that the the tip of the non-consumable electrode is withdrawn inside from the distal end of the power supply nozzle and another state is a state that the tip of the non-consumable electrode protrudes outside the distal end of the power supply nozzle.

5. The non-transferred plasma arc system according to any one of claims 1 to 4,

wherein the power unit uses a power unit for TIG welding.

6. The non-transferred plasma arc system according to claim 1,

wherein it is possible to weld by only using the plasma arc torch or to weld only by using the TIG welding torch.

7. The non-transferred plasma arc system according to claim 1,

wherein the power unit comprises at least two power units for plasma arc torch and a power unit for TIG welding torch.

8. The non-transferred plasma arc system according to any one of claims 1 to 7,

further comprises a cooling device for circulating a coolant flowing through the attachment, wherein the cooling device is connected to the plasma arc torch.