Ventilation Requirements for Today's Mechanized Underground Metal Mines

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***Abstract*—Ventilation is a basic part of all underground mine operations. The main objective of underground mine ventilation is to provide sufficient quantities of air to all the working areas. Today, in modern mechanized underground metal mines, diesel-powered mobile equipment is extensively used for high production rates. Ore can be extracted from many production stopes due to the production rate in a mine. Amount of airflow required for an underground mine depends on several factors, including daily production capacity, number of diesel equipment, ambient temperature, mining method, mining depth and airway type. After implementation of Stage IV Emission Standards for nonroad diesel engines, it is getting more complex to determine airflow quantities required for underground mines wherefore reduced diesel emissions. Required amount of airflow for a mine is obtained by ventilation fans and the largest cost aspect in mine ventilation is the power costs of running the ventilation fans which can reach as high as 50 percent of a mine's entire electrical power cost. The cost of electrical power has increased significantly in recent years and is likely to continue increasing in the future. That is why it is getting more important to determine proper ventilation design for underground metal mines.**

***Index Terms*—Mine ventilation, underground, mechanized mining, diesel equipment**

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