

CLAIMS

1. A controller (200) for controlling movement of a propeller shaft (8) on a vessel, the controller (200) comprising processing circuitry (210), the processing circuitry (210) being configured to cause the controller (200) to:
5 detect movement of the propeller shaft (8) by determining a signature of a sustained oscillation of the propeller shaft (8); and
control movement of the propeller shaft (8) according to the determined signature.
2. The controller (200) according to claim 1, wherein the processing
10 circuitry (210) is further configured to control movement of the propeller shaft (8) by forwarding a torque command signal to a drive subsystem (2) of the propeller shaft (8) as a set point, wherein the torque command signal is determined according to the determined signature.
3. The controller (200) according to claim 1, wherein the processing
15 circuitry (210) is further configured to receive a currently used throttle level for driving the propeller shaft (8).
4. The controller (200) according to claim 3, wherein the processing circuitry (210) is further configured to control movement of the propeller shaft (8) also according to the currently used throttle level.
- 20 5. The controller (200) according to claim 1, wherein the sustained oscillation is caused by a cavitation.
6. The controller (200) according to claim 1, wherein the processing circuitry (210) is further configured to reduce movement of the propeller shaft (8) upon having determined that the sustained oscillation is caused by a
25 cavitation.
7. The controller (200) according to claim 1, wherein the processing circuitry (210) is further configured to not reduce movement of the propeller shaft (8) when the currently used throttle level is below a threshold value.

8. The controller (200) according to claim 1, wherein movement of the propeller shaft (8) is a linear acceleration.
9. The controller (200) according to claim 8, wherein the acceleration is either tangential or axial with respect to the propeller shaft (8).
- 5 10. The controller (200) according to claim 1, wherein movement of the propeller shaft (8) causes a radial and/or axial displacement of the propeller shaft (8).
11. The controller (200) according to claim 1, wherein movement of the propeller shaft (8) is represented by a measured waveform of the sustained
10 oscillation of the propeller shaft (8).
12. The controller (200) according to claim 11, wherein the signature is determined by correlating a known waveform with the measured waveform.
13. The controller (200) according to claim 11, wherein the signature is represented by a set of waveforms, the set of waveforms comprising
15 quantized waveforms or classified waveforms.
14. The controller (200) according to claim 13, wherein the set of waveforms is determined by passing the measured waveform through a bank of filters.
15. The controller (200) according to claim 11, wherein the signature is a
20 quantized short-time spectrum of the measured waveform.
16. The controller (200) according to claim 11, wherein the signature is represented by a set of coefficients determined by convolving the measured waveform with a bank of filter responses, wavelet coefficients, Laplacian coefficients, or Hessian coefficients.
- 25 17. An arrangement for controlling movement of a propeller shaft (8) on a vessel, the arrangement comprising:
a controller (200) according to claim 1;

a vibration sensor (17) configured to provide a signal indicative of the sustained oscillation to the controller (200); and

wherein the controller (200) comprises a propulsion control unit (3) configured to control movement of the propeller shaft (8) according to the determined signature.

18. The arrangement according to claim 17, wherein the vibration sensor (17) is positioned in vicinity of, adjacent, or on the propeller shaft (8).

19. An electrical propulsion vessel comprising a controller according to claim 1 and/or an arrangement according to claim 17.

20. A method for controlling movement of a propeller shaft (8) on a vessel, the method comprising:

detecting (S102) movement of the propeller shaft (8) by determining a signature of a sustained oscillation of the propeller shaft; and

controlling (S106) movement of the propeller shaft (8) according to the determined signature.

21. A computer program (720) for controlling movement of a propeller shaft (8) on a vessel, the computer program comprising computer code which, when run on processing circuitry (210) of a controller (200), causes the controller to:

detect (S102) movement of the propeller shaft (8) by determining a signature of a sustained oscillation of the propeller shaft (8); and

control (S106) movement of the propeller shaft (8) according to the determined signature.