



Product No. 1

Invitation for Expression of Interest (Eoi) for Manufacturing and Commercialization of 'Digital convergence indicator cum data logger for monitoring of underground drivages'

1.0 Background

About 50% of accidents in underground workings occur due to roof fall. The deterioration of the roof condition in underground openings is directly manifested with the increase in convergence and the roof fall occurs when the stress develops due to convergence of the roof reaches a threshold limit due to bending or when the overlying strata substantially converge along any plane of weakness. Presently the conventional strata monitoring instruments being used by the industry do not provide continuous and real time observation of roof convergence and visual display of the extent of convergence of the roof at any given time. Hence the persons working underground are not alerted during any impending roof fall condition.

In order to effectively address this problem, CSIR-Central Institute of Mining and Fuel Research (CSIR-CIMFR) has developed a "**Digital convergence indicator cum data logger for monitoring of underground drivages**".

The installation of the developed system in an underground opening would help in continuous and real time monitoring of roof convergence and provide visual display of the extent of convergence of the roof at any given time. This would help the persons in underground to assess the stability of an opening during its excavation, get information of the roof condition under which they are working on real time basis. In turn it would also help the concerned persons to take on the spot decision for the precautionary measures to be adopted to prevent any damage to men and machines in case the roof condition deteriorates to a dangerous level. The device would also ensure logging of data which may be used for analysis of the stability of openings and evaluation of the efficacy of roof reinforcement measures in long term in any underground mines or civil excavation of any height or dimension.

Block diagram of the device is illustrated in Figure 1. Tentative technical specification and feature of the device are given below.

2.0 Technical Specification

- Embedded microcontroller 5V, 8 analog inputs ports, 14 digital input/ output ports: TX, RX, 6 PWM ports, 1 pairs of TTL level serial transceiver ports.
- High precision transducer for converting convergence value into differential voltage with respect to reference voltage, operating voltage 0V-5V.
- Data Logger – for storing real time data upto 64 GB in SD card.
- 16x2 LCD Display unit with blue backlight operating at 5V DC.
- 5v Buzzer element for warning sound
- Working voltage: 9V DC

3.0 Feature of the Developed Device

- Useful for strata and support behavior monitoring in underground openings.
- Range up to 300mm in underground mining environment with a least count of 1mm.
- Real time values available for decision making or alert indication.
- Display the current status of roof convergence along with LED indicators.
- The developed device has buzzer for producing the warning sound for unsafe area.
- The developed device is a low cost system which can be installed independently and easily in any area of underground without hindering movement of men and machines.
- The overall device is very small and operates with inbuilt 9V DC rechargeable battery.

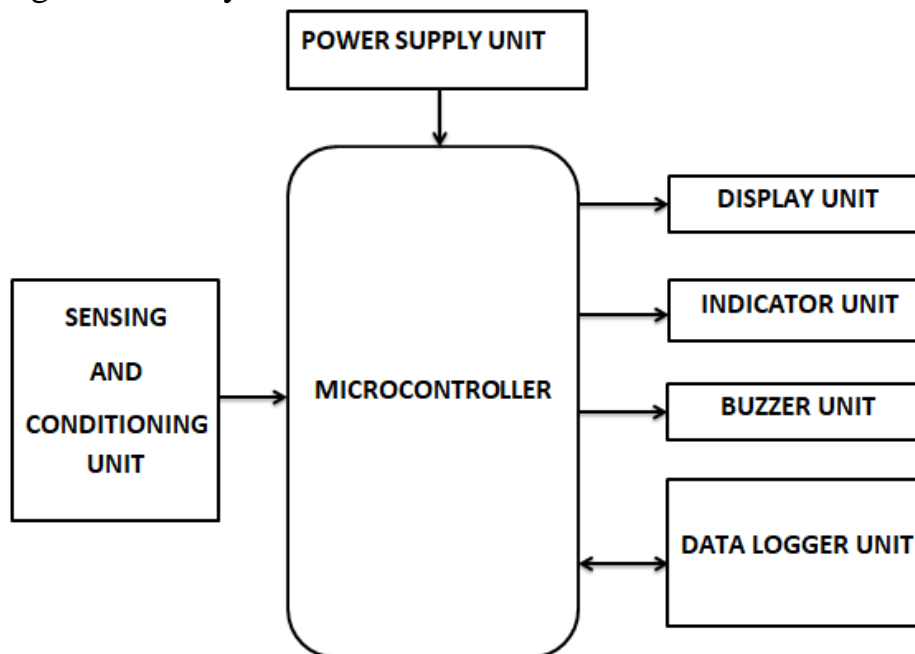


Figure 1: Block diagram of the device



4.0 Requirement/ Tasks to be carried out

CSIR-CIMFR requires an industry partner (PARTY) for manufacturing and commercialization of a '**Digital convergence indicator cum data logger for monitoring of underground drivages**'. Therefore, Expression of Interest (EoI) is invited from the interested firms for manufacturing and commercialization of the device.

5.0 Eligibility Criteria

- (i) The PARTY should be engaged in manufacturing/selling electronics and instrumentation products.
- (ii) The PARTY should have footprint in mining sector.
- (iii) The PARTY should have experience in the mentioned project area.
- (iv) Turnover of the company should be minimum of Rs. 20.00 lakhs during last financial year.

6.0 Terms and Conditions

- (i) The selected PARTY shall have to sign a licensing agreement which shall be finalized on mutually agreed terms and conditions based on the CSIR guidelines and shall be signed before the commencement of the project.
- (ii) A lump sum licensing fee need to be paid by the selected PARTY before signing the licensing agreement for commercialization of the system. Minimum lump sum premium shall be Rs. 5.00 lakh.
- (iii) Royalty rate to be paid by the selected PARTY based on percentage of selling price (excluding taxes) of the device during commercialization period. It should be minimum of 3%.
- (iv) Fabrication of the device should be completed within 6 (six) months from the date of signing the agreement.
- (v) The licensing agreement would be valid for 5 years from the date of signing the agreement and which may be renewed based on mutual consent.
- (vi) The technically qualified PARTY offering maximum lump sum licensing fee and royalty will be selected for licensing agreement.



7.0 Expression of Interest

The interested PARTY should submit their EoI in two bids (Technical and Financial Bids) separately with all the information and documents.

1. The bids prepared by the PARTY as well as all correspondence and documents relating to the bid exchanged by the technical partner shall be written in English language only. The bidder shall bear all costs of translation, if any, to the English language and all risks of the accuracy of such translation, for documents provided by the technical partner.
2. The PARTY shall have to submit the documentary evidences to support the eligibility criteria mentioned from point 5.0 sl. (i) to (iv).
3. The PARTY should also furnish the detailed documents of legal name & address, year of registration, PAN/TIN/GST details and financial standing (audited balanced sheet report & Income Tax).
4. CSIR-CIMFR requires that the PARTY should observe the highest standard of ethics during execution of such contracts.
5. The last date & time for receipt of proposal is 31.05.2018 at 5:00 PM (IST).

8.0 Submission of EoI

The interested firms should submit their EoI to:

The Head, BDIL,
CSIR-Central Institute of Mining and Fuel Research,
Barwa Road, Dhanbad – 826015
Jharkhand, India