# CLAIMS

1. A tug for maneuvering a towed vessel, the tug comprising:
- a dynamic positioning system, and
- a tow equipment comprising a towline connected to the towed vessel, wherein the tow equipment is automatically controlled by the dynamic positioning system based on a plurality of input parameters.

2. Tug according to claim 1, wherein the plurality of input parameters includes at least one of:
- length of the towline,
- tension of the towline,
- direction of the towline,
- location of the towed vessel,
- heading of the towed vessel,
- speed of the towed vessel,
- heading of the tug,
- speed of the tug, and
- relative height of a towline connector on the towed vessel to the tow equipment.

3. Tug according to any of the proceeding claims, wherein the tow equipment automatically spools in or out the towline to keep a slack of the towline and a tension of the towline within predefined thresholds.

4. Tug according to any of the proceeding claims, wherein the tow equipment automatically adjusts the direction of tow equipment such that the direction of the towline is perpendicular to the tow equipment.

5. Tug according to claim 2, wherein the dynamic positioning system is adapted to receive information of the length of the towline, the tension of the towline or the direction of the towline from the tow equipment.

6. Tug according to claim 5, wherein the tow equipment comprises a tension sensor to measure the tension of the towline.

7. Tug according to claim 5, wherein the tow equipment comprises a directional sensor to measure the direction of the towline.

8. Tug according to claim 2, wherein the dynamic positioning system is adapted to receive information location of the towed vessel, the heading of the towed vessel or the speed of the towed vessel from the towed vessel via wireless communication.

9. Tug according to claim 1, wherein the tug is adapted to be put in tow mode by locking the towing equipment.

10. Tug according to any of the proceeding claims, wherein the tow equipment comprises a winch.

11. Tug according to any of the proceeding claims, wherein the tow equipment is adapted to rotate around a vertical axis relative to the tug.

12. Tug according to any of the proceeding claims, wherein the dynamic positioning system is adapted to adjust the position of the tug to keep the tow equipment within an operation range of the tow equipment.

13. Tug according to any of the proceeding claims, wherein the dynamic positioning system is adapted to determine a dangerous situation for the tug based on the plurality of input parameters, and
the tow equipment automatically spools out the towline if the dangerous situation is determined.

14. Tug controller, comprising:
- a dynamic positioning system, and

- a tow equipment controller to control a tow equipment connected to a towed vessel by a towline, wherein the tow equipment controller is automatically controlled by the dynamic positioning system based on a plurality of input parameters.

15. Tug controller according to claim 14, wherein the plurality of parameters includes at least one of:
- length of the towline,
- tension of the towline,
- direction of the towline,
- location of the towed vessel,
- heading of the towed vessel,
- speed of the towed vessel,
- heading of the tug,
- speed of the tug, and
- relative height of a towline connector on the towed vessel to the tow equipment.

16. Tug controller according to claim 14 or 15, wherein the tow equipment controller automatically spools in or out the towline to keep a slack of the towline and a tension of the towline within predefined thresholds.

17. Tug controller according to any of claims 14 -16, wherein the tow equipment automatically controller adjusts the direction of tow equipment such that the direction of the towline is perpendicular to the tow equipment.

18. Tug controller according to claim 15, wherein the dynamic positioning system is adapted to receive information of the length of the towline, the tension of the towline or the direction of the towline from the tow equipment controller.

19. Tug controller according to claim 18, wherein the tow equipment controller receives a measure of the tension of the towline from a tension sensor in the tow equipment.

20. Tug controller according to claim 18, wherein the tow equipment controller receives a measure of the direction of the towline from a directional sensor in the tow equipment.

21. Tug controller according to claim 15, wherein the dynamic positioning system is adapted to receive information location of the towed vessel, the heading of the towed vessel or the speed of the towed vessel from the towed vessel via wireless communication.

22. Tug controller according to claim 14, wherein the tug controller put the tug in tow mode by locking the towing equipment.

23. Tug controller according to any of claims 14 - 22, wherein the dynamic positioning system is adapted to adjust the position of the tug to keep the tow equipment within an operation range of the tow equipment.

24. Tug controller according to any of claims 14 - 23, wherein the dynamic positioning system is adapted to determine a dangerous situation for the tug based on the plurality of input parameters, and
the tow equipment controller automatically spools out the towline if the dangerous situation is determined.