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Capacitive Electrode Sensor: Design and Testing (Conference Paper)

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Abstract

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This paper proposed an alternative method of measuring water level using a Printed Circuit Board(PCB). The design of the electrode water level sensor went through circuit sketching, printing of sketch on PCB and etching. The signal conditioning circuit board was fabricated using a donut board and other electrical components. Experimentation was carried on the fabricated electrode sensor and the capacitance and current for each electrode finger was measured using digital multimeter and LCR meter. The multiple correlation of the water level, measured current and measured capacitance produced a value of 0.921 with P-values less than 0.05 showing the strength of the data obtained from the test conducted. The electrode water level sensor has proven to be consistent and reliable under normal working condition. © 2018 IEEE.

SciVal Topic Prominence

Topic: Liquids | Level measurement | level sensor

Prominence percentile: 83.453

Author keywords

Capacitive electrode water level sensor Continuous water level sensor Energy Security PCB water level sensor Signal Conditioning circuit

Indexed keywords

Engineering controlled terms: Capacitance Capacitive sensors Electrodes Energy security Signal conditioning circuits Strain measurement Water levels

Engineering uncontrolled terms: Capacitive electrodes Digital multimeters Electrical components LCR meters Measured currents Multiple correlation Printed circuit boards (PCB) Water level sensors

Engineering main heading: Printed circuit boards

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-
- 1 Chapter i-early history of water measurement and the development of meters (1959) *Journal (American Water Works Association)*, 51 (6), pp. 791-799.
<http://www.jstor.org/stable/41256121>
-
- 2 Mamishev, A.V., Sundara-Rajan, K., Yang, F., Du, Y., Zahn, M.
Interdigital sensors and transducers
(2004) *Proceedings of the IEEE*, 92 (5), pp. 808-844. Cited 305 times.
doi: 10.1109/JPROC.2004.826603
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-
- 3 Abdullahi, S.I., Habaebi, M.H., Gunawan, T.S., Rafiqul Islam, M.D.
Miniaturized Water Flow and Level Monitoring System for Flood Disaster Early Warning ([Open Access](#))
(2017) *IOP Conference Series: Materials Science and Engineering*, 260 (1), art. no. 012019. Cited 3 times.
<http://www.iop.org/EJ/journal/mse>
doi: 10.1088/1757-899X/260/1/012019
[View at Publisher](#)
-
- 4 Manut, A., Zoolfakar, A.S., Muhammad, N.A., Zolkapli, M.
Characterization of Inter Digital capacitor for water level sensor
(2011) 2011 IEEE Regional Symposium on Micro and Nanoelectronics, RSM 2011 - Programme and Abstracts, art. no. 6088360, pp. 359-363. Cited 5 times.
ISBN: 978-161284846-4
doi: 10.1109/RSM.2011.6088360
[View at Publisher](#)
-
- 5 Loizou, K., Koutroulis, E.
Water level sensing: State of the art review and performance evaluation of a low-cost measurement system
(2016) *Measurement: Journal of the International Measurement Confederation*, 89, pp. 204-214. Cited 26 times.
doi: 10.1016/j.measurement.2016.04.019
[View at Publisher](#)

- 6 Chetpattananondh, K., Tapoanoi, T., Phukpattaranont, P., Jindapetch, N.
A self-calibration water level measurement using an interdigital capacitive sensor
(2014) *Sensors and Actuators, A: Physical*, 209, pp. 175-182. Cited 40 times.
doi: 10.1016/j.sna.2014.01.040
[View at Publisher](#)
-
- 7 Vu Quoc, T., Nguyen Duc, H., Pham Quoc, T., Nguyen Dinh, D., Chu Duc, T.
A printed circuit board capacitive sensor for air bubble inside fluidic flow detection
(2015) *Microsystem Technologies*, 21 (4), pp. 911-918. Cited 8 times.
<http://www.springerlink.com/content/0946-7076>
doi: 10.1007/s00542-014-2141-8
[View at Publisher](#)
-
- 8 Zoolfakar, A.S., Hashim, S.B., Zolkapli, M., Idros, M.F.
Design, fabrication and characterization of conductivity sensor using printed circuit board
(2010) *Signal Processing and Its Applications (CSPA), 2010 6th International Colloquium on*, pp. 1-6. Cited 3 times.
May IEEE
-
- 9 Azman, M.F., Yahya, A., Purwanto, H.
Effect of numbers of fringing electric field (fef) fingers on the performance of sensor for water content in soil
(2013) *International Journal of Materials, Mechanics and Manufacturing*, 1 (1), pp. 46-49.
-
- 10 Rajapaksha, R.D.A.A., Hashim, U., Fernando, C.A.N.
Design, fabrication and characterization of 1.0 μm Gap Al based interdigitated electrode for biosensors
(2017) *Microsystem Technologies*, 23 (10), pp. 4501-4507. Cited 10 times.
<http://www.springerlink.com/content/0946-7076>
doi: 10.1007/s00542-017-3373-1
[View at Publisher](#)
-
- 11 Gong, C.-S.A., Chiu, H.K., Huang, L.R., Lin, C.H., Hsu, Z.D., Tu, P.-H.
Low-Cost Comb-Electrode Capacitive Sensing Device for Liquid-Level Measurement
(2016) *IEEE Sensors Journal*, 16 (9), art. no. 7397857, pp. 2896-2897. Cited 18 times.
<http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=7361>
doi: 10.1109/JSEN.2016.2524696
[View at Publisher](#)
-
- 12 Nishimura, T., Okuyama, Y., Matsushita, A., Ikeda, H., Satoh, A.
A compact hardware design of a sensor module for hydroponics
(2017) *2017 IEEE 6th Global Conference on Consumer Electronics, GCCE 2017, 2017-January*, pp. 1-4. Cited 2 times.
ISBN: 978-150904045-2
doi: 10.1109/GCCE.2017.8229255
[View at Publisher](#)
-
- 13 Paczesnya, D., Tarapata, G., Michał, M., Jachowicz, R.
The capacitive sensor for liquid level measurement made with ink-jet printing technology ([Open Access](#))

(2015) Procedia Engineering, 120, pp. 731-735. Cited 9 times.
<http://www.sciencedirect.com/science/journal/18777058>
doi: 10.1016/j.proeng.2015.08.776

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-
- 14 Ibrahim, D.
Development of a low-cost educational liquid-level sensor circuit

(2015) International Journal of Electrical Engineering Education, 52 (2), pp. 168-181. Cited 3 times.
<http://manchester.metapress.com/content/0020-7209>
doi: 10.1177/0020720915575926

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-
- 15 Babu, C.S.S., Manohar, P.
Design of a low cost signal conditioning circuit for self-compensated non contact capacitive type multi threshold liquid level sensor


(2014) Proceedings of International Conference on Circuits, Communication, Control and Computing, I4C 2014, art. no. 7057757, pp. 58-63. Cited 4 times.
ISBN: 978-147996546-5
doi: 10.1109/CIMCA.2014.7057757

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-
- 16 Shao, M., Qiao, X., Zhao, X., Zhang, Y., Fu, H.
Liquid level sensor using fiber Bragg grating assisted by multimode fiber core

(2016) IEEE Sensors Journal, 16 (8), art. no. 7374651, pp. 2374-2379. Cited 6 times.
<http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=7361>
doi: 10.1109/JSEN.2015.2513413

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