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(54) Title of the invention : AN OPTICAL WEIGHBRIDGE WITH MULTIPLE OPTICAL LOAD CELLS BASED ON CANTILEVER STRUCTURE FOR MEASURING WEIGHT

(51) International classification :G01L0001240000, G01D0005353000, G01G0019020000, G02B0006020000, G01B0011160000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA	(71)Name of Applicant : 1)INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES), DHANBAD Address of Applicant :Dhanbad, Jharkhand-826004, India ----- ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)AMITESH KUMAR Address of Applicant :DEPARTMENT OF ELECTRONICS ENGINEERING, INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES), Dhanbad, Jharkhand-826004, India ----- 2)ABHINAV GAUTAM Address of Applicant :DEPARTMENT OF ELECTRONICS ENGINEERING, INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES), Dhanbad, Jharkhand-826004, India ----- 3)JAISINGH THANGARAJ Address of Applicant :DEPARTMENT OF ELECTRONICS ENGINEERING, INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES), Dhanbad, Jharkhand-826004, India ----- 4)VISHNU PRIYE Address of Applicant :DEPARTMENT OF ELECTRONICS ENGINEERING, INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES), Dhanbad, Jharkhand-826004, India -----
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(57) Abstract :

The present invention relates to an optical weighbridge (101) using optical load cells based on cantilever structure. The optical weighbridge (101) disclosed in the present invention comprises a multiple optical load cell (21) each comprising fiber bragg grating (FBG) fiber optic sensor (FOS) (5). After analysing each load cell (21) to find the best possible location (8) to mount the FBG for strain measurement, a plurality of identical load cells (21) divided into two channels (C1, C2) with different central wavelength at the locations (R1-R3, L1-L3) are used to develop the proposed weighbridge (101). The sensing data or the wavelength shift corresponding to the applied weight is acquired by the interrogator (IG) simultaneously from both the channels (C1, C2) and the strain is measured by converting shift in different bragg wavelength of each optical cell (21) into strain. The two- channel configuration has the advantage of low optical power due to division of total number of optical sensors in said channels with better understanding of load cell sensing data.

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