CLAIMS

1. A method for reducing undesired eddy currents induced in a conducting structure, the method comprising the steps of:

inducing a first set of eddy currents in the conducting structure and

translating a plasma into the conducting structure, wherein the plasma translating into a plasma confinement vessel inducing a second set of eddy currents in the conducting structure, wherein the first set of eddy currents being induced prior to the second set of eddy currents and having a distribution substantial equal to and opposite in sign to a distribution of the second set of eddy currents to substantial cancel the second set of eddy currents upon inducement of the second set of eddy currents in the conducting structure.

2. The method of claim 1 wherein the conducting structure is a wall of the plasma confinement vessel.

3. The method of claim 1 wherein the step of inducing eddy currents in the conducting structure includes the steps of

ramping up and holding coils about the conducting structure at a constant current until all eddy currents have decayed in the conducting structure, and

interrupting current to the coils to allow the first set of eddy currents to excite in the conducting structure conserving a magnetic flux through the structure.

4. The method of claim 1 wherein the translating plasma injects a flux into the conducting structure that induces the second set of eddy currents in the conducting structure reducing the amplitude of eddy currents in the conducting structure back towards zero.

5. The method of claim 3 wherein the translating plasma injects a flux into the conducting structure that induces the second set of eddy currents in the conducting structure reducing the amplitude of eddy currents in a wall of the vessel back towards zero.

6. The method of claim 1 wherein the step of inducing the first set of eddy currents in the conducting structure includes the steps of

ramping up and holding coils about the conducting structure at a constant current to produce the first set of eddy currents in the conducting structure, and

wherein the translating plasma injects a flux into the conducting structure that induces the second set of eddy currents in the conducting structure reducing the amplitude of eddy currents in the conducting structure back towards zero.

7. A system for reducing undesired eddy currents induced in a vessel wall, the system comprising:

a vessel having the vessel wall and an interior,

a formation section attached to an end of the vessel,

a plurality of coils positioned around the vessel, and

a control system coupled to the plurality of coils and configured to induce a first set of eddy currents in the wall of the vessel prior to a second set of eddy currents being induced in the wall of the vessel, wherein the first set of eddy currents having a distribution substantial equal to and opposite in sign to a distribution of the second set of eddy currents to substantial cancel the second set of eddy currents upon inducement of the second set of eddy currents in a wall of a chamber, wherein the control system is further configured to translate a plasma from a formation section into the interior of the vessel, wherein the translating plasma induces the second set of eddy currents in the wall of the vessel.

8. The system of claim 7 wherein the control system is further configured to ramp up and hold the plurality of coils at a constant current until all eddy currents in the wall of the vessel have decayed, and then interrupt the current to the plurality of coils to allow the first set of eddy currents to excite in the wall of the vessel conserving a flux through the vessel.

9. The system of claim 8 wherein the translating plasma injects a flux into the wall of the vessel that induces the second set of eddy currents in the wall of the vessel reducing an amplitude of eddy currents in the wall of the vessel back towards zero.

10. The system of claim 7 wherein the control system is further configured to ramp up and hold the plurality of coils at a constant current to produce the first set of eddy currents in a conducting structure.

11. The system of claim 10 wherein the translating plasma injects a flux into the wall of the vessel that induces the second set of eddy currents in the wall of the vessel reducing an amplitude of eddy currents in the wall of the vessel back towards zero.

12. A method for reducing undesired eddy currents induced in a conducting structure, the method comprising the steps of:

inducing a first set of eddy currents in a wall of a vessel having a wall and an interior prior to inducing a second set of eddy currents in the wall of the vessel, and

translating a plasma into the vessel, wherein the plasma translating into the plasma confinement vessel inducing the second set of eddy currents in the wall of the vessel, wherein the first set of eddy currents having a distribution substantial equal to and opposite in sign to a distribution of the second set of eddy currents to substantial cancel the second set of eddy currents upon inducement of the second set of eddy currents in the wall of the vessel.

13. The method of claim 12 wherein the step of inducing eddy currents in the wall of the vessel includes the steps of

ramping up and holding a plurality of coils positioned about the wall of the vessel at a constant current until all eddy currents have decayed in the conducting structure, and

interrupting current to the plurality of coils to allow the first set of eddy currents to excite in the wall of the vessel conserving a magnetic flux through the wall of the vessel.

14. The method of claim 12 wherein the translating plasma injects a flux into the wall of the vessel that induces the second set of eddy currents in the wall of the vessel reducing an amplitude of eddy currents in the wall of the vessel back towards zero.

15. The method of claim 13 wherein the translating plasma injects a flux into the wall of the vessel that induces the second set of eddy currents in the wall of the vessel reducing an amplitude of eddy currents in the wall of the vessel back towards zero.

16. The method of claim 12 wherein the plasma is translated from opposing formation sections attached to opposite ends of the vessel.

17. The method of claim 16, further comprising the step of forming a FRC plasma in the opposing formation sections and wherein the step of translating a plasma into the vessel comprises translating the FRC plasma into the vessel.

18. The method of claim 12 wherein the step of inducing eddy currents in the wall of the vessel includes the steps of

ramping up and holding a plurality of coils positioned about the wall of the vessel at a constant current to produce the first set of eddy currents in the wall of the vessel, and

wherein the translating plasma injects a flux into the wall of the vessel that induces the second set of eddy currents in the wall of the vessel reducing an amplitude of eddy currents in the wall of the vessel back towards zero.

19. The method of claim 18 wherein the plasma is translated from opposing formation sections attached to opposite ends of the vessel.

20. The method of claim 19, further comprising the step of forming a FRC plasma in the opposing formation sections and wherein the step of translating a plasma into the vessel comprises translating the FRC plasma into the vessel.