robust wireless communication technology from the load cell as well; and/or using the same load pin housing design as in use today, by allowing additional electronics to be fitted in the existing cavity of the load cell or installed or installed immediately outside and adjacent to the load cell.

[0016] According to a first aspect, a method for controlling a draw-works system may include measuring, with a load pin, a load on a hook of a draw-works system; converting, with the load pin, the measured load to a digital value representative of the measured load, wherein the digital value represents the value of the measured load; and wherein converting comprises converting, with a transducer strain gauge of the load pin, the measured load to an analog voltage representative of the measured load; converting, with an analog-to-digital converter of the load pin, the analog voltage representative of the measured load to a digital value; and compensating, with an MCU of the load pin, the digital value to account for known variations in the measurement of the load; and transferring, from the load pin, the compensated digital value representative of the measured load to a control system located at a derrick; and/or adjusting, with the control system, operation of the draw-works system based, at least in part, on the received digital value representative of the measured load.

[0016a] According to a second aspect, there is provided a load pin, comprising: a strain sensor for measuring a load on a hook of a draw-works system; and electronic circuitry coupled to the strain sensor and configured to perform steps comprising: converting the measured load to an analog voltage representative of the measured load; converting the analog voltage representative of the measured load to a digital value; compensating the digital value to account for known variations in the measurement of the load; and transferring, from the load pin, the compensated digital value representative of the measured load to a control system located at a derrick.

[0016b] According to a third aspect, there is provided a computer program product, comprising: a non-transitory computer readable medium comprising code to perform steps comprising: receiving data regarding a load on a hook of a draw-works system; converting the measured load to a digital value representative of the measured load, wherein the

digital value represents the value of the measured load; and wherein the step of converting comprises: converting the measured load to an analog voltage representative of the measured load; converting the analog voltage representative of the measured load to a digital value; and compensating the digital value to account for known variations in the measurement of the load; and transferring the compensated digital value representative of the measured load from a load pin to a control system located at a derrick.

[0017] The foregoing has outlined rather broadly certain features and technical advantages of embodiments of the present invention in order that the detailed description that follows may be better understood. Additional features and advantages will be described hereinafter that form the subject of the claims of the invention. It should be appreciated by those having ordinary skill in the art that the conception and specific embodiment disclosed may be readily utilized as a basis for modifying or designing other structures for carrying out the same or similar purposes. It should also be realized by those having ordinary skill in the art that such equivalent constructions do not depart from the spirit and scope of the invention as set forth in the appended claims. Additional features will be better understood from the following description when considered in connection with the accompanying figures. It is to be expressly understood, however, that each of the figures is provided for the purpose of illustration and description only and is not intended to limit the present invention.

CLAIMS

What is claimed is:

1. A method for controlling a draw-works system, comprising:

measuring, with a load pin, a load on a hook of a draw-works system;

converting, with the load pin, the measured load to a digital value representative of the measured load, wherein the digital value represents the value of the measured load; and wherein converting comprises:

converting, with a transducer strain gauge of the load pin, the measured load to an analog voltage representative of the measured load;

converting, with an analog-to-digital converter of the load pin, the analog voltage representative of the measured load to a digital value; and

compensating, with an MCU of the load pin, the digital value to account for known variations in the measurement of the load; and

transferring, from the load pin, the compensated digital value representative of the measured load to a control system located at a derrick.

2. The method of claim 1, further comprising adjusting, with the control system, operation of the draw-works system based, at least in part, on the received digital value representative of the measured load.

3. The method of claim 1, wherein the measured load is represented as a tension value.

4. The method of claim 1, wherein the load pin is coupled to at least one of a traveling block, a drilling hook, and a top drive of the draw-works system.

5. The method of claim 1, wherein transferring comprises transferring the digital value via at least one of a physical communications bus and a wireless communication system.

6. A load pin, comprising:

a strain sensor for measuring a load on a hook of a draw-works system; and

electronic circuitry coupled to the strain sensor and configured to perform steps comprising:

converting the measured load to an analog voltage representative of the measured load;

converting the analog voltage representative of the measured load to a digital value;

compensating the digital value to account for known variations in the measurement of the load; and

transferring, from the load pin, the compensated digital value representative of the measured load to a control system located at a derrick.

7. The load pin of claim 6, wherein the electronic circuitry comprises:

an operational amplifier coupled to the strain sensor; and

an analog-to-digital converter (ADC) coupled to the operational amplifier.

8. The load pin of claim 7, wherein the electronic circuitry is further configured to perform steps comprising scaling and offset conversion of an output of the analog-to-digital converter (ADC).

9. The load pin of claim 6, wherein the load pin is configured to be coupled to at least one of a traveling block, a drilling hook, and a top drive of the draw-works system.

10. The load pin of claim 6, wherein transferring comprises transferring the digital value via at least one of a physical communications bus and a wireless communication system.

11. A computer program product, comprising:

a non-transitory computer readable medium comprising code to perform steps comprising:

receiving data regarding a load on a hook of a draw-works system;

converting the measured load to a digital value representative of the measured load, wherein the digital value represents the value of the measured load, and wherein the step of converting comprises:

converting the measured load to an analog voltage representative of the measured load;

converting the analog voltage representative of the measured load to a digital value; and

compensating the digital value to account for known variations in the measurement of the load; and

transferring the compensated digital value representative of the measured load from a load pin to a control system located at a derrick.

12. The computer program product of claim 11, wherein the measured load is represented as a tension value.

13. The computer program product of claim 12, wherein the tension value is measured from at least one of a traveling block, a drilling hook, and a top drive of the draw-works system.

14. The computer program product of claim 11, wherein transferring comprises transferring the digital value via at least one of a physical communications bus and a wireless communication system.

15. The computer program product of claim 11, wherein the medium further comprises code to perform steps comprising scaling and offset conversion of the measured load.

16. The method of claim 1, wherein the step of compensating the digital value to account for known variations in the measurement of the load comprises compensating the digital value for thermal variations in the analog voltage representative of the measured load, wherein the step of compensating the digital value for thermal variations is based, at least in part, on a temperature value received from a thermocouple integrated with the load pin.

17. The load pin of claim 6, wherein the electronic circuitry is configured to perform the step of compensating the digital value to account for known variations by compensating the digital value for thermal variations in the analog voltage representative of the measured load, wherein the load pin further comprises a thermocouple, and wherein the electronic circuitry is configured to compensate for thermal variations based, at least in part, on a temperature value received from the thermocouple.