Claims

1. A device for monitoring a physical condition of a mechanical joint, the device comprising:

a magnet for removably mounting the device to the mechanical joint;

a set of sensors for disposing at one or more bearing caps of the mechanical joint, the sensors configured for measuring physical parameters of the mechanical joint, the physical parameters comprising vibration parameters and temperature parameters; and

a control unit for disposing at the mechanical joint and configured for:

receiving the physical parameters from the sensors; and

sending the physical parameters to an external electronic device for the electronic device to subsequently process the physical parameters,

wherein the device comprises the magnet, sensors, and control unit in a single unitary component; and

wherein the physical condition of the mechanical joint is determinable from said processing of the physical parameters including the vibration parameters and temperature parameters.

2. The device according to claim 1, wherein the sensors comprise a velocity sensor for measuring the vibration parameters.

3. The device according to claim 1 or 2, wherein the sensors comprise a thermal sensor for measuring the temperature parameters.

4. The device according to any one of claims 1 to 3, wherein the control unit comprises a battery for powering the sensors.

5. The device according to claim 4, wherein the battery is chargeable by actuation of mechanical parts connected by the mechanical joint.

6. The device according to any one of claims 1 to 5, wherein the control unit is configured to send the physical parameters to the electronic device in response to receiving a control signal from the electronic device.

7. The device according to any one of claims 1 to 6, wherein the control unit is configured to send the physical parameters to the electronic device via Bluetooth.

8. The device according to any one of claims 1 to 7, wherein the sensors further comprise an accelerometer and/or a time-of-flight sensor.

9. A shaft assembly comprising:

a shaft comprising a mechanical joint; and

a device for monitoring a physical condition of the mechanical joint, the device comprising:

a magnet for removably mounting the device to the mechanical joint;

a set of sensors for disposing at one or more bearing caps of the mechanical joint, the sensors configured for measuring one or more physical parameters of the mechanical joint, the physical parameters comprising vibration parameters and temperature parameters;

a control unit for disposing at the mechanical joint, the control unit configured for receiving the physical parameters from the sensors; and

the control unit further configured for sending the physical parameters to an external electronic device for the electronic device to subsequently process the physical parameters,

wherein the device comprises the magnet, sensors, and control unit in a single unitary component; and

wherein the physical condition of the mechanical joint is determinable from said processing of the physical parameters including the vibration parameters and temperature parameters.

10. The shaft assembly according to claim 9, wherein the sensors comprise a velocity sensor for measuring the vibration parameters.

11. The shaft assembly according to claim 9 or 10, wherein the sensors comprise a thermal sensor for measuring the temperature parameters.

12. The shaft assembly according to any one of claims 9 to 11, wherein the control unit comprises a battery for powering the sensors.

13. The shaft assembly according to claim 12, wherein the battery is chargeable by actuation of the shaft.

14. The shaft assembly according to any one of claims 9 to 13, wherein the control unit is configured to send the physical parameters to the electronic device in response to receiving a control signal from the electronic device.

15. The shaft assembly according to any one of claims 9 to 14, wherein the control unit is configured to send the physical parameters to the electronic device via Bluetooth.

16. The shaft assembly according to any one of claims 9 to 15, wherein the mechanical joint is a universal joint.

17. The shaft assembly according to any one of claims 9 to 16, wherein the sensors further comprise an accelerometer and/or a time-of-flight sensor.