WATER TURBIDITY MEASUREMENT USING FIBRE OPTIC AND NEURAL NETWORK

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MARCH 2006

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TAJUK PROJEK: 'THE MEASUREMENT OF WATER TURBIDITY USING OPTICAL FIBRE SENSOR AND ARTIFICIAL NEURAL NETWORK'

Dengan hormatnya perkara di atas adalah dirujuk.

Sukacita dimaklumkan bahawa Jawatankuasa Penyelidikan, Pembangunan dan Pengkomersilan di peringkat Fakulti telah membuat keputusan:

i.   Bersetuju meluluskan cadangan penyelidikan yang dikemukakan oleh puan serta Pn Rozita Jailani dan Pn Mahanijah Ma Kamal.

ii.   Tempoh projek penyelidikan ini ialah 12 bulan, iaitu mulai **1 hb Julai 2004** hingga **30 hb Jun 2005**.

iii.   Kos yang diluluskan ialah sebanyak **RM18,500.00** sahaja.

iv.   Penggunaan geran yang diluluskan hanya akan diproses setelah perjanjian ditandatangani.

v.   Semua pembelian peralatan yang kosnya melebihi RM500.00 satu item perlu menggunakan Pesanan jabatan Universiti Teknologi MARA (LO). Pihak puan juga dikehendaki mematuhi peraturan penerimaan peralatan. Panduan penerimaan peralatan baru dan pengurusannya dilampirkan bersama.

vi.   Kertaskerja boleh dibentangkan di seminar setelah **75% deraf awal laporan akhir projek** dihantar ke Institut Penyelidikan, Pembangunan dan Pengkomersilan (IRDC) untuk semakan. Walau bagaimana pun, puan perlu membuat permohonan kepada IRDC.

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ABSTRACT

Turbidity of water is a measurement of water clarity to show how clear the water appears. The amount of total suspended solids (TSS) in water contributes proportionally to the value of turbidity. Insoluble particles impede the passage of light through water by scattering and absorbing the rays. Thus, the interference to the passage of light could be used for turbidity measurement using a turbidity index.

The current existing method of measuring turbidity of water could come in bulky size or small portable turbidity meter. The ability to handle many samples and implementation of on-line monitoring is limited for such devices while some do not support this feature. Taking measurements would be laborious and time consuming especially when the sources of samples are located in remote places which are difficult to be accessed by human.

In this research, an alternative turbidity measurement system called the "Fibre Optic Turbidity Measurement System" is designed and its performance is analysed and compared to the measurement from a standard turbidity meter. The concept of the proposed measurement system is to make the turbidity measurement remote, easy to handle and more flexible. Furthermore, the application of fibre optic enables measurement taken at the source of sample but could be remotely controlled from other place by the user. The design for the fibre optic set-up, transmitter circuit, receiver circuit and signal

conditioning circuit were covered. A Peripheral Interface Controller (PIC) was used to display the measured data on an LCD. Consequently, measured turbidity from the proposed system in different parameters is trained and tested using Artificial Neural Network (ANN) programming to produce a model that could give good predictions on water turbidity for LCD display.