सत्यमेव जयते

आज़ादी का अमृत महोत्सव

भारत सरकार /Government of India
श्रम एवं रोजगार मंत्रालय /Ministry of Labour & Employment
खान सुरक्षा महानिदेशालय /Directorate General of Mines Safety

No. DGMS (Tech.)(S&T) Circular No. 02 **Dhanbad dated** 11th **/04/2025.**

To

The Owners, Agents and Managers of Coal Mines.

Sub: Guidelines on minimum air quantity required at Continuous Miner and Long-wall panels.

1.0 Introduction: Regulation 153(1) of the coal Mines Regulations, 2017 (CMR 2017) mandates that owner, agent or manager of every mine to take such steps as are necessary to constantly provide in all parts of the mine belowground which are not sealed off, adequate ventilation to clear away smoke, steam and dust, to dilute gases that are inflammable or noxious so as to render them harmless, to provide air containing sufficient oxygen and to prevent such excessive rise of temperature or humidity which may be harmful to the health of persons.

As per the existing norms [sub-clause 2 (a) of Regulation 153 of CMR 2017], in order to ensure ventilation in every ventilation district, not less than 6 m^3 per minute of air per person employed in the district on the largest shift or not less than 2.5 m^3 per minute of air per tonne of daily output, whichever is larger, should pass along the last ventilation connection (LVC) in the district which means the in-bye most gallery in the district along which the air passes. To comply with this rule, a large quantity of air is to be delivered in the LVC of the mass production panels (MPP), as the daily Coal production in MPP is very high. This large air quantity may generate excessive dust in the LVC of MPP and develop a high water gauge in the main mine mechanical ventilator. The high ventilation pressure may accelerate the chance of spontaneous heating and endanger the overall safety of the mines.

2.0 Background Study and outcome: R & D project tilled **"Requirement of Air in Mass Production Technology"**, was conducted by CMPDIL, Ranchi to address the above challenges in ventilation of MPPs. Subsequent to successful completion of this R&D project, a workshop on "Assessment of ventilation requirement for underground Coal Mines adopting mass production technology in India" was organized jointly by M/s ECL and M/s CMPDIL at Jhanjra Project of M/s ECL and detailed deliberations were made in the presence of professionals, researchers and academicians.

Subsequently CMPDIL collected data from one development & two depillaring Continuous Miner (CM) panels and two different Longwall panels of coal mines for an in-depth study on humidity, dust, clearance/limit of noxious and inflammables gases for the life cycle of

development and extraction of CM and longwall panels, analyzed the same and recommended as follows:

A- For Continuous Miner Panels:

(i) Minimum air quantity (m^3/s) required at Last Ventilation Connection(LVC) of CM Panel **(Q_{min}):**

In Degree-I and Degree-II gassy coal mines:

Q_{min} at LVC (m^3/s) = 3 x A_{max} x 0.5 m/s of air velocity.

In Degree-III gassy coal mines:

Q_{min} at LVC (m^3/s) = 3 x A_{max} x 0.75 m/s of air velocity.

A_{max} is cross-sectional area in m^2, of the gallery with maximum dimension in the panel.

(ii) To maintain a relative humidity not exceeding 80% in Mass Production Panels, at least 2^0C temperature difference between the DBT and WBT is advisable to be maintained, which can ensure a comfortable environment for the miners to work in a safe and healthy environment.

To restrict maximum 2^0C rise in temperature due to machines, at least 25 m^3/s of air is to be delivered in the LVC of mass production CM panels.

B- Power Support Longwall (PSLW) panel:

(i) To achieve a comfortable working environmental in PSLW face and 2^0C temperature difference between the DBT and WBT at least 3 m/s of air velocity is required; consequently, minimum air quantity (m^3/s) required at PSLW Panel **(Q_{min}),**

Q_{min} = Cross-sectional **Area** of maximum span of PSLW face **in m^2 x 3 m/s air velocity**.

(ii) To restrict maximum 2^0C rise in temperature due to machines, at least 60 m^3/s of air to be delivered in PSLW.

Note- The minimum air quantity requirement for Mass Production Panel (MPP) should be calculated considering all of the aforementioned criteria individually, and whichever is the highest shall be delivered in the LVC of CM Panel or in PSLW Panel.

3.0 In view of the above study, it is advised that while ventilation planning of CM and PSLW panels, the above calculations of minimum air quantity requirement may preferably be used.

However, after commencement of the Mass Production Panels, a ventilation scheme shall be prepared on the basis of the factual conditions of the specific mine in compliance of the provision under sub-regulation (2) of the Regulation 153 of the Coal Mines Regulation, 2017.

Director General of Mines Safety &
Chief Inspector of Mines